

# Street Design Manual



**New York City  
Department of Transportation**

**2020  
Third Edition**



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## Letter from the Commissioner

Dear Fellow New Yorkers:

I am thrilled to bring you the third edition of the New York City Department of Transportation's *Street Design Manual*. In the six years since I became Commissioner, the city's record employment, tourism, and e-commerce have continued to push the limits of our street network. This growth, in conjunction with the city's ambitious climate, equity, safety and mobility goals, has made efficiently accommodating a wide variety of users ever more urgent. To do this, we must continue to transform our city's streets and push the boundaries of safe, multimodal street design.

With its arrival in 2009, the *Street Design Manual* broke ground for the unprecedented clarity and guidance it provided to numerous agencies and organizations involved in projects on New York's streets. The Manual included standardized techniques and combined formerly separate silos of the street design process into a single resource for practitioners and citizens alike. As policies and best practices have advanced—from our expanded toolkit of bike and bus lanes to our growing portfolio of street furniture and our redoubled emphasis on accessibility—the Manual has evolved with them. This Third Edition represents a significant undertaking to ensure that agencies and public stakeholders have current information at their disposal. And with our new, fully interactive website, they can access it more easily than ever before.

These things matter. Working from the same playbook and codifying best practices not only encourages and streamlines the use of proven street safety techniques, it saves time and money for all the entities that work in our streets, and fosters award-winning design excellence in projects across the City. And the results are clear: a public realm that emphasizes high-quality design for users of all ability levels helps create a vibrant city, where New Yorkers and visitors feel comfortable walking, riding their bike, and spending time outdoors with friends and family. A street designed for pedestrian comfort and access is more likely to be an inviting, and therefore safer, street for all users.

I want to acknowledge Assistant Commissioner Wendy Feuer and her tremendous team who have distilled the great work of the agency and our partners as we continue to experiment, innovate and build expertise in so many areas of street design. DOT's practices have become a model for public realm enhancements around the country – and the world; I'm proud that each new edition of the Manual has reflected this fast-paced evolution.

In 2009, many of the treatments in the Manual's First Edition were aspirational: new ideas for New York with photos showcasing the techniques used in other cities. Today, these same pages document those treatments and many new installations and activities within the five boroughs, showing the ways New Yorkers are interacting with their neighborhoods.

But pictures only tell part of the story. Go out—walk, ride a bike, take a bus—experience the transformation of your City's streets for yourself.



Polly Trottenberg  
Commissioner

## Preface

The Third Edition of the *Street Design Manual* continues the Manual's status as a living document and reinforces its role as a critical resource for those working on projects in New York City's public right-of-way. It provides both a thorough update to the guidance in previous iterations and a number of important additions: a new chapter on programming in streets and public spaces; a host of new entries throughout the Process, Geometry, Furniture, and Landscape chapters; and substantially expanded coverage of several key topics, including bike lanes, inclusive design, and plant selection and management. Importantly, the Third Edition is available on a new website, [www.nycstreetdesign.info](http://www.nycstreetdesign.info), to increase the reach and accessibility of this essential reference document.

Like its predecessors, the Third Edition of the *Street Design Manual* is the result of substantial intra- and interagency collaboration. The following agencies participated in its development: the Departments of Buildings (DOB), City Planning (DCP), Design and Construction (DDC), Environmental Protection (DEP), and Parks and Recreation (Parks), as well as the Economic Development Corporation (EDC), the Landmarks Preservation Commission (LPC), the Public Design Commission (PDC), and the Mayor's Office.

# Acknowledgments

The Third Edition of the New York City Department of Transportation's *Street Design Manual* is the result of substantial intra- and interagency collaboration. Thanks to the contributions and attention to detail of nearly 150 participants across city government, this edition is as comprehensive as possible reflecting the latest guidance and best practices in street design. The publication also builds on the previous two editions; to recognize those contributors, the acknowledgments pages from the prior publications are included in APPENDIX C.

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# Agency Acronyms

## **CECM**

Mayor's Office of Citywide Event  
Coordination and Management

## **DCAS**

New York City Department of  
Citywide Administrative Services

## **DCLA**

New York City Department of Cultural  
Affairs

## **DCP**

New York City Department of  
City Planning

## **DCWP**

New York City Department of  
Consumer and Worker Protection

## **DDC**

New York City Department of  
Design and Construction

## **DEC**

New York State Department of  
Environmental Conservation

## **DEP**

New York City Department of  
Environmental Protection

## **DOB**

New York City Department  
of Buildings

## **DOHMH**

New York City Department of  
Health and Mental Hygiene

## **DoITT**

New York City Department of  
Information Technology and  
Telecommunications

## **DOT / NYCDOT**

New York City Department  
of Transportation

## **DSNY**

New York City Department  
of Sanitation

## **EDC**

New York City Economic  
Development Corporation

## **FDNY**

New York City Fire Department

## **FEMA**

Federal Emergency Management  
Agency

## **FHWA**

Federal Highway Administration

## **FTA**

Federal Transit Administration

## **LPC**

New York City Landmarks  
Preservation Commission

## **MOPD**

Mayor's Office for People  
with Disabilities

## **MOR**

Mayor's Office of Resiliency

## **MOS**

Mayor's Office of Sustainability

## **MTA**

Metropolitan Transportation Authority

## **NYCEM**

New York City Emergency  
Management

## **NYCT**

New York City Transit, an MTA agency

## **NYPD**

New York City Police Department

## **NYSDEC**

New York State Department  
of Environmental Conservation

## **NYSDOT**

New York State Department  
of Transportation

## **OCPD**

Mayor's Office of Capital  
Project Development

## **OMB**

Mayor's Office of Management  
and Budget

## **Parks**

New York City Department of  
Parks and Recreation

## **PDC**

New York City Public Design  
Commission

## **SAPO**

The Street Activity Permit Office  
within the New York City Office  
of Citywide Event Coordination  
and Management

## **SBS**

New York City Department of  
Small Business Services

## **SHPO**

New York State Historic Preservation  
Office

## **USACE**

US Army Corps of Engineers

## **US DOT**

US Department of Transportation

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# Introduction







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# Introduction

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## Purpose

The *Street Design Manual* is New York City's resource on street design policies, principles, processes, and best practices. It aggregates a broad range of resources — from nationally recognized engineering and design guidelines and standards to federal, state, and local laws, rules, and regulations — to provide information on treatments that are allowed and encouraged on New York City streets. The Manual's intended audience is diverse, consisting of design professionals, city agency staff, elected officials, community groups, and private developers.

The *Street Design Manual* supplements rather than replaces existing engineering and environmental standards, requirements, or guidelines, such as the *Manual on Uniform Traffic Control Devices* (MUTCD), *AASHTO Policy on Geometric Design of Highways and Streets*, and *2010 ADA Standards for Accessible Design*. In a city with as many varied and complex conditions as New York, designs must be tailored to the needs and opportunities created by the local context, uses, and dimensions of streets. The *Street Design Manual* leaves ample room for choice, and all designs remain subject to case-by-case DOT approval based on established engineering standards and professional judgment, with the safety of all street users being of paramount importance.



ABOVE: Fulton Street, Brooklyn

LEFT: Herald Square, 6th Avenue and W 33rd Street, Manhattan

This Manual is New York City's resource on street design policies, principles, processes, and best practices.



## Background

The New York City Department of Transportation (DOT) first published the *Street Design Manual* in 2009 to better communicate design policy and methods and streamline project delivery to facilitate design excellence. The document was part of a broader effort to transform the city's streets from a network designed primarily for automobiles into one that supported safe and convenient travel using a diversity of modes.

In the ten years since the release of the First Edition, the city has made unprecedented investments in policies and projects that have collectively reshaped how New Yorkers and tens of millions of annual visitors experience its streets. Building on efforts that began in the early 2000s and accelerated in 2014 under Vision Zero—the city's initiative to eliminate traffic deaths and serious injuries—DOT and its partners have redesigned hundreds of corridors and intersections across the five boroughs to encourage safe driving, separate pedestrians and cyclists from motorists, and create dedicated space for buses and their riders.

These projects have included hundreds of new miles of bike lanes with just over 125 miles of protected lanes, which, along with the launch and expansion of the Citi Bike bike share system, have brought cycling into the mainstream. For transit riders, a growing network of bus lanes and bus stop enhancements on routes crisscrossing the city have made taking the bus a faster and more comfortable experience.

Perhaps most importantly, by focusing on pedestrians in the street design process, the city has made walking—New Yorkers' primary mode of transportation—safer, easier, and more pleasant. DOT has widened sidewalks, shortened crossing distances, and installed pedestrian ramps with highly visible detectable warning surfaces at corners across the city. The NYC Plaza Program has taken the car-dominated Times Square and dozens of stretches of underutilized roadway and turned them into pedestrian-focused neighborhood destinations. And in 2019, the agency partnered with 54 organizations to hold over 100 event days of Weekend Walks, and hosted Summer Streets

LEFT and RIGHT: Before and after capital reconstruction: Cropsey Avenue and Bay 37th Street, Brooklyn





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for the twelfth year, welcoming more than 300,000 people to enjoy a seven mile car-free route over three Saturdays in August.

Further, efforts to enhance sustainability and resiliency have harmonized with citywide improvements for pedestrians. For example, DOT has nearly completed the transition to LED street lights citywide, creating a more hospitable nighttime experience while conserving energy. And NYC Parks, in collaboration with civic and community groups, has planted one million new trees, expanding urban tree cover by almost 20 percent between 2007 and 2015.

Though meaningful progress has been made toward safer, more inclusive, and more sustainable streets, much work remains. While we've seen sustained decreases in traffic-related deaths since the city adopted Vision Zero in 2014, too many people are still killed and injured on city streets. DOT is engaged in a substantial effort to provide accessible pedestrian ramps at all of New York's more than 160,000 street corners, so that people of all abilities, as

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**Like its predecessors, this Third Edition of the *Street Design Manual* is practical, flexible, and aspirational.**

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well as people with strollers, can navigate the sidewalks. And evolving challenges like the explosive growth of e-commerce, the urgent threats of sea-level rise and stronger storm surges, and the rapid introduction of new mobility technologies will require new regulatory strategies and creative design thinking.

Like its predecessors, this Third Edition of the *Street Design Manual* is practical, flexible, and aspirational. DOT and its partners will continue to refine proven methods and experiment with new ones to create a transportation network and streetscape fit for the challenges of this decade and beyond.

# Street Design Policy

Planning and designing streets in accordance with the goals and principles of this section will contribute to a consistent level of quality and functionality for New York City's streets. Along with a project's planning framework, the goals and principles should be used to resolve conflicting priorities for limited street space.



## Goals & Principles

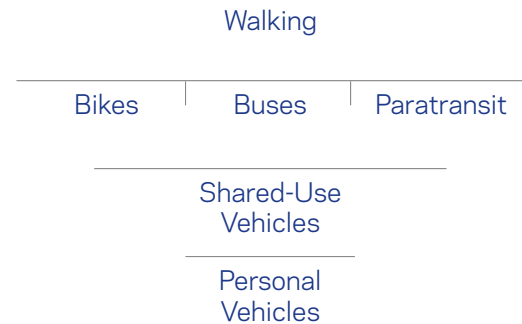
Demand for street space in New York City will always outstrip supply, and it is DOT's responsibility to design streets and allocate space to encourage the transportation modes that move people and goods most efficiently. Accordingly, consistent with the city's *OneNYC 2050* plan, the city prioritizes walking, cycling, and transit when redesigning streets and allocating use of the streetscape. In applying this framework, projects must also consider freight operations.

Practitioners should adhere to the following goals and principles when designing city streets, with an eye to achieving the highest possible aesthetic standards.

DOT seeks to design streets that are:

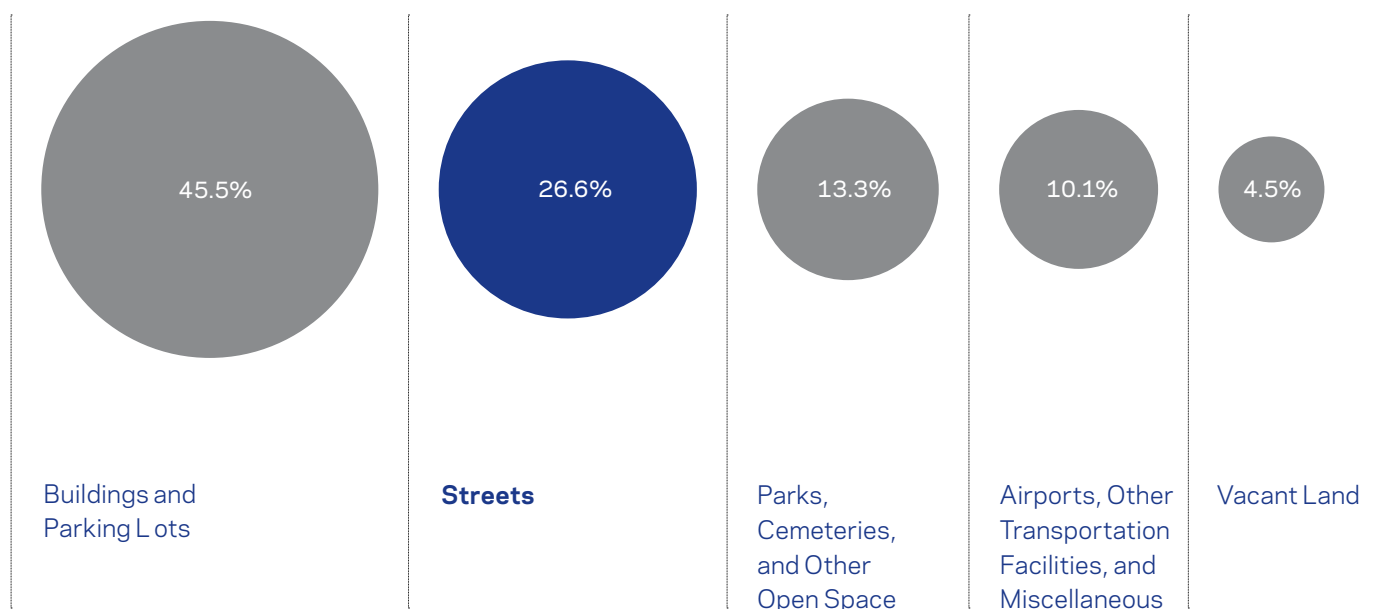
- 1 **Safe**
- 2 **Balanced and Inclusive**
- 3 **Vibrant**
- 4 **Contextual**
- 5 **Sustainable and Resilient**
- 6 **Cost-effective and Maintainable**

### Moving People Efficiently



### Percent of New York City Land Area by Use

Streets make up over 25% of the city's land area. (Source: PlaNYC Sustainable Stormwater Management Plan, 2008)





Safety enhancements: Flatbush Avenue and Atlantic Avenue, Brooklyn



Roadway design for multiple modes: 1st Avenue, Manhattan



Dance performance at Rudin Plaza: Summer Streets 2019 Uptown Rest Stop, Manhattan

1

## Safe

In 2014, the city introduced its Vision Zero campaign to enhance street safety through engineering, education, and enforcement. These efforts have contributed to a decrease in the number of traffic fatalities and serious injuries. Designing safe streets will continue to be the first priority for DOT.

- **Prioritize walking, cycling, use of** mobility devices for those with disabilities, and other non-automotive modes.
- **Design streets for slower speeds** to discourage speeding and increase driver attention.
- **Use crash data to assist with** decision-making.
- **Research, test, and evaluate** innovative safety treatments, particularly those successfully adopted in other cities.
- **Provide consistent lighting for all** users to ensure safe operation of streets and sidewalks.

2

## Balanced and Inclusive

Street designs should enable the movement of street users of all ages and abilities, prioritizing space-efficient modes capable of providing mobility to the largest number of people. Streets should balance the needs of people and vehicles within neighborhoods and movement through them.

- **Provide convenient and** comfortable facilities for walking, cycling, and transit, particularly on designated routes and at critical network connections.
- **Meet or exceed 2010 ADA** Standards for Accessible Design.
- **Accommodate delivery of goods** for businesses and residents.
- **Ensure emergency vehicle access.**

3

## Vibrant

Beyond their use for moving people and goods, streets comprise an extensive network of public open spaces that facilitate social, civic, and economic interactions.

- **Expand usable public open space** by reallocating underutilized roadway space.
- **Encourage physical health and** activity for all ages and populations by making walking, cycling, and transit safe, attractive, and convenient.
- **Design streets to be flexible and** allow for multiple activities and public programming.
- **Install public seating and bike** parking.
- **Encourage temporary and** permanent public art installations.
- **Maximize street trees and other** plantings.



Granite block roadway: Washington Street, Brooklyn



Bioswale: Dean Street, Brooklyn



Raised median: Grand Concourse, Bronx

4

### Contextual

Streets help define the character of neighborhoods. Both standard and distinctive design treatments—including furniture, materials, lighting, and landscape—should relate to the surrounding context, including its history, land uses, and nearby landmarks.

- o **Preserve the unique character of neighborhoods.**
- o **Maintain design consistency** within neighborhoods and corridors.
- o **Reduce clutter of structures and signs** that are outdated or no longer necessary.
- o **Support connections to adjacent land uses** by providing gathering spaces and pedestrian access to and from major destinations.

5

### Sustainable and Resilient

Streets present an extraordinary opportunity to improve the environmental health of the city. When designed to be resilient, streets can help communities withstand and bounce back from climate-related events.

- o **Collaborate across agencies in testing, evaluating, and standardizing new materials** so that streets are constructed in an increasingly environmentally-sound way, and respond effectively to climate threats.
- o **Plan for resiliency by analyzing the risks associated with sea-level rise, coastal storms, and extreme precipitation and heat.**
- o **Minimize impermeable surfaces** and maximize plantings and stormwater capturing installations.
- o **Utilize resilient materials that can withstand periodic temporary inundation.**
- o **Reduce streets' rate of heat absorption** by maximizing tree canopy cover.
- o **Minimize the overall lifecycle energy use and pollution associated with projects, including the extraction, transportation, construction, maintenance, and replacement of materials.**

6

### Cost-effective and Maintainable

Reconstruction of city streets requires substantial financial resources. The list of worthy projects competing for a limited pool of funding is extensive. Street designs need to be cost-effective and maintainable for the long-term.

- o **Consider lifecycle costs and maintenance needs** in addition to up-front capital costs.
- o **Ensure interagency coordination** on projects that impact streets to reduce redundancy.
- o **Design streets to meet the city's future needs.** Because streets are reconstructed infrequently, consider future conditions and demands during the planning process.
- o **Maintain a clear and consistent design-review process** to reduce change orders and the time it takes to complete projects.
- o **Establish well-considered and clearly defined goals early in project development, and focus on meeting those goals throughout planning and design.**
- o **Pilot and evaluate new materials and treatments** likely to reduce construction and operating costs.

## Design Considerations

To define context, set project goals, and help give appropriate thought to the full range of factors that should inform a street's design, refer to this list of design considerations. While this is not an exhaustive list, projects submitted to DOT for approval will be reviewed with respect to these topic areas.

### Use

Streets must accommodate many different users and serve a variety of functions.

- Buses and paratransit
- Cycling
- Emergency vehicles and access
- Flood protection/coastal surge barrier
- Motor vehicles
- Programming and special events
- Public space
- Sanitation
- School buses
- Stormwater management practices
- Trucks and goods movement
- Walking

### Community Context

Each street is unique and streets should be planned and designed with an understanding of their role in both the local and larger planning contexts.

- Combined Sewer Overflow (CSO) Priority Areas
- Commercial corridors
- Community Boards and elected representatives
- Contamination and remediation
- DCP Neighborhood Studies, proposed zoning studies, and anticipated density change
- FEMA Flood Zones and floodplains
- Historic districts and special zoning
- Land uses, e.g., commercial/retail, industrial, park/open space, single-family residential
- Maintenance partners and capacity
- Neighborhood character
- Proximity to transit
- School- or senior-safety zones
- Trip generators, e.g., prominent landmarks; public spaces; commercial, cultural, and civic institutions
- Wetlands, coastlines, and designated conservation areas

### Performance

The operational conditions of a street both respond to and inform street design.

- Access and circulation (e.g., one-way or two-way)
- Conflict and length of exposure of pedestrians and cyclists to vehicular traffic
- Crash history
- Curb cuts
- Curbside demand, e.g., meter and non-metered parking, loading zones
- Multimodal Conflict Points
- Pedestrian, cyclist, and vehicular volumes
- Pedestrian and vehicular level of service (LOS)
- Roadway and sidewalk condition
- Role of a street in transportation network, e.g., residential street, commercial street
- Traffic controls

### Physical Constraints

Some physical elements and characteristics are costly, challenging, or impossible to change or relocate, creating constraints for the design process, while others are less costly and challenging.

- Building ingress/egress
- Column supports for elevated structures
- Comfort levels, e.g., wind, access/protection from sun
- Daylighting and sightlines
- Grading and drainage
- Healthy trees
- Lights
- Poles
- Retaining walls
- Roadway width and variations in roadway width
- Sewer catch basins
- Soil structure and permeability
- Street grid
- Turning radii
- Utilities, e.g., underground gas, sewer, water

### Streetscape Elements

Furnishings on the sidewalk or in curbside lanes serve a variety of functions and enhance streetscape vibrancy.

- Bike parking
- Plantings and green infrastructure
- Public art
- Seating
- WalkNYC Wayfinding



## The Planning Framework

This section provides an overview of the larger planning framework for streets, which includes the street design considerations outlined in the previous section. It establishes the context and priorities for each street project and considers the ongoing management and operation of the completed project. DOT evaluates the costs and effectiveness of treatments and management strategies to inform future designs and initiatives. APPENDIX B includes a number of useful resources for best planning practices for streets.

### Planning

Every street is inseparable not only from its surrounding community and land uses but also from the larger transportation network of the city and region. Streets should be designed with an understanding of their role in both local and larger planning contexts. The planning of street projects should begin with the setting of clearly defined goals. Projects should seek to address not only pre-existing issues that have been identified by the community or the city, but also policy objectives or other needs of the city and stakeholders. Appropriate stakeholders should be involved in projects from conception to implementation.

### Design

The *Street Design Manual's* design guidance includes options for geometric, material, lighting, furnishing, and landscape treatments (Chapters 2–6); in most cases it does not prescribe which specific treatments must be used and in which combination. It also does not dictate which treatment should receive priority when there is a conflict between design alternatives. Rather, it gives users the flexibility to determine which overall design is most appropriate and practical in light of the goals and priorities established through the planning process and the policies enumerated in this Manual. The Design Considerations list in the previous section can be a particularly helpful tool for this decision-making process.

### Management

Well-functioning, high-quality streets are not just a product of their planning and design; the way a street is operated and managed once built is just as important as its design. For example, curbside regulations and traffic controls (signs, signals, and markings) are a central factor in determining how streets operate and the quality of the public realm. Likewise, access to a street, sidewalk, or plaza can be limited to pedestrian traffic or specific public programming on certain days or for certain hours, and vehicular traffic can be limited to transit and/or commercial vehicles some or all of the time. Finally, maintenance of street materials, furnishings, and plantings is critical to the long-term success of street designs.



Community planning workshop for Citi Bike expansion in Community Board 1: Astoria, Queens

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# Using This Manual



## Applicability

The policies and guidelines in the *Street Design Manual* are the foundation of designs for all projects that impact public and private streets in New York City, including roadways, sidewalks, and plazas. They should be used by agency staff, design professionals, community groups, and other entities involved in the planning and design of streets. DOT uses the Manual to review projects for quality and consistency.

Examples of applicable projects include operational and capital projects, such as street reconstructions and resurfacings; operational and traffic control treatments; street work associated with new or renovated buildings; and other public or private construction projects that include roadways, sidewalks, and plazas.

The guidance presented in the *Street Design Manual* does not supersede any existing federal, state, or city laws, rules, and regulations. All projects remain subject to relevant statutes—including, but not limited to, the Zoning Resolution and the City Environmental Quality Review (CEQR)—and appropriate reviews and approvals of oversight agencies such as PDC, LPC, and OMB.



Public workshop for DOT's Citywide Transit Plan at Elmhurst Hospital Center: Elmhurst, Queens



Public workshop for Jamaica NOW! at the Jamaica Center for Arts and Learning: Jamaica, Queens

The Manual provides assistance in four areas:

**1**

Setting  
Appropriate Goals  
for Each  
Project

**2**

Providing a  
Framework for  
Design  
Decisions

**3**

Establishing  
a Clear and  
Consistent Design  
Review  
Process

**4**

Serving as  
a Central,  
Comprehensive  
Reference  
Guide

# Organization

The *Street Design Manual* is structured with seven chapters and two appendices. Chapters 2 through 6 contain the bulk of the Manual’s design guidance, and Chapter 7 provides information on activating streets and public spaces through public programming.

## Chapter 1: Process

How DOT projects are conceived, planned, designed, and implemented.

## Chapter 2: Geometry

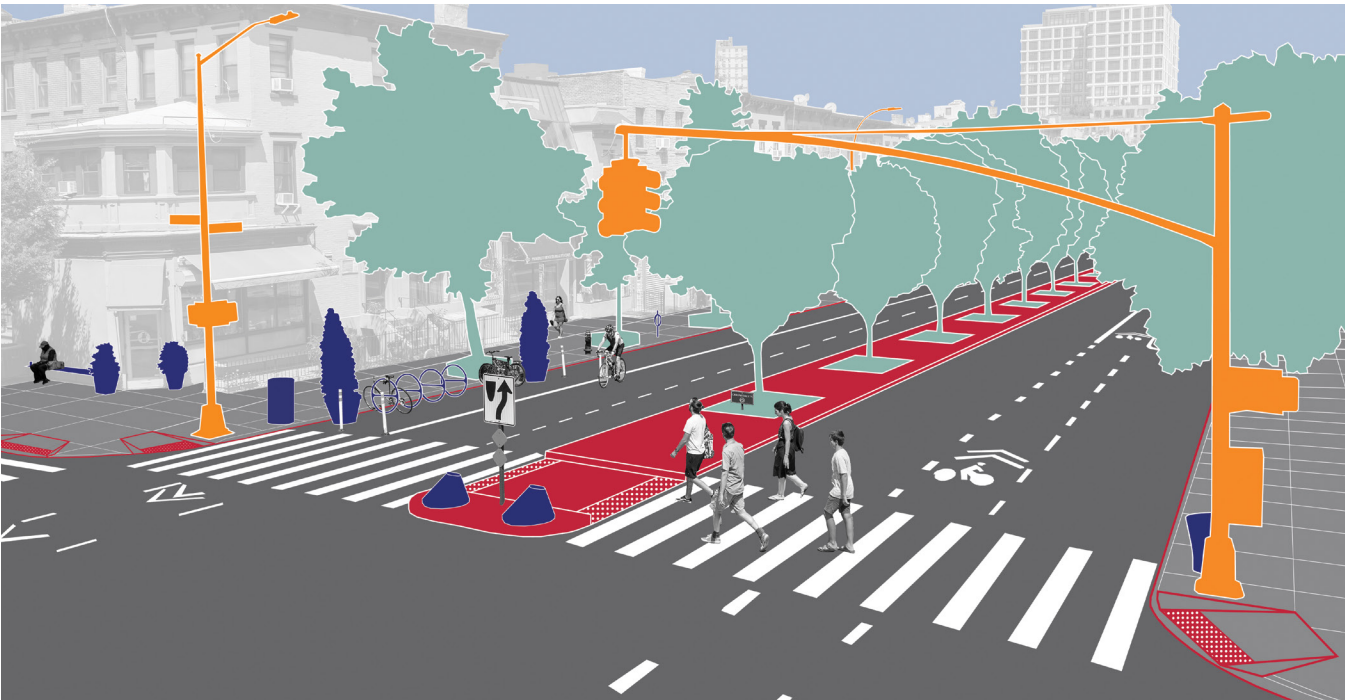
A “toolbox” of geometric street treatments that focus on safety, mobility, and sustainability.

## Chapter 3: Materials

Materials with recommendations for use and references to appropriate specifications.

## Chapter 4: Lighting

Street and pedestrian lights that meet energy efficiency, technical, and visual quality criteria.



## Chapter 5: Furniture

Standard outdoor furniture, including DOT’s Coordinated Street Furniture Franchise, and a selection of items being tested by the agency.

## Chapter 6: Landscape

Guidance on plant selection, design, installation, and maintenance.

## Chapter 7: Programming

Processes and considerations for community and city-initiated public programming.

## Glossary

Definitions of frequently used terms and abbreviations.

## Appendix A: Agency Roles on the City’s Streets

Agency responsibilities for particular street operations and infrastructure.

## Appendix B: Legal & Design Guidance References

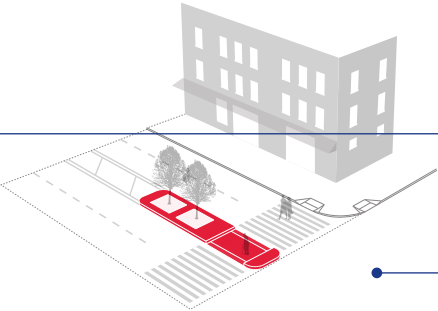


Reference to laws, regulations, and reference sources.

## Appendix C: Acknowledgments: Previous Editions

## Index

# Page Structure

The guidance in Chapters 2 through 7 follows a consistent template, as outlined below.

GEOMETRY: SIDEWALKS & RAISED MEDIANS	2.2.6 Pedestrian Safety Island	Title and usage type
<h2>Pedestrian Safety Island</h2>		Description of element
<p>Usage: Wide</p>	<p>Schematic descriptive diagram</p>	
<p>A raised area located at crosswalks that serves as pedestrian refuge separating traffic lanes or directions, particularly on wide roadways. Also known as a "median refuge island." Used at pedestrian crossings when a full raised median is not feasible. A pedestrian safety island confers most of the same benefits as full raised medians at pedestrian crossings. Full raised medians should be used rather than pedestrian safety islands wherever possible. See GEOMETRY: RAISED MEDIAN.</p>		Examples
<p>211th Street and 23rd Avenue, Queens</p>		
<p>Riverside Drive, Manhattan</p>	<h3>Benefits</h3>	<p>Benefits, Considerations, Application and Design Guidelines</p>
<p>Enhances pedestrian safety and accessibility by reducing crossing distances and providing refuge for pedestrians to cross road in stages</p>	<p>Landscaping (excluding street trees) or stormwater source controls require a partner for ongoing maintenance, including executing a maintenance agreement</p>	
<p>Calms traffic, especially left turns and through-movements, by narrowing roadway at intersection</p>	<p>If there is a maintenance partner, design should consider the inclusion of irrigation system for long term maintenance</p>	
<p>Reduces risk of vehicle left-turn and head-on collisions at intersection</p>	<h3>Application</h3>	
<p>Can green and beautify the streetscape with trees and/or vegetation, potentially including stormwater source controls</p>	<p>See application guidance for GEOMETRY: RAISED MEDIAN</p>	
<p>Trees increase the visibility of the island, potentially enhancing safety</p>	<h3>Design</h3>	
<h3>Considerations</h3>	<p>See design guidance for GEOMETRY: RAISED MEDIAN</p>	
<p>May impact underground utilities</p>	<p>Typical island accommodates two street trees and, where appropriate, safety bollards. See LANDSCAPE: TREE BEDS and LANDSCAPE: RAISED MEDIAN (CURB HEIGHT). Street trees must not block vehicles' line of sight to the traffic signal</p>	





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# Process



# Process

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# Introduction

## About this Chapter

This chapter describes how DOT projects originate and how they are planned, designed, and implemented, with the exception of work performed on bridges, tunnels, and viaducts, which is managed by DOT's Bridges Division. The chapter includes four case studies: a safety project, a transit project, a plaza project, and a public space activation project.

Generally, DOT implements two kinds of projects: "Operational" and "Capital." Operational projects usually do not involve sub-surface utility work, drainage, or roadway grading, and they are designed by DOT staff and built either by agency personnel or by a DOT contractor. Capital projects can impact sub-surface conditions and are more comprehensive. They are initiated by DOT and typically designed by DDC staff or consultants and are built by DDC contractors.

Information about specific procedures for notification, permitting, approval, and execution of work by developers and utilities can be found in DOT's *Street Works Manual*.

Operational projects are mainly funded by the city's Expense Budget, which pays for day-to-day operating expenditures, while Capital projects are funded largely by the city's Capital Budget, which generally comes from bond proceeds. Capital and Operational projects may also obtain funding from federal, state, and private grants.



Operational projects usually do not involve sub-surface utility work, drainage, or roadway grading, and they are designed by DOT staff and built either by agency personnel or by a DOT contractor: Grand Army Plaza, Brooklyn



Pipe installation as part of street reconstruction. Capital projects can impact sub-surface conditions and are more comprehensive. They are managed by DDC: Second Avenue and E Houston Street, Manhattan



### Community Participation

DOT conducts extensive outreach to communities whenever the agency implements safety enhancement projects or makes changes to the local transportation network. Input from residents and businesses helps DOT assess the character and needs of specific neighborhoods in the project-development process. While each DOT unit that manages a project is involved in community outreach, the Borough Commissioners are the agency's primary liaison with communities and generally conduct the ongoing dialogue.

The Borough Commissioners routinely meet with Community Boards, elected officials, business leaders, and other community stakeholders on issues ranging from full-scale intersection redesign projects to parking regulation adjustments. These meetings can be in community rooms or school auditoriums, in agency or other offices, or on site to review specific traffic concerns.

To facilitate a more robust and inclusive outreach process, DOT's Street Ambassadors team engages with community members and other street users at project sites and community workshops to better understand mobility and usage patterns and seek input on project elements. The team uses in-person surveys, designed with the project managers, and provides translation services tailored to the neighborhood. The results of these surveys are analyzed to inform project scoping and design choices.

DOT tailors its community outreach to suit the scope, size, complexity, and magnitude of potential impacts of each project. The outreach process is iterative, as DOT often adjusts and modifies projects based on community feedback. For some projects, as with NYC Plaza Program Capital projects, local community institutions may be engaged as maintenance and programming partners. DDC also conducts community outreach for DOT street reconstruction Capital projects, in coordination with DOT. DOT notifies local elected officials of every large project and presents the project to the relevant Community Board(s) during planning and prior to implementation.

### DOT Design Reviews and Analyses

Multiple DOT divisions review project designs throughout the planning and design phases. They review designs not only to identify potential problems or conflicts of projects, but also to identify opportunities to advance the agency's policy goals as enumerated in this Manual, DOT's strategic plan, and in other DOT publications. Depending on the type of project, DOT divisions consider the following items (some of which overlap with the technical areas addressed by CEQR, the State Environmental Quality Review Act [SEQR], or National Environmental Policy Act [NEPA] processes):

- Safety of all street users
- Pedestrian mobility and access
- Accessibility that meets or exceeds ADA standards
- Cyclist protection and network connectivity
- Transit access and operations
- Network operations
- Pedestrian and vehicular level of service (LOS)
- Air quality
- Construction-phase impacts
- Parking utilization
- Goods delivery
- Community priorities
- Historic resources and neighborhood character
- Public space opportunities
- Resiliency
- Stormwater capture and/or filtration
- Plantings
- Aesthetic appeal
- Temporary and permanent art and street furniture placement

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### Vision Zero, the city's initiative to eliminate traffic deaths, prioritizes safety in all street design projects.

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DOT prepares design documents and performs safety and operations analyses as required by federal, state, and local laws, rules, and regulations (including CEQR, SEQR, and NEPA procedures). DOT also conducts its analyses according to standard engineering practices and design guidelines (including those described in this Manual). The level of review varies by project.

TABLE 1A: OPERATIONAL &amp; CAPITAL PROJECT CHARACTERISTICS

	Operational	Capital
<b>Elements</b>	Signals, lighting, markings, signs, basic concrete work such as islands or medians, street furniture, landscaping, and paint. No sub-surface or significant drainage work	Project can include full reconstruction, sub-surface infrastructure upgrades and/or relocation, lighting, permanent streetscape elements, regrading, resurfacing, and green infrastructure. Many streetscape elements that can be Expense-funded can also be included in Capital projects.
<b>Funding Source</b>	Mostly city Expense funds; some federal and state grants	Mostly city Capital funds; some federal and state grants
<b>Budget</b>	No restrictions	\$35,000 minimum (\$50,000 minimum as of July 1, 2020)
<b>Total Project Timeline</b>	1-2 years	4-7 years
<b>Coordination with DEP</b>	Generally not necessary	DOT and DEP coordinate to avoid conflict and, where possible, undertake joint projects. DEP requirements may affect implementation schedule.
<b>Reviews by Other Agencies* and Utilities</b>	DOT reviews designs with FDNY to confirm emergency vehicle access through new street geometries. Utilities are consulted as necessary. FHWA and NYSDOT review FHWA-funded projects, and FTA reviews projects that it funds. Designs for all works of art and structures† intended for use in a fixed location for more than one year are subject to PDC review.‡ Projects may require LPC and/or SHPO review.	Multiple stakeholders are included in the planning and design review process at DDC, including FDNY, LPC, MOR, NYPD, OMB, Parks, PDC, and SHPO. Private utilities also review. MTA and Port Authority are consulted as necessary. FHWA and NYSDOT review FHWA-funded projects, and the FTA reviews projects that it funds. Coordination with as many as 40 public agencies and private entities may be required.
<b>Coordinating Agency</b>	DOT	Typically DDC (in design and construction)
<b>Useful Life</b>	No requirements	Minimum 5 years
<b>Protected Status</b>	Additional Operational and/or Capital work may often be done at project site post-completion, as needed.	No additional work can be performed at project site for at least 5 years if it damages the Capital asset.
<b>Planning</b>	DOT or its consultant	DOT or its consultant
<b>Design</b>	DOT or its consultant	DDC or consultant, often based upon a conceptual schematic from DOT
<b>Implementation</b>	DOT or its contractor	DDC contractor

\* For major transportation projects, DOT is required to consult with FDNY, NYPD, MOPD, and SBS. Major transportation projects are defined in section 19-101.2 of the New York City Administrative Code as any project that after construction will alter four or more consecutive blocks or 1,000 consecutive feet (whichever is less); a major realignment of the roadway, including either the removal of a vehicular (travel) lane(s) or full-time removal of a parking lane(s) or addition of a vehicular (travel) lane(s). For further information, see Section 19-101.2 of the New York City Administrative Code.

† See the definition of “structures” in Section 854(b) of the New York City Charter.

‡ For further information see Section 854(g) of the New York City Charter.

### Reviews by Other Entities

Other city agencies and private utilities regularly review project designs. FDNY reviews any designs—whether Operational or Capital—that might affect its operations. DEP and private utilities review each Capital project for potential impacts on their infrastructure and for opportunities to fold in repair or upgrades of their infrastructure as part of the project.

Aside from FDNY and DEP, other city agencies review DOT projects as necessary. Parks reviews all projects that impact planted areas in the public right-of-way, including greenstreets, existing street trees, or proposed new street trees. NYPD reviews DOT projects that may have security implications. MOPD reviews Operational projects for consistency with ADA standards.

Major transportation projects (as defined in Section 19-101.2 of the New York City Administrative Code) require notification to the affected Community Board(s) and council member(s) as well as consultation with multiple agencies.

See Table 1a for more information on reviews of DOT projects by other entities.

### PDC and LPC Review

PDC reviews all projects planned to be installed for more than one year. LPC reviews all projects located within the city-designated historic districts and scenic landmarks or impacting city-designated individual landmarks. Neither Commission reviews or approves roadway markings.

Per Local Law 77 of 1995, the NYC Charter was revised to outline the shared jurisdictions of PDC and LPC with regard to individual landmarks, historic districts, and scenic landmarks depending on project type. In general, PDC has jurisdiction over all art projects and any project not located within a historic district. PDC and LPC have joint jurisdiction over scenic landmarks with projects located in these areas typically requiring review by both Commissions. LPC has jurisdiction over any project occurring within a historic district or impacting an individual landmark, unless it is an artwork. For more information on PDC and LPC jurisdiction and review, visit [www.nyc.gov/designcommission](http://www.nyc.gov/designcommission) and [www1.nyc.gov/site/lpc/index.page](http://www1.nyc.gov/site/lpc/index.page).

It is critical for projects to consider reviews by these Commissions and plan accordingly. In general, the Commissions will review projects multiple times throughout design.

### Stages of PDC Review

The likelihood of PDC review should be determined during scoping. If PDC review is considered probable, its extent should be determined, and the design team should structure its schedule accordingly.

#### Conceptual

- o Necessary for complex or large-scale projects, including those subject to ULURP

#### Preliminary

- o This is typically the first time PDC reviews the design. Preliminary review is generally an iterative process that may require multiple submissions
- o Community Board review is required prior to submission
- o All necessary interagency coordination should be accomplished prior to submission
- o Maintenance responsibilities must be identified and addressed prior to submission
- o Significant design changes after preliminary approval must be submitted for PDC review prior to proceeding to 90% final design

#### Final

- o Conditions of Preliminary approval must be resolved
- o Projects—generally those that are narrow in scope—can be submitted for preliminary and final approval simultaneously, provided they comply with all requirements for both levels of review
- o All maintenance concerns must be resolved. Outside maintenance partners must commit to responsibilities, as applicable

### Stages of LPC Review

Unlike PDC, LPC does not have discrete levels of review; they will issue a report (advisory or binding) upon receipt of appropriate project materials. Consult with LPC staff early to determine the extent of LPC review. Depending on the design, pursuant to LPC's rules, staff may be able to issue an approval. Otherwise, a public hearing will be required followed by a vote from the full Commission. Community Board review is required prior to any hearing.



### Environmental Reviews and Historic Preservation

Environmental review processes, NEPA and SEQR/CEQR, require DOT to assess the potential consequences of its projects. Many of DOT's projects are exempt from review because they fall within a Type II SEQR/CEQR category or are classified as a NEPA Categorical Exclusion (CE). Projects that require federal approval or use federal funding must complete the NEPA process with the federal agency (e.g., FHWA, FTA, FEMA, HUD) in addition to SEQR/CEQR.

Pursuant to Section 106 of the National Historic Preservation Act, if the project uses federal funds or requires federal approvals, the project must be evaluated for its effect on historic properties within what is called the Area of Potential Effect (APE). Section 106 requirements are distinct from those of NEPA, but Section 106 can be coordinated with NEPA. While the federal agency providing the funding is ultimately responsible for making a determination under Section 106, DOT, DDC, or consultants working on their behalf will prepare all relevant project documentation. Projects funded by FHWA are reviewed by NYSDOT for compliance with Section 106 requirements with SHPO providing concurrence on the determination. Projects funded by other federal entities are typically documented by DOT or DDC and reviewed by SHPO. A similar process for evaluation is required under Section 14.09 of the New York State Historic Preservation Act of 1980 for projects using state funds or permits. The team should initiate these processes as early in the project timeline as is possible.

SHPO maintains a database of historic and cultural resources as well as projects reviewed by their office, the Cultural Resource Information System (CRIS), which is searchable and readily available at [cris.parks.ny.gov/Login.aspx?ReturnUrl=%2f](https://cris.parks.ny.gov/Login.aspx?ReturnUrl=%2f).

For additional guidance on city, state, and environmental and historic review, see **APPENDIX B** for resource documents and links.

In addition, for federally funded projects, Section 4(f) of the United States Transportation Act requires FHWA or FTA to make a finding that the project minimizes use of historic resources and parks and recreation areas as defined in the law. This requirement, unlike Section 106, is substantive and contains a specific requirement that the agency select whichever reasonable and prudent alternative minimizes “uses” of those resources.

### Projects Initiated Outside DOT

While this chapter focuses on projects that originate at DOT, other entities—both public and private—can plan and design projects that affect the ROW. In such cases, DOT ensures that the projects meet established criteria, particularly with regard to safety, and provides guidance on meeting other requirements and guidelines, such as those enumerated in CEQR and this Manual.

Project designs must conform to existing contexts or, if other, nearby projects are planned, to future conditions. For instance, a project site might be located along an official truck route or a planned bicycle route, in which case DOT requests that sufficient lane widths be maintained to continue to accommodate trucks, or asks that bike lanes be incorporated into the design.

## Operational Projects

### 1.1.1 Origination

Operational projects can originate as a result of one or more of the following:

- A DOT citywide safety initiative, such as Vision Zero, identifies an area in which to make safety enhancements based on crash data and other factors
- As is the case with the development of the bicycle lane network or Select Bus Service routes and many other projects, a DOT unit leads a citywide or neighborhood-level planning process that identifies modifications
- Another city agency's project, such as a DCP neighborhood rezoning or planning study, creates an opportunity for DOT to make cost-effective enhancements in the course of the project
- Elected officials provide funding for a project
- Elected officials, the general public, business improvement districts, other agencies, or Community Boards request certain treatments or ask DOT to investigate conditions
- Non-profit organizations with community support apply to DOT's NYC Plaza Program to convert underutilized ROW into public spaces

The New York City Charter mandates that each Community Board submit to the mayor and the appropriate borough president statements of its expense budget priorities for the fiscal year. This is one mechanism by which a Community Board can originate a DOT Operational project. See Section 230 of the New York City Charter for more information.



111th Street and Corona Avenue, Queens

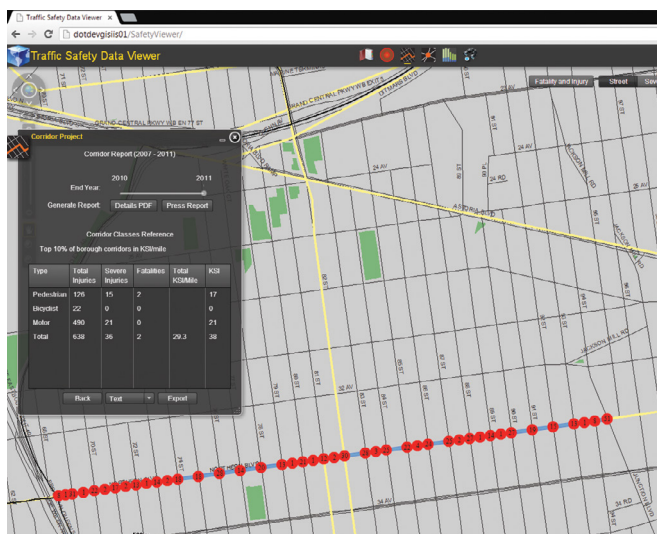
### 1.1.2 Planning & Design

#### Scoping (1–4 Months)

DOT plans and designs most of its Operational projects rather than engaging a consultant to do so. When it begins to plan a project, agency staff conduct site visits, talk to stakeholders, and collect appropriate information, which typically includes some or all of the following:

- Crash data
- Traffic speeds
- Pedestrian, bicycle, and motor vehicle volumes
- Turning-movement counts
- Parking utilization
- Contextual information, particularly local land uses, parking regulations, bus/truck route information, etc.
- Inventory of existing infrastructure, such as fire hydrants, storm drains, manholes, sidewalks and curbs, curb cuts, etc.
- Relevant demographic data, such as high proportions of older adults and/or people with disabilities

Goals and preliminary design concepts often emerge from initial data collection and information from stakeholders.



DOT's Traffic Safety Data Viewer displays and exports crash data details and summaries for corridors and intersections. Information from the Viewer informs project scoping.

#### Design (6–12 Months)

DOT assesses the project site and creates a base map to establish existing conditions. Agency staff then design enhancements that meet project goals. DOT may collect additional information as the project is developed if other nearby intersections are determined to be in need of modification.

DOT consults with FDNY to address any concerns about the impact of the designs on its operations. The agency may also present the preliminary concepts to the relevant Community Board and elected officials for input. If the project is a major transportation project, as defined in section 101.2 of the New York City Administrative Code, DOT also consults with NYPD, SBS, and MOPD. DSNY is consulted when a design might impact its operations. Designs for all works of art and structures intended for use in a fixed location for more than one year are subject to PDC review.

In some cases, if DOT contemplates making changes to signal timing or narrowing or removing lanes, the agency uses computer modelling to anticipate future conditions and adjust the plan or make improvements as needed.

### 1.1.3 Implementation (1 week to 4 months)

Once a project design is completed, the relevant DOT units and/or outside contractors implement the project. The construction season is usually between mid-April and mid-November.

DOT staff monitor and analyze crash data at the project site for up to three years after implementation. DOT also compares pre- and post-implementation motor vehicle, bicycle, and pedestrian data to determine what impact, if any, the project had on safety and mobility. If issues arise out of this analysis, DOT may revisit the project to make modifications. DOT is increasingly measuring other project-performance indicators as well, such as economic impacts.



## Capital Projects

### 1.2.1 Origination

DOT Capital projects are initiated in any of the following ways:

- DOT identifies state-of-good-repair needs for roadways, bulkheads, retaining walls, or step streets. (This Manual does not cover bridges, tunnels, and viaducts, which are managed by DOT's Bridges Division)
- DOT divisions identify safety, mobility, resiliency, or other issues that need Capital enhancements
- A DOT citywide initiative, such as Vision Zero, identifies areas in which to make enhancements. Such initiatives often employ Operational work prior to Capital implementation
- Another agency's project, such as a DEP infrastructure upgrade, creates an opportunity for DOT to incorporate enhancements to the ROW
- The general public or Community Boards make requests, sometimes seeking funding from their elected officials or from grants
- Elected officials provide funding for a project
- The mayor or other elected officials may establish priorities to be fulfilled by DOT

### 1.2.2 Planning & Design

#### Scoping (3 Months–1 Year)

When a Capital project is proposed, DOT creates an initial project budget and adds the project to the list of the agency's Capital needs. Projects are typically prioritized for funding based on a given project's alignment with the agency's strategic goals. After a rigorous prioritization process, the project may be funded in the Capital Plan, which is updated three times per year. OMB must approve the addition of the project to DOT's Capital Plan before work can begin.

DOT begins research into the project location and visits the site with various agency divisions and other stakeholders to discuss the project scope prior to funding the project. After funding, the agency refines the project scope and engages DDC to provide design and construction management services; this process generally takes several months to a year, depending on the project's size and

complexity. Prior to project initiation, DOT works closely with DDC's Front End Planning unit, as well as other stakeholders, so that the project's scope, budget, and schedule are achievable and acceptable to all parties. DOT divisions and other relevant agencies compile information that may have some bearing on the project — e.g., traffic analysis, crash data, environmental studies, etc. — and about other planned or ongoing work occurring in the project area or nearby.

Among many factors, scoping considers the impacts of climate change, including projected sea level rise, heat island effect, and coastal storm surge. To ensure consistency in these measurements, all elevations are measured in accordance with the North American Vertical Datum of 1988 (NAVD88). Special attention is given to whether the project is located in a flood-vulnerable area, according to FEMA's flood risk maps. Capital projects in high flood risk areas may involve many additional resiliency considerations from planting selection and salt tolerance to concrete and asphalt thickness. Project managers should refer to the latest version of New York City's *Climate Resiliency Design Guidelines*, which provide more detailed guidance on these topics.

If the project includes non-standard elements, such as distinctive materials or furnishings, OMB reviews and comments on the preliminary project scope and budget.

The project is then transferred to DDC for detailed design and implementation using the Capital Project Initiation form (CPI). The CPI includes:

- Project purpose/justification
- Site plan and conceptual design, if applicable
- Project description
- Cost estimate
- Funding sources summary
- Other relevant reference materials

#### Design (1–3 Years)

DDC usually awards a contract or task order to a consultant to design the project. For less complex projects, DDC may use in-house staff. DDC and the consultant conduct an analysis of existing conditions.

### Schematic Geometric Design

The consultant creates a schematic geometric design—a basic design showing curblines and markings—upon which all DOT divisions, as well as other relevant agencies, comment. Changes in geometry or to the number of moving lanes often require further traffic analysis.

### Final Design

Final Design begins the process of creating construction documents. Once DDC and its consultant incorporate all of DOT's comments on the schematic geometric design, the consultant produces the final design in three stages: 40%, 75%, and 100% completion. DDC circulates each set of drawings to all DOT divisions, relevant public and private stakeholders, and to the relevant Community Boards and elected officials for their review. At 40% and 75% design, DOT collates and transmits its comments to DDC, and the consultant incorporates the comments into the next design phase. DDC holds "alignment" meetings with the private utilities during final design, as necessary, to avoid conflicts with their infrastructure and so that there is minimal disruption to the construction schedule.

### Acquisition/ULURP as Necessary

Capital projects sometimes require the acquisition of private property (e.g., to build a new street or widen an existing street) and/or Uniform Land Use Review Procedure (ULURP) (e.g., to map a new street or change a street's mapped width or grade). These processes will generally add up to two years to a project's implementation timeline, need to have an environmental determination, and require a public hearing, Community Board review, and City Council approval.

### 1.2.3 Construction (1-3 Years)

Once the design is complete, DDC requests a construction Certificate to Proceed (CP) from OMB and bids out the project to construction management (CM) firms and contractors. OMB typically issues the construction CP before the CMs and contractors respond. Construction can begin when the contract with the selected bidder is finalized with DDC.

### The role of DDC is to:

- Perform or contract for and oversee design work, procure construction services, and manage the construction process for DOT's Capital street projects
- Coordinate among all stakeholders and manage outreach to communities affected by projects
- Manage Capital street work funded by different city agencies and coordinate Capital programs to minimize conflicts

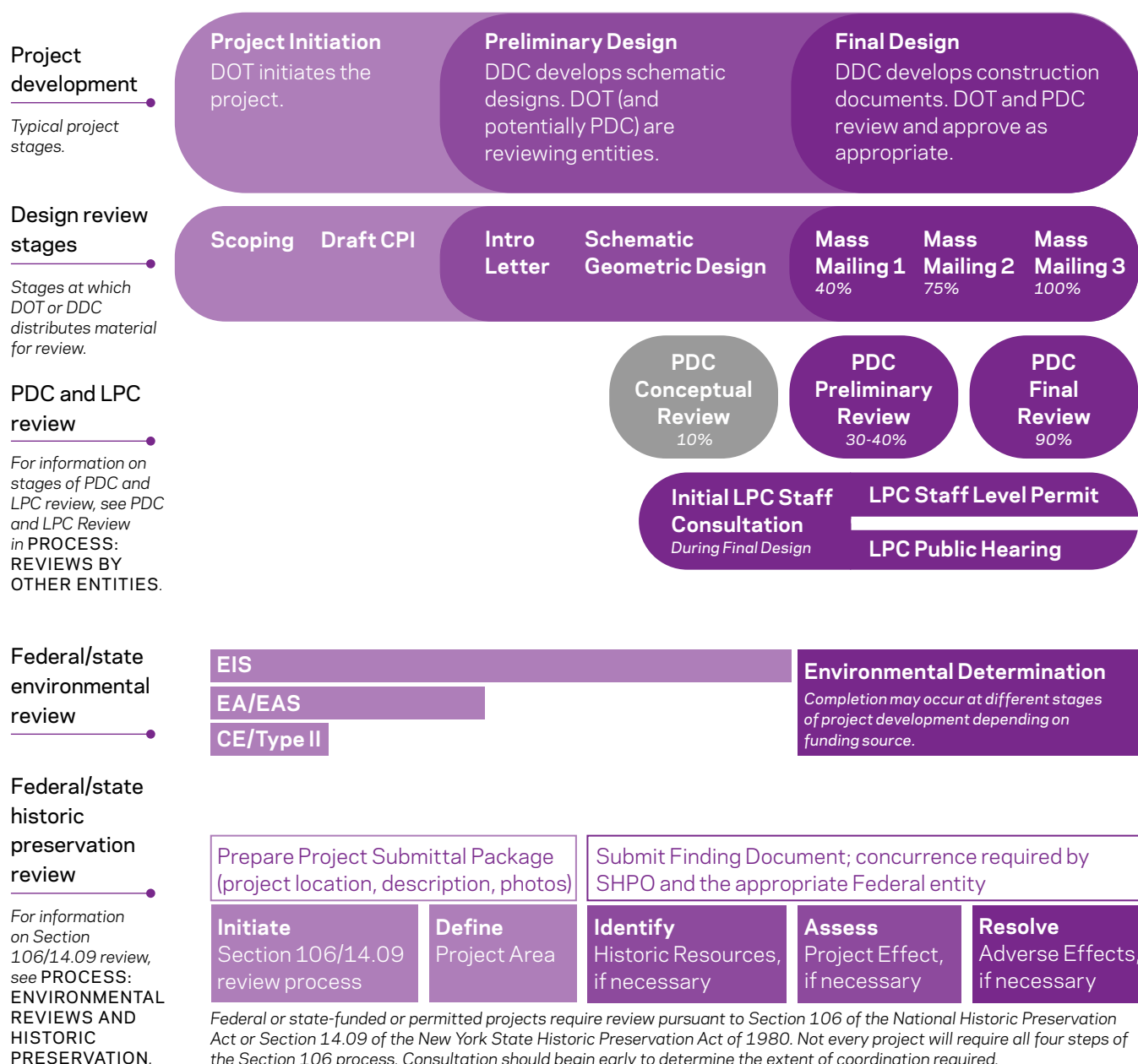
### Design Development and Review Diagram

Many teams across DOT and partner agencies participate in the design development and review process. As the project develops, DOT works with relevant oversight entities to complete the required environmental review and related approvals, which informs the decision-making process.

This diagram covers the typical project development phases, the stages at which DOT or DDC distributes designs for review, and where both local (PDC and LPC) and federal discretionary review processes come into play.

The vast majority of projects DOT undertakes are considered Type II projects under SEQR/CEQR and are thus exempt from local environmental review. They may also fall within one or more Categorical Exclusions (CE) under NEPA, requiring minimal documentation that is approved by the relevant state and federal agencies. However, some DOT projects require additional review in the form of Environmental Assessment (EA)/Environmental Assessment Statement (EAS) and/or Environmental Impact Statements (EIS). An EA (NEPA) or EAS (SEQR/CEQR) can take three to six months to complete whereas an EIS can take two years or more.

*This diagram describes the sequential development of a project as well as when certain review milestones should occur in the project timeline.*







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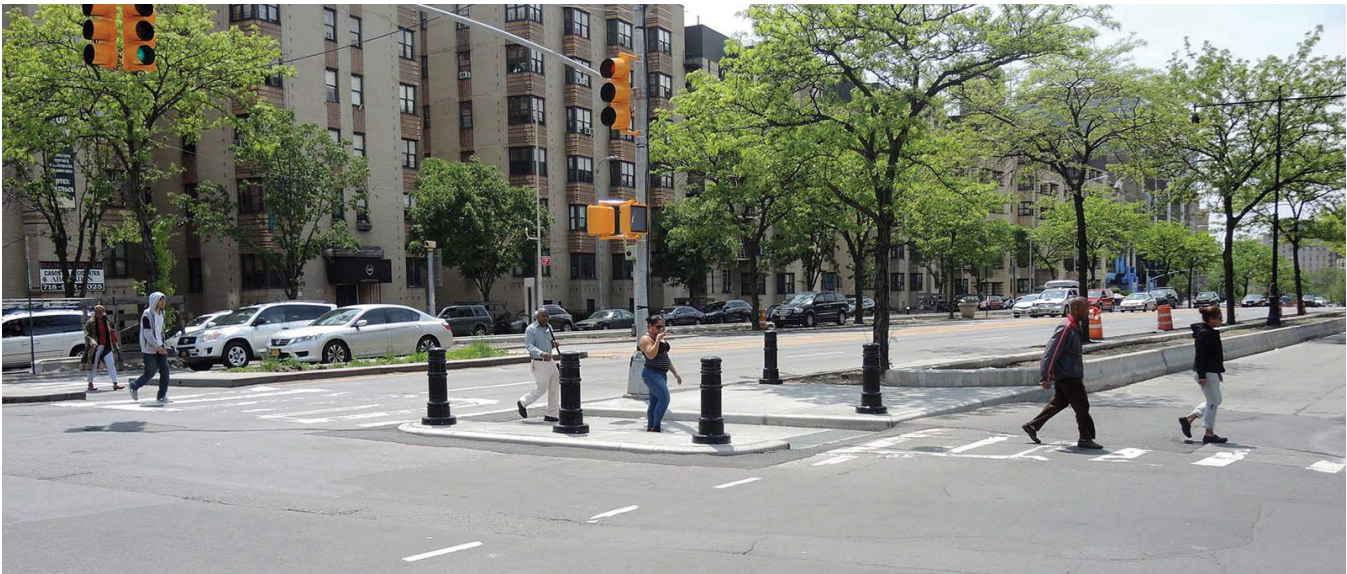
# Case Studies



## Grand Concourse

### Capital Project

The Grand Concourse is one of the busiest, most iconic thoroughfares in the Bronx. The 5-mile-long project area experiences some of the highest pedestrian death and injury counts in the Borough. Following the successful implementation of a Street Improvement Project (SIP) in 2009, over \$250 million was invested in safety improvements and other enhancements. In 2014, with the inception of the Vision Zero initiative, the Grand Concourse was named a Vision Zero Great Street, designating it as a priority for redesign. The current multi-phase Capital investment project includes improvements that target existing safety conditions, reduce vehicle delays, and greatly improve walking, cycling, and driving.



### Purpose

- Rebuild, expand, and plant medians.
- Enhance cyclist safety with grade-separated bike lanes.
- Add curb extensions.
- Reconfigure slip lanes with stop controls.
- Enhance safety and visibility at crossings with raised crosswalks.

### Location

Passes through West Concourse, Mount Hope, Fordham, Bedford Park, and Van Cortlandt Village.



**ABOVE and BELOW:** Capital construction over the last decade at Grand Concourse has improved pedestrian crossings: Bronx



## Context

As a high-density residential and commercial corridor, Grand Concourse is a venue for active, vibrant public life in the Bronx.

Grand Concourse is recognized for its rich architectural history; the corridor is flanked by a large concentration of Art Deco-style buildings.

The B and D lines run below the high-volume corridor, situating it at the intersection of several modes of transit.

## Project Origination

Beginning in the mid-2000s, the high pedestrian fatality rate at Grand Concourse drew attention to the corridor as a significant safety concern, and Grand Concourse has since been formally designated a Vision Zero Priority Corridor to reflect the urgency of safety hazards. Addressing these challenges, and leveraging strong political will, DOT moved forward with work to narrow a service road and stripe out medians along Grand Concourse. DOT's Bridges, who were reconstructing Lou Gehrig Plaza at E 161st Street, agreed to build out Phase 1 of the Grand Concourse safety improvements as part of their existing Capital project. Coupling the first phase safety improvements with Bridges' Capital work enabled the successful completion of the needed safety improvements and, consequently, substantial benefits to the public realm. Phases 1 and 2 of the project were completed prior to the launch of the Vision Zero Great Streets Initiative.

## Planning and Design

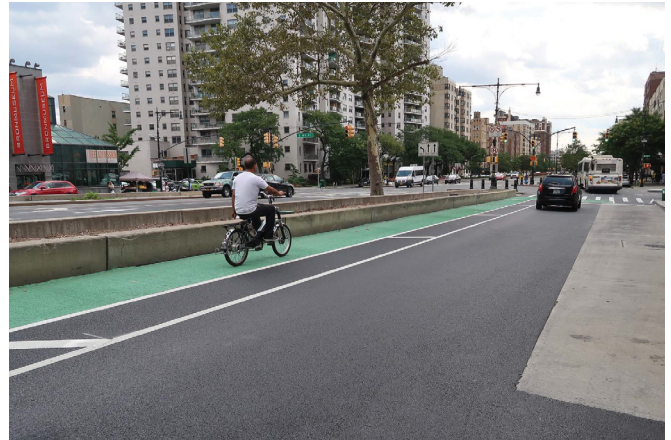
The project is currently funded through five phases covering E 161st to E 198th Streets. Phases 1 and 2 are complete; Phase 3 is in construction; Phase 4, which includes a grade-separated bike lane along the median, is beginning construction; Phase 5 is beginning design; Phases 6 and 7 are not currently funded. Design includes landscaping, new crossings, protected median expansions, protected bike facilities, and bus improvements. Crossings are improved with upgraded accessibility and raised crosswalks.

Several signalized intersections were installed to ease crossing where median barriers had disrupted the grid.

Because the B and D lines run below the entire corridor, the project requires ongoing coordination with MTA.

## Implementation

SIP implementation: May 2009 - June 2009



*Raised median adjacent to protected bike lane is scheduled for planting as part of Grand Concourse Capital project: Bronx*



*In 2011, prior to Capital project, medians on Grand Concourse were in disrepair: Bronx*

Phase 1 (Lou Gehrig Plaza): March 2006 - 2008 (Construction)

Phase 2 (E 166th to E 171 Streets): May 2014 - October 2017 (Construction)

Phase 3 (E 171st to E 175th Streets): December 2017 - May 2020, planned (in construction)

## Results

Local Community Boards have responded positively to the project, expressing satisfaction with new median plantings and improved maintenance.

Three years after the completion of Phase 1, total injuries have decreased 45% along the segment of Grand Concourse from 161st to 165th Streets.

Phases 1 and 2 have been replanted, and long-term maintenance agreements are in place to ensure the longevity of plantings, which have contributed to the beautification of the corridor.

## Bx6 Select Bus Service Route

### Operational Project

Select Bus Service (SBS) is New York City's bus rapid transit service, with 17 service routes located in all five boroughs. Designed in response to decreased bus speeds, SBS aims to create more reliable, expedient, and comfortable rides for customers. In the case of the South Bronx Crosstown Route, SBS enhancements significantly improved bus speeds and rider experience.



### Purpose

Improve bus travel times and reliability, especially at key bottlenecks; enhance pedestrian safety; and allow bus-curb access.

### Location

Primarily on 161st Street and 163rd Street in the South Bronx, yet the full route connects Riverside Drive West in Washington Heights to the Hunts Point Market in Hunts Point.

### Context

The Bx6 bus serves 24,000 daily riders as a critical crosstown route connecting to Manhattan, the Hunts Point markets, and eight subway lines.



ABOVE: E 161st Street and River Avenue, Bronx

BELOW: E 161st Street and Sherman Avenue, Bronx



161st Street is a high volume street with mostly mixed-use land use and several major buildings, such as Yankee Stadium and a number of Bronx courthouses. Prior to SBS implementation, cars often parked and double parked in front of bus stops and a nearby family court, preventing the bus from accessing the curb.

Narrow sidewalks along the corridor forced pedestrians to walk on the streets, creating dangerous pedestrian conditions.

Affordable housing currently in development along the corridor will further intensify the area's transit needs.

### Project Origination

After the success of Fordham Road and Webster Avenue SBS projects in the Bronx, MTA and DOT determined a need for a South Bronx Crosstown SBS route. As a result of input from stakeholders, including the Bronx Borough President's office, and on-street outreach with bus riders, the Bx6 was selected as the appropriate candidate due to need for improvements and opportunities for implementation.

### Planning and Design

Through data analysis, DOT and MTA identified 161st Street from the Macombs Dam Bridge to Morris Avenue as a critical portion of the route due to high ridership and slow existing bus speeds. This section also included pedestrian safety and ADA issues, such as narrow sidewalks and street operations that blocked bus stop curb access in front of the courthouse. These challenges called for an unconventional and innovative design.

To address these issues, DOT considered creating a center-running busway starting at the Yankee Stadium Crosswalk, converting the tunnel under the Grand Concourse to bus-only, and constructing a pair of bus boarding islands in front of the courthouses. This design also allowed for sidewalk expansion between River Avenue and Gerard Avenue.

Subsequent traffic analysis revealed that a two-way bus tunnel would significantly impact traffic in the westbound direction. After extensive outreach, featuring over 30 community meetings and events, DOT opted to balance the needs of community members and traffic concerns. The resulting design featured converting eastbound tunnel to bus-only while still allowing traffic in the westbound tunnel.



E 161st Street between Sherman Avenue and Morris Avenue, Bronx

The center-running design with boarding islands helped mitigate the courthouse parking challenges.

### Implementation

Implementation was conducted July-September 2017.

With a hard project deadline, the construction process required coordinating multiple parties at once.

DOT in-house teams poured bus boarding islands, while coordinating with MTA to install the bus shelters, fare machines, and SBS Wayfinding signs. Temporary materials were used for sidewalk expansions.

### Results

Bx6 SBS route travel times are 11-16% faster than previous local service.

On 161st Street between Yankee Stadium and Melrose Avenue, Bx6 SBS travel times are between 32-46% faster eastbound (the direction with the bus-only tunnel) and 14-18% faster westbound than previous local service.

The Capital project will build upon existing successful transit improvements as well as address significant state-of-good-repair needs along 161st Street.



## Diversity Plaza

### Capital Project

Diversity Plaza was originally implemented as the result of a neighborhood-wide transportation study. The plaza's implementation simplified a complex intersection and eased access to the 74th Street-Roosevelt Avenue train station. Initially implemented in interim materials, the pedestrian plaza was later built out with permanent materials and fixtures, further enhancing its pedestrian safety benefits.



### Purpose

Enhance pedestrian safety and provide more open space and amenities.

### Location

The plaza is located on 37th Road between Broadway and 74th Street and on 73rd Street between Broadway and Roosevelt Avenue in a dense commercial district in Jackson Heights, Queens.



**ABOVE:** Diversity Plaza as a permanent pedestrian plaza: Queens

**BELOW:** Prior to Capital project completion, Diversity Plaza was constructed using temporary materials: Queens

---

### Context

The surrounding area is characterized primarily by high-density, street-level retail as well as other commercial and residential uses. Low-rise buildings house mostly small retail businesses and offices on both sides of Diversity Plaza, while the north side of the plaza features an entrance to the 74th Street-Roosevelt Avenue elevated subway station. Multiple bus lines, including the Q70 SBS to LaGuardia Airport, serve the area immediately adjacent to the plaza.

---

### Project Origination

In 2011 DOT completed a transportation study that, among other things, included a recommendation for the closure of 37th Road to vehicular traffic as a means to make a safer intersection at 73rd Street and Broadway and to accommodate community requests for more open space. DOT created an interim plaza at this location in fall 2012. Diversity Plaza eventually became a Capital project and was reconstructed in permanent materials, opening again to the public in the summer of 2018.

---

### Planning and Design

Before and after creating the interim plaza, DOT conducted extensive community outreach and technical analyses, which included a study of the impacts of the closure on safety, traffic operations, and deliveries.

Scoping for the permanent plaza was completed and transmitted to DDC in May 2013.

DOT engaged local stakeholders throughout the design process through public workshops and coordination with local elected officials.

Durable permanent materials were employed to reduce maintenance needs. Large above-ground planters allow for robust plantings while enhancing pedestrian safety. The layout of the space, with moveable tables and chairs, prioritizes flexibility to allow for easy circulation and promote a wide variety of community events.

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### Implementation

Capital construction began in spring 2017 and was completed in summer 2018.

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### Results

Administered by DOT along with community partners SUKHI NY and The Friends of Diversity Plaza, the pedestrian plaza provides public seating, landscaping, and ample opportunity for community-based events all year round. Daily maintenance, seasonal plantings, and other services are provided by the Horticultural Society of New York through a contract with DOT as part of the OneNYC Plaza Equity Program.



## Fifth Avenue Street Seat

### Operational Project

Small-scale interventions can transform streetscapes into safe, walkable spaces for pedestrians. The seasonal Street Seat is an effective way to calm traffic, increase visibility, and maximize the utility of sidewalk area.



### Purpose

Create a seasonal outdoor seating opportunity; improve the public realm; enhance pedestrian safety; and provide an attractive setting for eating, reading, meeting friends, or taking a rest.

### Location

The Street Seat is located on the active commercial corridor of 5th Avenue at St. Mark's Place, near Barclays Center and Flatbush Avenue in Park Slope, Brooklyn.

### Context

With proximity to mass transit connections and major destinations such as Barclays Center, 5th Avenue in Park Slope buzzes with pedestrian activity. The active corridor includes many retail and restaurant options, but lacks adequate public space to host vibrant street life.



**ABOVE and BELOW:** DOT installed the 5th Avenue Street Seat in response to a request by a local business, Skylce: 5th Avenue and St. Marks Avenue, Brooklyn



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### Project Origination

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DOT's Public Space Unit worked with the 5th Avenue Park Slope BID and a local business, who applied to install this Street Seat.

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### Planning and Design

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After the community partner submitted a plan, DOT visited the site to assess the potential for design intervention. Partners and DOT collaborated to present to the Brooklyn Community Board 6, and gathered support from the adjacent businesses and the community at large.

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### Implementation

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DOT installed 'No Standing Anytime' signs, wheel stop bars, flexible delineators, and a parking stripe.

The partner hired a fabricator to build the Street Seat structure out of cedar wood and a contractor to install it. To ensure physical accessibility, the Street Seat rests on a platform to make it level with the curb and sidewalk. The partner maintains the structure and surrounding plantings as part of the legal project maintenance agreement. DOT conducts periodic inspections, and the partner conducts surveys to garner valuable public input.

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### Results

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The Street Seat project repurposed one parking space into an asset for hundreds of pedestrians daily. With new seating, the 5th Avenue corridor benefits from more active street life, additional greenery, and open views. Sales also increased after the Street Seat was installed.



5th Avenue and St. Marks Avenue, Brooklyn



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# Geometry







# Geometry

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# Introduction



1st Avenue and 100th Street, Manhattan

## About this Chapter

The geometric design of streets is integral to their use; for instance, overly wide roadways and corners with large turning radii tend to invite speeding and create an environment that is uncomfortable for pedestrians, while pedestrian ramps improve transitions from curbs to crosswalks for all users, and make sidewalks accessible for people with disabilities. Geometric changes also affect an area's economy, community and services, and environment.

This chapter establishes general guidelines for the geometric design of streets as well as a “toolbox” of geometric treatments that may be used to enhance safety, mobility, and sustainability.

The recommendations of this chapter supplement rather than replace existing sources of detailed engineering guidance and do not supersede any existing federal, state, or city laws, rules, and regulations. All projects remain subject to relevant statutes, such as the Zoning Resolution of the City of New York, CEQR, and appropriate reviews and approvals of oversight agencies.

## Guidance Sources

Guidance on the geometric design and operations of streets and roadways is contained in such sources as *A Policy on Geometric Design of Highways and Streets* (AASHTO, 2018), the *Manual of Uniform Traffic Control Devices* (FHWA, 2012), the *2010 ADA Standards for Accessible Design* (USDOJ, 2010), *Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way* (US Access Board, 2011), *Guide for the Development of Bicycle Facilities* (AASHTO, 2012), the *Urban Bikeway Design Guide, Second Edition* (NACTO, 2014), and the *Urban Street Geometric Design Handbook* (ITE, 2008).

Other resources include the *Guide for the Planning, Design, and Operation of Pedestrian Facilities* (AASHTO, 2004), *Inclusive Design Guidelines: New York City 2nd Edition* (MOPD, 2017), *Designing Walkable Urban Thoroughfares: Context Sensitive Approach* (ITE, 2010), the *Urban Street Design Guide* (NACTO, 2013), the *Transit Street Design Guide* (NACTO, 2016), and *New York City's Active Design Guidelines* (2010). Readers should also refer to *New York City's Borough Pedestrian Safety Action Plans* (2019), the *DOT Typical Pavement Markings Drawings*, and the latest version of *MOR's Climate Resiliency Design Guidelines*. Readers are directed to the sources noted above, those listed in **APPENDIX B**, and any other applicable resources.



### Applicability and Exceptions

All projects that significantly impact public and private streets should follow these guidelines. DOT approval will be based on site-specific conditions and cost-effective engineering standards and judgment, with safety and access for all street users being of paramount importance.

### Usage Categories

Geometric treatments are divided into three categories: Wide, Limited, and Pilot applications.

#### Wide

Geometric treatments of this type are in wide use throughout New York City. They constitute the basic set of elements that are typically found on city streets. Designs should incorporate them wherever appropriate. These treatments generally require less intensive review than limited or pilot treatments.

#### Limited

Geometric treatments of this type are currently in limited use in New York City. While the designs are well-established, their application is contingent on site-specific conditions. These treatments will require more in-depth review of appropriateness and feasibility.

#### Pilot

Geometric treatments of this type are currently in, at most, limited use in New York City, but have been employed successfully in other US and international cities. Appropriate design criteria are still under development for application in New York City. Proposals for pilot usage of these treatments will be evaluated on a case-by-case basis.

### Implementation

Many of the treatments in this chapter may be implemented in operational or capital materials. Use of operational materials enables DOT to test and deploy treatments more rapidly. When implementing geometric treatments in operational materials, special attention must be paid to edge delineation and street-sweeping needs. For more information on the difference between operational and capital projects, see the PROCESS chapter.

TABLE 2A: GEOMETRY REFERENCE GUIDE

Section	Geometric Treatment	Wide	Limited	Pilot
<b>2.1</b>	<b>Roadway &amp; Lanes</b>			
2.1.1a	Conventional Bike Lane	•		
2.1.1b	Protected Bike Lane	•		
2.1.1c	Two-Way Bike Lane		•	
2.1.1d	Grade-Separated Bike Lane		•	
2.1.2	Bus Lane	•		
2.1.3	Shared Street		•	
2.1.4	Pedestrian Plaza	•		
<b>2.2</b>	<b>Sidewalks &amp; Raised Medians</b>			
2.2.1a	Full Sidewalk	•		
2.2.1b	Ribbon Sidewalk	•		
2.2.2	Pedestrian Ramp	•		
2.2.3a	Curb Extension	•		
2.2.3b	Mid-Block Narrowing	•		
2.2.3c	Bus Bulb	•		
2.2.4	Bus Boarding Island	•		
2.2.5	Raised Median	•		
2.2.6	Pedestrian Safety Island	•		
2.2.7	Median Barrier		•	
<b>2.3</b>	<b>Traffic Calming</b>			
2.3.1	Lane Narrowing and Lane Removal	•		
2.3.2	Raised Speed Reducer	•		
2.3.3	Gateway		•	
2.3.4	Raised Crosswalk		•	
2.3.5	Raised Intersection			•
2.3.6	Chicane			•
2.3.7	Neighborhood Traffic Circle			•
2.3.8	Roundabout		•	

## General Guidelines



*Pulaski Bridge at 11th Street and Jackson Avenue, Queens*

The following guidelines expand on the general policies and principles outlined in the Introduction, with more detailed information specific to geometric street design.

### Safe by Design

As part of New York City's Vision Zero commitment to eliminating preventable traffic deaths and injuries, the city is redesigning many of its streets to make them safer. Using roadway geometry like lane width and type, intersection design, and elements such as curb extensions, raised medians, and roundabouts, DOT aims to encourage safe driving, reduce crossing distances for pedestrians, and create dedicated space for cyclists. A redesigned street can both lessen the likelihood of a crash and reduce the severity of crashes that do occur. An expanded program of Street Improvement Projects drawing upon the tools outlined in this section of the Manual contributed to five consecutive years of declines in road deaths following the establishment of Vision Zero as citywide policy. DOT will continue to implement these design elements to further decrease fatalities and serious injuries on New York City streets.

Streets should be designed to protect the most vulnerable users, particularly pedestrians and cyclists, while maintaining necessary vehicular access. The two goals are not mutually exclusive. In fact, improvements made explicitly to enhance safety can also simplify the flow of traffic and eliminate confusion among roadway users. DOT's commitment to safety is paramount, and while street design improvements may require changes in parking allocations or vehicular access, DOT strives to minimize disruption and encourages community feedback on projects.

### Vehicle Target Speed

Streets should be designed with target speeds (see GLOSSARY) and speed limits appropriate to their surrounding uses and desired role in the vehicular network. The citywide speed limit is 25 mph, except where otherwise noted. New York State Vehicle & Traffic Law (VTL) Section 1642(a)(26) and (27) currently allow speed limits below 25 mph, and as low as 15 mph in New York City if used in conjunction with traffic calming measures. Slower target speeds and speed limits should be considered on local streets and residential streets; on streets adjacent to schools; in areas with higher populations of older adults or people with disabilities; and on waterfronts, in parks, or in and around other significant pedestrian destinations.



As part of its efforts to enhance safety, DOT deploys traffic calming devices in neighborhoods around schools and in areas with high numbers of crashes involving older adults. Some traffic calming treatments, such as raised medians, can also enhance the public realm by expanding pedestrian space and incorporating greenery. Community groups can also request certain traffic calming interventions, such as raised medians and corner bulbouts, at specific locations by contacting their DOT Borough Commissioner.

### Roadway Width, Corner Radii, and Crossing Distance

The roadway — the portion of a street ordinarily used by motor vehicles and cyclists, exclusive of the sidewalk — should be designed to be the minimum possible width, with the minimum number of lanes, that safely and cost-effectively allows for the travel of motor vehicles and cyclists. Narrower roadways minimize pedestrian crossing distances, encourage safe driving behavior, and reduce impermeable, heat-absorbing asphalt coverage.

Roadway modifications should be designed for the expected traffic volumes in the year that construction will be complete. Additional consideration should be given to recent trends in traffic and mode choice — as documented in DOT's *Mobility Report* — and their implication for traffic volumes in future years (e.g., five years after the build year). Excess width should be reallocated to provide walking, transit, and bicycling facilities, public open space, green cover, and/or stormwater source control measures. If financial limitations preclude capital implementation of street redesigns (e.g., curbing or streetscaping), the reallocation of space should still proceed with less costly operational approaches such as restriping.

To reduce pedestrian crossing distances further and slow turning vehicles, all roadway corners should be designed with the smallest possible radius that still accommodates the design vehicle (see GLOSSARY) and emergency vehicles.

Pedestrian crossing distances should be minimized in all locations utilizing treatments such as curb extensions (i.e., neckdowns) with detectable warnings to make edge conditions clear to pedestrians with vision disabilities. See GEOMETRY: CURB EXTENSION. Sidewalk narrowings and roadway widenings should be avoided.



E 42nd Street and Madison Avenue, Manhattan

### Design Vehicles and Emergency Access

The design vehicle (see GLOSSARY) used for geometric street designs, typically a single-unit truck, with a 30-foot long wheelbase (SU-30), should be appropriate to the predominant intended uses of the given street and should not include commercial vehicles larger than New York City's maximum allowable length. In addition, all street designs must consider FDNY, other emergency vehicle, and sanitation vehicle access needs (e.g., for street sweeping and snow clearing). Larger design vehicles, such as tractor-trailer trucks with wheelbases varying from 40 feet (WB-40) to 62 feet (WB-62) in length, are used on bus and designated truck routes depending on the route type, context, and special route provisions.

### Complex Intersections

Multi-leg or skewed angle intersections should be redesigned (to the extent practicable) to simplify operations and reduce or separate conflicts. This can include the removal of intersection legs and slip lanes that are inconsequential to the traffic network, creation of right-angled intersection alignments, and simplified traffic patterns. Resulting space should be consolidated to create new public open space and shorter, more direct crossings.

The use of slip lanes should generally be avoided except where conflicts are mitigated and overall safety is significantly improved by their use. If one is necessary, it should produce a conflict-free crosswalk from the island.

### Maintenance

Unless a maintenance partner can be identified, new geometric treatments, including curb and sidewalk extensions in operational materials, must leave a minimum of 11 feet of roadway width to accommodate standard street sweepers and snow plow operations.



Shore Front Parkway, Queens

### Inclusive Design

Projects should be designed to make it easier for New Yorkers with disabilities, older adults, and children to navigate the city. To this end, designs should consider how people with diverse ability levels will use and move through the space.

Pedestrian spaces should have clearly defined pathways with minimal clutter that are easy to understand, regardless of users' ability level or experience. Delineation treatments should be developed in conjunction with stakeholders to meet the mobility needs of the intended users. Designs should incorporate multiple ways of communicating effectively with users. Examples include pedestrian ramps and detectable edge treatments. Projects must meet or exceed all applicable federal, state, and/or local accessibility standards for facilities and public rights-of-way, including minimum clear-path widths, inclusion of ADA-compliant ramps, and provision of accessible transit facilities.

### Drainage and Stormwater Control

All modifications to street geometry should avoid unintended changes in the direction and disposition of stormwater runoff so as not to create ponding or flooding issues. Adequate roadway grades (i.e., 1.5% desired, with a minimum of 0.5%) are required to direct runoff to catch basins. Include planted areas and stormwater source controls within the roadway wherever feasible. For more information on green infrastructure treatments, see **LANDSCAPE: STORMWATER MANAGEMENT PRACTICES**. Stormwater control within the street network may offer opportunities for resiliency benefits in areas that experience frequent flooding.



Kappock Street and Netherland Avenue, Bronx

### Resiliency

Resilient design enhances a street's ability to return to service quickly and without excessive cost or inconvenience to the public following a climate-related event, like flooding or extreme heat. At the network level, resiliency helps maintain access to critical facilities, such as hospitals and storm shelters, during flood events.

Climate-related risks and their triggers and thresholds should be evaluated during the design process. Mitigation strategies include, but are not limited to, raising streets, creating landscaped berms, and installing permanent or deployable flood walls. Designs should seek to minimize damage to DOT assets while allowing traffic circulation for all vehicle types. Projects in the current and future 100-year floodplain should consult the latest version of MOR's *Climate Resiliency Design Guidelines*.

### Sustainability

In 2017, New York City recommitted to the Paris Climate Agreement through Executive Order 26. Releasing the 1.5 *Climate Action Plan*, the city committed to more aggressive near-term climate change mitigation goals, building upon the existing sustainability efforts in the *Roadmap to 80x50* and the *DOT Strategic Plan*. A core goal in the city's climate change mitigation strategy is growing the share of trips made using sustainable modes—transit, walking, and biking—from 66% to 80% by 2050. Prioritizing these modes in order to enhance safety and inclusivity also creates a more sustainable transportation system.







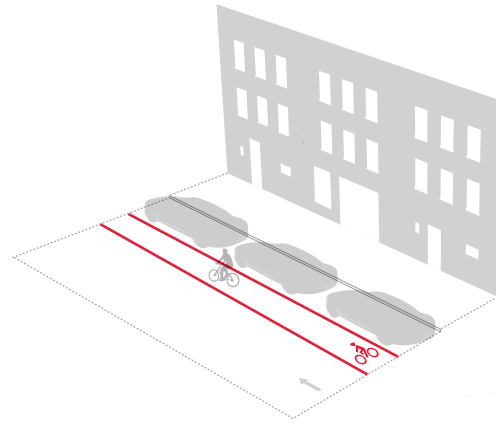
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# Roadways & Lanes

## Conventional Bike Lane

### Usage: Wide

A portion of a roadway that has been designated by pavement markings and/or signs for the preferential or exclusive use of cyclists.



Greenpoint Avenue, Queens



Hoyt Street, Brooklyn

### Benefits

Provides dedicated space for cyclists, enhancing safety, comfort, and mobility

In combination with other bikeways, provides a comprehensive network of recommended routes for cyclists, thereby encouraging bicycling

On-roadway bike lanes that narrow or replace motor vehicle lanes can calm traffic

routes, and where speeds are lower and double parking/illegal parking (i.e. potential bike lane blocking) is not prevalent

When excess roadway exists, conventional lanes can be used to calm traffic and make the street safer for all road users

Consider using a protected bike lane rather than, or in addition to, a conventional bike lane where conditions permit (e.g., street width, traffic volume, etc.). See

GEOMETRY: PROTECTED BIKE LANE

### Considerations

Conduct outreach to people with disabilities and stakeholders working with these population groups early in the planning and implementation process. Provide notification of street geometry changes before implementation. Consideration should be given to commercial vehicles loading/unloading

Without physical separation, vehicles can block bike lanes, making enforcement of violations critical

### Design

See Table 2b for a listing of typical bikeway designs and their respective spatial requirements, ideal applications, and advantages and disadvantages

Create connectivity with adjoining bikeways, bike parking, transit, and commercial or cultural destinations

Bikeways in parks, or in other places with heavy pedestrian traffic, light cycling traffic, and insufficient right-of-way for separated facilities, can be designated using bike stamps

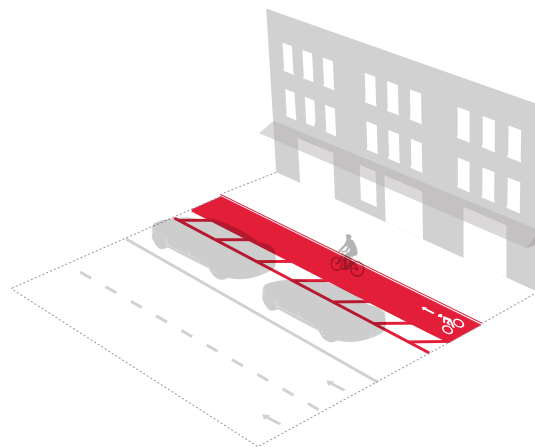
### Application

On streets with high current or anticipated bike volumes or that offer important linkages to destinations or between

## Protected Bike Lane

### Usage: Wide

A bike lane with a physical separation from motorized vehicle traffic by a parking lane or barrier. Physical separation of bikeways is preferable on wide or busy streets, on major bike routes, or along long, uninterrupted stretches. Separation can take the form of floating parking, a curb or raised median, or other vertical elements preventing motor vehicles from accessing the bikeway.



6th Avenue, Manhattan



1st Avenue, Manhattan

### Benefits

See benefits of GEOMETRY: CONVENTIONAL BIKE LANE

Offers greater cyclist separation from motor vehicle traffic on mid-block sections

Reduces risk of “dooring” (a motor-vehicle occupant opening their door into the path of an oncoming cyclist)

Reduces or eliminates blocking of the bike lane by motor vehicles and the swerving of cyclists into mixed traffic

Encourages novice and less confident cyclists to choose cycling

### Considerations

Design consideration must be given to pedestrians with vision or ambulatory disabilities; emergency vehicle and paratransit access to adjacent buildings; snow-clearing and street-sweeping needs; commercial vehicles loading and unloading; bicycling visibility at intersections; and establishment of right of way

### Application

Where the street is an important bike network connection, or a truck route, or has high motor vehicle volumes, high speeds, or multiple moving lanes

Consider wherever a conventional bike lane is appropriate. See GEOMETRY: CONVENTIONAL BIKE LANE



## Design

See Table 2b for a listing of typical bikeway designs and their respective spatial requirements, ideal applications, and advantages and disadvantages

Care must be given to the design of bike lanes at intersections and driveways to maintain visibility of cyclists to motorists and to reduce the risk of turning conflicts with motor vehicles

Designs to mitigate turning conflict at intersections may utilize mixing zones, signal-protected turns, or offset crossings

In some circumstances (e.g., long paths along open space or waterfront), facilities can be designed for shared use by cyclists, pedestrians, skaters, users with mobility devices, and other non-motorized users (a “shared-use” facility) rather than as a separate bike lane and sidewalk

If designed as a shared-use facility, provide adequate space appropriate to anticipated volumes of low-speed users (pedestrians) and higher-speed users (cyclists) so as to provide safe and comfortable accommodation of both and minimize conflicts

Design raised medians that separate bike lanes according to the GEOMETRY: RAISED MEDIAN section

If a protected bike lane uses raised medians, see the LANDSCAPE: RAISED MEDIAN (CURB HEIGHT) section or the LANDSCAPE: RAISED MEDIAN (12-24 INCHES) section for information on planting

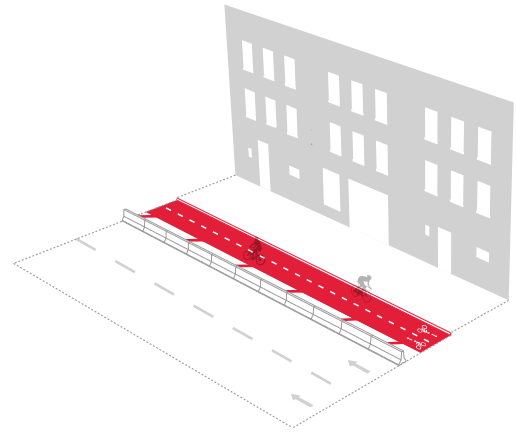


*One-way bike path separated from roadway by parking: Skillman Avenue, Queens*

## Two-Way Bike Lane

### Usage: Limited

A bike lane that accommodates cyclists traveling in both directions, and is typically separated from vehicle traffic by an open space or barrier. Physical separation of two-way bike lanes is often preferable on wide or busy streets, on major bike routes, or along long, uninterrupted stretches. However, two-way bike lanes may also exist without physical separation on streets with low traffic volumes, low operating speeds, or low risk of conflict.



S 5th Street, Brooklyn



Clinton Street, Manhattan

### Benefits

See benefits of GEOMETRY: PROTECTED BIKE LANE

A single buffer can protect both directions, thereby requiring less street width than a pair of protected bike lanes

Enhances bike network connectivity on one-way streets

When located adjacent to parks or public space, improves access to and circulation around those locations

Allows for greater passing width for cyclists traveling at different speeds

### Considerations

Design consideration must be given to pedestrians with vision or ambulatory disabilities; emergency vehicle and paratransit access to adjacent buildings; snow-clearing and street-sweeping needs; commercial vehicles loading and unloading; bicycling visibility at intersections; and establishment of right of way

Additional traffic control devices may be necessary for cyclists riding against the traffic direction in the adjacent vehicular lane

### Application

Where a conventional bike lane is appropriate and the street is an important bike network connection, or is along a park, waterfront, or other open space where cross streets are infrequent

Consider wherever a conventional bike lane is appropriate. See GEOMETRY: CONVENTIONAL BIKE LANE

### Design

See Table 2b for a listing of typical bikeway designs and their respective spatial requirements, ideal applications, and advantages and disadvantages

Two-way bike lanes require 4 feet of width in each direction (or 8 feet total) and an additional 2 feet when protected by a concrete barrier, or a 3-foot buffer in a parking-protected configuration to safely accommodate opening vehicle doors

A two-way bike lane can be protected using a single section of buffer with reflective vertical elements (e.g., flexible delineator, Jersey barrier, or concrete median)

Care must be given to the design of bike lanes at intersections and driveways to maintain visibility of the cyclist to motorists and to reduce the risk of turning conflicts with motor vehicles

Special provisions for turns or turn bans may be required, especially left turns which require a protected phase to cross both opposing vehicle traffic and the bikeway

In some circumstances (e.g., long stretches along open space or waterfront) with low volumes, two-way bike lanes can be designed for shared use by cyclists, pedestrians, skaters, pedestrians using mobility devices, and other non-motorized users (a “shared-use” facility) rather than as a separate bike lane and sidewalk

If designed as a shared-use facility, provide adequate space for anticipated volumes of low-speed users (pedestrians) and higher-speed users (cyclists) to provide safe and comfortable accommodation of both and minimize conflicts

Design raised medians that separate bike lanes according to the GEOMETRY: RAISED MEDIAN section

At intersections with complex traffic patterns—or when bike lanes are located immediately adjacent to the curb—bike lanes can be given visual emphasis through the application of green-colored pavement



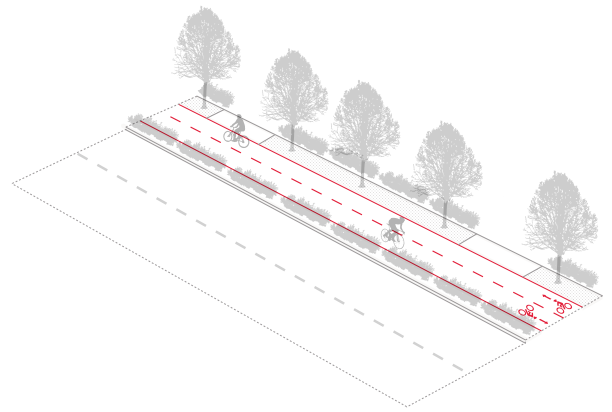
Chrystie Street, Manhattan



## Grade-Separated Bike Lane

### Usage: Limited

A bike lane that is raised above the roadway to sidewalk grade, or in between sidewalk and roadway grade. Grade-separated bike lanes are utilized where there is adequate right-of-way adjacent to the roadway or connecting through parks or other properties. Grade-separated bike lanes are typically designed as two-way facilities.



Queensboro Bridge Greenway, Queens



Van Brunt Street, Brooklyn

### Benefits

See benefits of GEOMETRY: PROTECTED BIKE LANE

Provides the greatest protection for cycling

Can be located either within the public right-of-way or on properties owned by private entities allowing for connection of cycling facilities where on-street facilities are not feasible

Grade-separated bike lanes that require capital construction can often include planted areas or trees

Because grade-separated bike lanes are not located in the street, curbside access is maintained for motor vehicle loading, parking, or other uses

### Considerations

Design consideration must be given to pedestrians with vision or ambulatory disabilities; emergency vehicle and paratransit access to adjacent buildings; snow-clearing and street-sweeping needs; commercial vehicles loading and unloading; bicycling visibility at intersections; and establishment of right of way

Grade change should be clear to all road users

If lane is also two-way, see considerations for GEOMETRY: TWO-WAY BIKE LANE

### Application

Where the bike lane serves as an important connection to the bike network, or is along a park, waterfront, other open space where cross streets and driveways are infrequent

### Design

See Table 2b for a listing of typical bikeway designs and their respective spatial requirements, ideal applications, and advantages and disadvantages

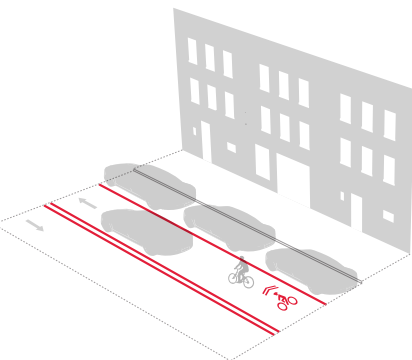
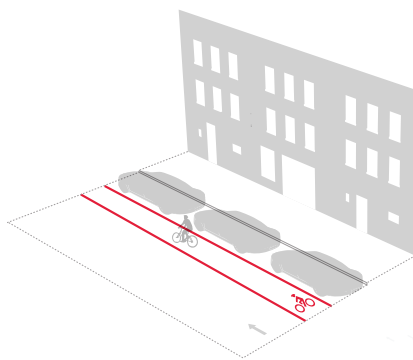
Adjust buffer width to avoid door swing from vehicles and to ensure that placement of signs, utilities, and street furniture does not obstruct cyclists

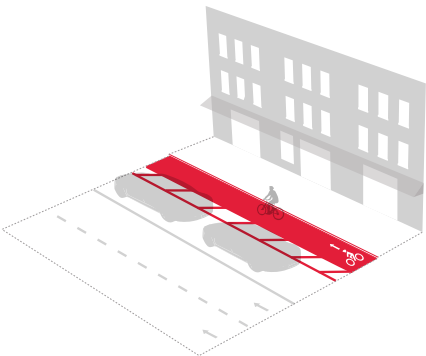
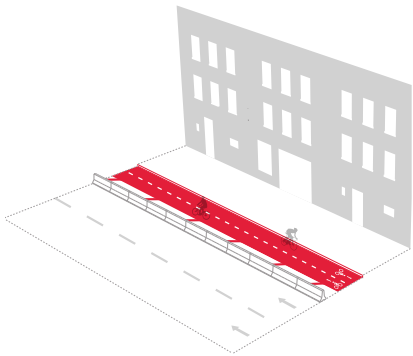
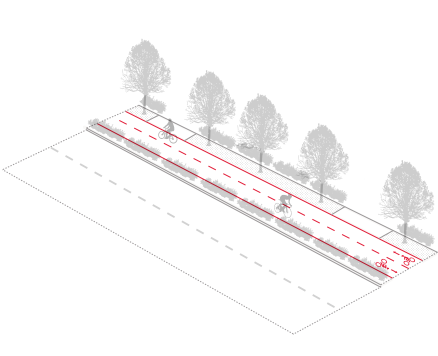
Care must be given to the design of grade-separated bike lanes at intersections and driveways to maintain visibility of the cyclist to motorists and to reduce the risk of turning conflicts with motor vehicles

In some circumstances (e.g., long stretches along open space or waterfront), a grade-separated bike lane can be designed for biking, walking, and other non-motorized uses rather than as a separate bike facility and sidewalk

If designed as a shared-use facility, provide adequate space to accommodate anticipated volumes of lower- and higher-speed users and minimize conflicts

**TABLE 2B: BIKE LANES**

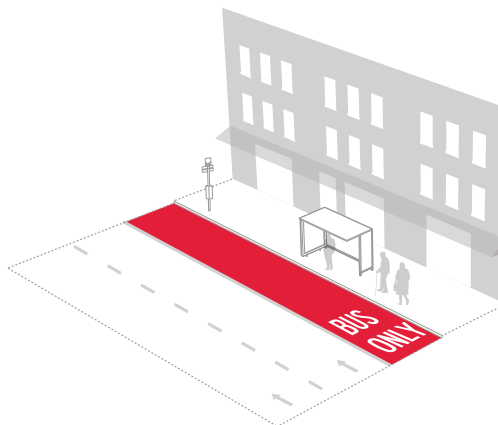
Bike Lane Types		
	Shared Lane	Conventional Bike Lane
	<p><b>Shared Lane</b></p> <p>Ex: 48th Street, Queens</p> 	<p><b>Conventional Bike Lane</b></p> <p>Ex: Van Duzer Street, Staten Island</p> 
<b>Space Required</b>	None	5-6' standard
<b>Ideal Application</b>	<ul style="list-style-type: none"> <li>One- or two-lane street</li> <li>No excess road space</li> <li>Connected to other bike facilities</li> </ul>	<ul style="list-style-type: none"> <li>One- or two-lane street</li> <li>Excess road space</li> <li>Low potential for intrusion into bike lane</li> </ul>
<b>Advantages</b>	<ul style="list-style-type: none"> <li>Clear, easy to follow bike route</li> <li>Heightens driver awareness of cyclists</li> <li>Preserves curbside access</li> <li>Simple implementation</li> </ul>	<ul style="list-style-type: none"> <li>Dedicated roadway space for cycling</li> <li>Preserves curbside access</li> <li>Simple implementation</li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>Does not provide dedicated roadway space for cycling</li> <li>Cyclists not separated from traffic</li> </ul>	<ul style="list-style-type: none"> <li>Vehicular intrusion remains possible</li> <li>Cyclists have minimal separation from traffic</li> <li>Perceived as less safe than protected lanes</li> </ul>
<b>Green Pavement</b>	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Standard if lane is immediately adjacent to curb, especially in areas with high pedestrian volumes</li> <li>Standard if lane is located between a travel lane and a turn lane ("pocket lane")</li> </ul>
<b>Intersection Treatments</b>	<ul style="list-style-type: none"> <li>Chevrons to indicate bike facility</li> </ul>	<ul style="list-style-type: none"> <li>Chevrons to indicate bike facility</li> </ul>

Protected Bike Lane		
<b>One-Way Protected Bike Lane</b> Ex: 55th Street, Manhattan 	<b>Two-Way Protected Bike Lane</b> Ex: Prospect Park West, Brooklyn 	<b>Grade-Separated Bike Lane</b> Ex: Sands Street, Brooklyn 
4' min. lane + 3' min. buffer + 4' min. buffer if no maintenance plan (does not apply if parking-protected)	8' min. (4' min. each lane) + 3' min. buffer if no maintenance plan + 2' if protected by Jersey barrier	5' min. one-way, 8' min. two-way + buffer for edge treatments and any obstructions
<ul style="list-style-type: none"> <li>Excess road space</li> <li>Low-speed vehicular traffic</li> <li>High potential for intrusion into bike lane</li> </ul>	<ul style="list-style-type: none"> <li>Favorable edge conditions</li> <li>Excess road space</li> <li>Adjacent to parks and waterfront public spaces</li> <li>Within industrial areas</li> </ul>	<ul style="list-style-type: none"> <li>As part of a continuous "Greenway"</li> <li>Adjacent to or through parks and waterfront public spaces</li> </ul>
<ul style="list-style-type: none"> <li>Protection for cyclists</li> <li>Proven safety benefits for all modes</li> <li>Enhanced pedestrian safety and comfort</li> <li>Allows for pedestrian improvements like safety islands</li> </ul>	<ul style="list-style-type: none"> <li>More spatially efficient than two separate one-way bike lanes</li> <li>Enhanced visibility of cyclists</li> <li>Enhanced access and circulation next to parks and public spaces</li> <li>Safer passing for cyclists traveling at different speeds</li> </ul>	<ul style="list-style-type: none"> <li>Greatest safety benefit to cyclists</li> <li>Connects cycling facilities where on-street facilities are infeasible</li> <li>Preserves curbside access</li> </ul>
<ul style="list-style-type: none"> <li>Parking impacts</li> <li>Loading activity occurs across bike lane</li> <li>Challenging to regulate floating parking</li> <li>Bike signal timing may impact traffic</li> <li>Maintenance plan required at ped. safety islands for lanes under 11' wide</li> <li>Complex review and implementation</li> </ul>	<ul style="list-style-type: none"> <li>Parking impacts</li> <li>Bike signal timing may impact traffic</li> <li>Requires turn controls or restrictions on a two-way street</li> <li>Complex review and implementation</li> </ul>	<ul style="list-style-type: none"> <li>Often requires capital reconstruction</li> <li>Complex review and implementation</li> </ul>
<ul style="list-style-type: none"> <li>Standard if there is high parking turnover; not recommended at locations with low turnover</li> <li>Not used when protected by a permanent, continuous vertical element</li> </ul>	<ul style="list-style-type: none"> <li>Preferred if lane is exclusive to cyclists and/or is in an area with high pedestrian volumes</li> </ul>	<ul style="list-style-type: none"> <li>Not used when protected by a permanent, continuous vertical element (e.g., curb, Jersey barrier)</li> </ul>
<ul style="list-style-type: none"> <li>Turn restrictions may be needed at complex intersections</li> <li>Shared crossing ("mixing zone"), separated crossing ("signal-protected turn"), or offset crossing ("protected intersection") to manage turning conflict</li> <li>Chevrons to indicate bike facility</li> </ul>	<ul style="list-style-type: none"> <li>Turn restrictions may be needed at complex intersections</li> <li>Separated crossing ("signal-protected turn") or offset crossing ("protected intersection") to manage turning conflict</li> <li>Chevrons to indicate bike facility</li> </ul>	<ul style="list-style-type: none"> <li>Separated crossing ("signal-protected turn") or offset crossing ("protected intersection") to manage turning conflict</li> <li>Chevrons to indicate bike facility</li> </ul>

## Bus Lane

### Usage: Limited

A dedicated on-street facility for buses. Bus lanes are delineated within the roadway with markings. Bus lanes can either be designed to run along the median of the street or along the outside (curbside or offset from a parking lane) of the street.



Woodhaven Boulevard, Queens



W 81st Street, Manhattan

### Benefits

Improves bus speeds and reliability by separating buses from potential congestion in mixed traffic and by reducing or eliminating their need to merge in and out of traffic at bus stops

Bus lanes can improve speed for buses anywhere between 10-100%, saving time for thousands of New Yorkers and reducing reliance on cars

Provides means for emergency vehicles to bypass traffic

### Considerations

If curbside, may result in restriction or relocation of curbside parking or commercial vehicles loading/unloading

### Application

Consider on all streets where buses experience slow speeds due to congestion, particularly on higher ridership corridors

Avoid on streets where the roadway geometry prevents the safe operation of a bus lane in conjunction with other necessary uses of the roadway

### Design

See Table 2c for a listing of typical bus lane and busway designs and their respective widths, ideal applications, and advantages and disadvantages

Bus lanes can be located immediately adjacent to the curb (curbside bus lane), adjacent to the right hand parking lane (offset bus lane), or in the middle of a road with boarding island stations (median bus lane or center-running bus lane). Note that buses can only load/unload on the right-hand side



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All bus lane types can be one or two lanes per direction based on bus volume, operating characteristics, and road width; one lane per direction is more common

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Use an offset bus lane where possible, particularly when parking needs to be maintained; stops can be made at the curb or at bus bulbs. See **GEOMETRY: BUS BULB**

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Use a curbside bus lane when right-of-way may be constrained and where parking impacts can be managed

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For curbside bus lanes, curbside deliveries can be accommodated with truck loading windows or reserved truck loading around the corner

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A median bus lane should be considered on two-way streets when sufficient right-of-way is available to accommodate the bus facility and the associated boarding islands, and the operation of the busway (including pedestrian movements) can be safely managed

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For median bus lane designs, boarding platforms must be included for bus passengers at bus stops; these islands can also function as pedestrian safety islands. See **GEOMETRY: PEDESTRIAN SAFETY ISLAND**

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For median bus lane designs, left turns across the bus facility should either be prohibited or provided a protected signal phase

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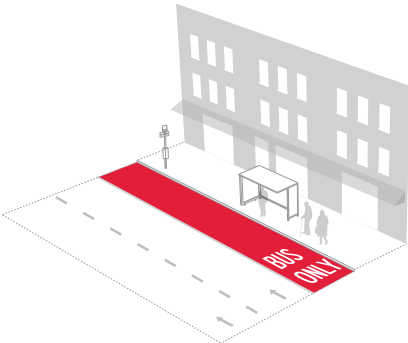
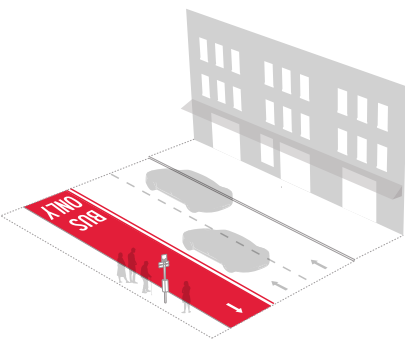
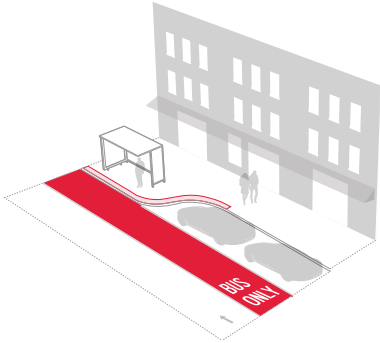
All bus lane designs can accommodate one or two directions of bus traffic. Special care must be paid to the signalization and design of intersections so as to not introduce turning conflicts

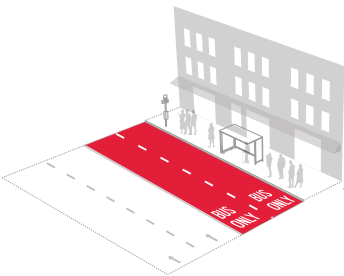
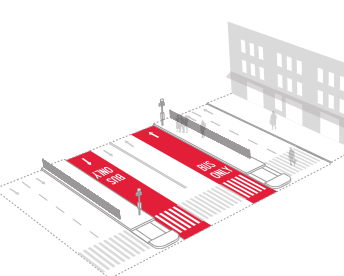
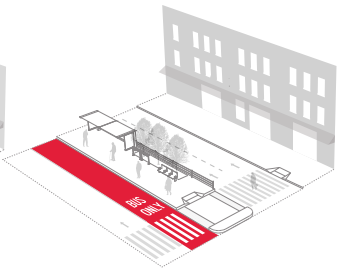
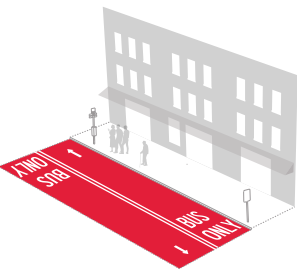
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Webster Avenue, Bronx

TABLE 2C: BUS LANES

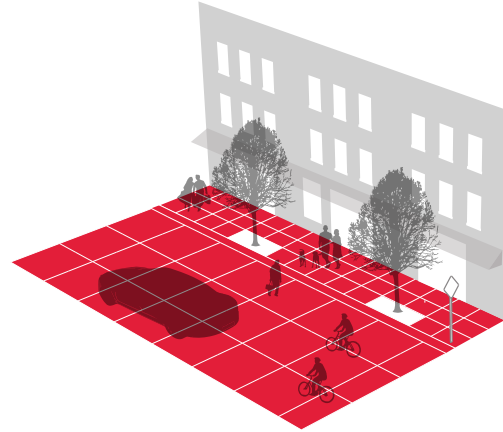
	Curbside Bus Lane	Contraflow Bus Lane	Offset Bus Lane
	Ex: Hylan Boulevard, Staten Island	Ex: Glenwood Road, Brooklyn	Ex: Utica Avenue, Brooklyn
			
Width	11-14'	12-14'	11-12'
Ideal Application	<ul style="list-style-type: none"><li>Streets with narrow right-of-way where an offset bus lane is not geometrically feasible</li><li>Streets with minimal curb demand</li></ul>	<ul style="list-style-type: none"><li>Simplifying bus routing</li><li>Very high-volume bus corridors</li><li>Streets with narrow right-of-way where two-way general traffic is not feasible or desired</li></ul>	<ul style="list-style-type: none"><li>Congested streets with heavy demand at the curb</li></ul>
Advantages	<ul style="list-style-type: none"><li>Preserves vehicular travel lanes</li><li>Bus lane can be used for parking/loading off-hours</li></ul>	<ul style="list-style-type: none"><li>Eliminates conflicts at the curb</li><li>Allows buses to use a simpler routing than the street network currently allows</li><li>Can be grade-separated</li></ul>	<ul style="list-style-type: none"><li>Avoids conflicts at the curb</li><li>Can be in effect 24 hours/7 days per week allowing for uncomplicated signage to drivers</li><li>Provides opportunity to construct bus bulbs, adding more space for pedestrians and bus stop amenities</li><li>Buses can pass buses who are stopped at the curb</li></ul>
Disadvantages	<ul style="list-style-type: none"><li>Removes parking/curb access</li><li>Only effective if properly enforced</li></ul>	<ul style="list-style-type: none"><li>Removes parking/curb access</li><li>Requires sufficient right-of-way</li></ul>	<ul style="list-style-type: none"><li>Requires removal of travel lane</li><li>For two-way streets ~60'-70', left turns must often be restricted or bus lanes must often transition to the curb to accommodate a left turn bay (example: Utica Avenue, Brooklyn; Main Street, Queens)</li></ul>
Parking Loss	Medium-High <ul style="list-style-type: none"><li>Parking removed when bus lane is in effect</li></ul>	High <ul style="list-style-type: none"><li>All parking should be removed</li></ul>	Low-Medium <ul style="list-style-type: none"><li>Parking typically preserved. Truck loading zones and meters should be added to prevent double-parking in bus lane</li></ul>
Red Color Treatment	<ul style="list-style-type: none"><li>Preferred when bus lane is in effect for at least six hours per day</li></ul>	<ul style="list-style-type: none"><li>Preferred</li></ul>	<ul style="list-style-type: none"><li>Preferred</li></ul>

	Double Bus Lane	Median Bus Lane	Center-Running Bus Lane	Limited Access Transit Street
	Ex: Madison Avenue, Manhattan	Ex: Woodhaven Boulevard, Queens	Ex: 161st Street, Bronx	Ex: 14th Street, Manhattan
				
Width	21-24'	11-12'	11-12'	24-48'
Ideal Application	<ul style="list-style-type: none"><li>Very high-volume bus corridors</li><li>Corridors with a high frequency of bus stops used by many lines (i.e. express bus corridors)</li></ul>	<ul style="list-style-type: none"><li>Streets with a main line / service road design</li></ul>	<ul style="list-style-type: none"><li>Streets with chronic double-parking issues</li><li>Streets where boarding islands can be accommodated</li></ul>	<ul style="list-style-type: none"><li>Very high-volume bus corridors</li></ul>
Advantages	<ul style="list-style-type: none"><li>Allows buses to pass each other</li></ul>	<ul style="list-style-type: none"><li>Separates buses from curb conflicts</li><li>Allows for robust median bus stops</li></ul>	<ul style="list-style-type: none"><li>Removes right-turn and curb conflicts</li></ul>	<ul style="list-style-type: none"><li>Fully grade-separated right-of-way</li></ul>
Disadvantages	<ul style="list-style-type: none"><li>Removes parking/curb access</li><li>Requires sufficient right-of-way</li></ul>	<ul style="list-style-type: none"><li>Vehicle intrusion remains possible</li></ul>	<ul style="list-style-type: none"><li>Left turns must be restricted or have separate signal phasing</li><li>Requires sufficient right-of-way</li></ul>	<ul style="list-style-type: none"><li>Typically requires a capital project</li><li>Loading challenges for businesses</li></ul>
Parking Loss	Medium-High <ul style="list-style-type: none"><li>Curbside parking typically removed but could allow curb access during off-peak hours (causing the bus facility to function as a de facto offset bus lane)</li></ul>	Very Low <ul style="list-style-type: none"><li>Parking is sometimes gained due to relocating bus stops from service road to main line</li></ul>	Very Low <ul style="list-style-type: none"><li>Parking is sometimes gained due to relocating bus stops from service road to main line</li></ul>	High <ul style="list-style-type: none"><li>All parking should be removed</li></ul>
Red Color Treatment	<ul style="list-style-type: none"><li>Preferred</li></ul>	<ul style="list-style-type: none"><li>Preferred</li></ul>	<ul style="list-style-type: none"><li>Preferred</li></ul>	<ul style="list-style-type: none"><li>Preferred but less necessary since no traffic is allowed in right-of-way</li></ul>

## Shared Street

### Usage: Limited

Also known as a “pedestrian-priority” street, a shared street is a roadway designed for slow travel speeds where pedestrians, cyclists, and motorists all share the right of way. Typically employed on low vehicle volume and/or high pedestrian volume streets, vehicles are advised to drive 5 mph, and the roadway may be flush from building line to building line, separated by bollards or pedestrian amenities rather than the typical curb line grade separation. Slow speeds are encouraged through traffic calming, signage, and use of furnishings, plantings, and other visual cues in the roadway that caution drivers. Street users generally negotiate the right-of-way cooperatively rather than relying on traffic controls, allowing the entire street to effectively function as a public space. Shared streets can be designed and managed in a variety of different ways to balance the needs of all users while enhancing the safety, aesthetics, and overall experience of the street.



Flatiron Shared Street, Broadway between 24th Street and 25th Street, Manhattan



University Place Shared Street, University Place between 13th Street and 14th Street, Manhattan

### Benefits

Encourages freer pedestrian movement within pedestrian-dominated areas and to and from adjacent destinations

Reduces sidewalk crowding on narrow streets

Comfortable, attractive environment encourages “staying” activities such as relaxing, shopping, eating, and socializing, fostering a vibrant public realm

Allows for a range of different management and operational parameters based on changing peak street users

Design treatments, including street furniture and landscaping, prioritize pedestrian use while still allowing for local access

Creates more space for event programming



### Considerations

Coordinate access for transit, buildings, loading, sanitation, and emergency services to facilitate daily operations

Attention should be given to accommodation of and navigation by people with vision and cognitive disabilities

May impact street drainage or require catch basin relocation

May require loss of on-street parking

Any public space amenity, such as street furniture or plantings, generally requires a maintenance agreement

Coordinate streetscape/utility work to minimize street cuts

May require pedestrian security measures

Consider as an alternative to a fully pedestrianized street when pedestrian volumes are high, vehicle volumes are low, and vehicle access is not required during daytime hours

### Application

Consider on narrower streets (at most two moving lanes) or outer roadways of boulevard-type streets, with little or no through traffic, and which are not major vehicular or cyclist through routes or designated truck routes

Consider on streets adjacent to major pedestrian destinations, where vehicle volumes are low and pedestrian desire lines are diffuse (i.e., pedestrians would like to cross the street in many places)

Consider on local residential streets whose design priority is to allow safe use of street space for recreational activities and green space, in partnership with residents or neighborhood groups

### Design

Curbs should be avoided, but pedestrian paths of travel alongside vehicle zones should be provided for people with ambulatory, vision, and cognitive disabilities

Guideways using tactile cues and maximum visual contrast should be included for people with vision disabilities

In the absence of curbs, special attention should be given to providing adequate drainage

Institute an advisory reduced speed of 5 mph (New York State VTL Section 1642(a)(26) and (27) allow actual enforceable speed limits as low as 1.5 mph) along with the physical traffic calming of the shared street

Design should utilize whatever horizontal, vertical, and material treatments are necessary to encourage low vehicle speeds throughout, whether or not pedestrians are present

Use gateway or similar treatments and proper signage at entries to discourage through traffic, indicate the change in street environment, and slow entering vehicles. See **GEOMETRY: GATEWAY**

Attractive street materials, furnishings, and other objects within the street can be used to alert drivers and emphasize the pedestrian orientation of the space, subject to permits, maintenance agreements, or revocable consents as required

DOT standard concrete is appropriate for the portion of the shared street intended for vehicles

Include planted areas and stormwater source controls within the roadway where possible. See **LANDSCAPE: STORMWATER MANAGEMENT PRACTICES**

Staggered sections of parking or loading zones can be used as a design option to constrict wider streets

To maintain the streetscape elements required for creating a low-speed environment and fostering a vibrant public space, careful attention should be paid to proper programming and management of the space, with the participation of an active maintenance partner where appropriate

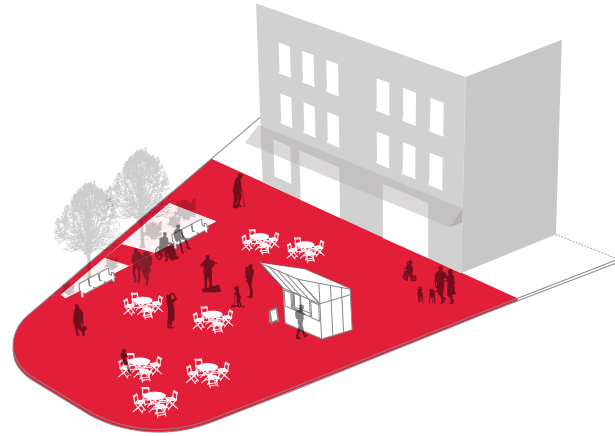
Maximize trees and other green cover. See **LANDSCAPE: TREE BEDS** and **LANDSCAPE: ROADWAY PLANTINGS**

Utilize recycled content in paving materials

## Pedestrian Plaza

### Usage: Limited

An area located fully within the public right-of-way that is designated by DOT for use by pedestrians. The space may contain benches, tables, or other facilities. Plazas are maintained and managed by local, not-for-profit partner organizations or other entities, such as Parks.



Special event at Corona Plaza: National Street and Roosevelt Avenue, Queens



Interim pedestrian plaza at 71st Avenue Plaza: 71st Avenue and Myrtle Avenue, Queens

### Benefits

Promotes social interaction and builds neighborhood identity

Encourages pedestrian activity and associated health benefits

Catalyzes local economic development

Serves as a venue for a diverse range of community, cultural, and/or commercial events

Enhances safety by removing conflicts, narrowing wide roadways, and/or normalizing intersections

### Considerations

The road segment's relevance to the traffic network

Open-space needs

Local deliveries and loading/unloading

Income eligibility: neighborhoods designated by HUD as Community Development Block Grant (CDBG) eligible receive greater consideration

Surrounding land uses and site appropriateness

Organizational and maintenance capacity of community partner

Advertising is generally prohibited in plazas

Generally requires a maintenance agreement

May require pedestrian security measures

Attention should be given to accommodation of and navigation by people with vision and cognitive disabilities

Conduct outreach to people with disabilities and stakeholders working with these population groups early in the planning and implementation process. Provide notification of street geometry changes after implementation

### Application

Underutilized, DOT-owned road segments

Locations with high crash rates

Neighborhoods that support repurposing streets for plazas

Neighborhoods with active organizations that can serve as Pedestrian Plaza Partners to maintain and manage plazas

Areas with appropriate adjacent land uses, sufficient population density, proximity to transit, historic sites, and significant view corridors

### Design

Each permanent plaza is designed to reflect the character and context of its neighborhood. DOT and the Pedestrian Plaza Partner conduct a public process to develop an appropriate design that is responsive to the needs of the community

A consultant design team bases its plans on feedback from the public process

Sites smaller than 2,000 square feet are not encouraged

Plazas may include movable and/or formal and informal fixed seating, trees and plants (see **LANDSCAPE: TREE BEDS** and **LANDSCAPE: PLAZA PLANTINGS**), lighting, paving, information and wayfinding signage, sub-concessions, temporary and permanent public art, bike parking, and drinking water fountains

Permanent or temporary art can be included in plaza design. For more information, see **PROGRAMMING: DOT ART PROGRAM**

Plaza designs should support year-round events and programs. See **PROGRAMMING: PLAZA EVENT (CIVIC)**

Provide clear paths with minimum clutter, and tactile and visual cues to accommodate people with disabilities

Provide furniture that accommodates people with ambulatory disabilities; for example, space for knee clearance for people using mobility devices

Utility boxes should be screened from public view

Incorporate trees and other green cover. See **LANDSCAPE: TREE BEDS** and **LANDSCAPE: PLAZA PLANTINGS**

Utilize stormwater source controls wherever feasible



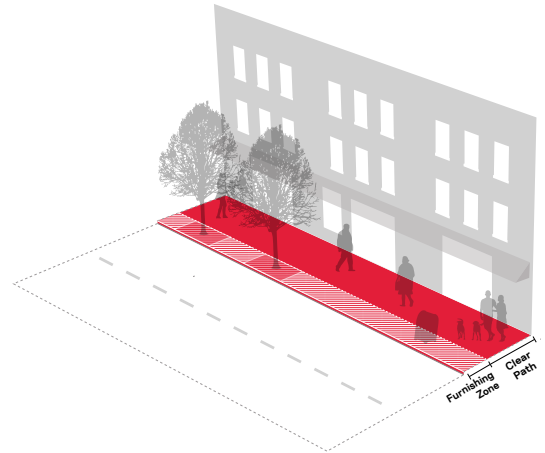
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# Sidewalks & Raised Medians

## Full Sidewalk

### Usage: Wide

A sidewalk is the portion of a street, intended for the use of pedestrians, between the roadway and adjacent property lines. A full sidewalk accommodates both pedestrian traffic and a range of street furnishings and fixtures. The area of the sidewalk closest to the curb, where light poles, tree pits and other vegetation, signs, fire hydrants, and street furniture are typically located, is referred to as the “furnishing zone.”



Canal Street, Manhattan



Main Street, Queens

### Benefits

- Provides space for walking, the most widely used mode of travel in New York City
- Creates linkages to transit and connects neighborhood destinations
- Facilitates straight and unobstructed pedestrian movement, free of vehicle conflicts except at intersections and driveways
- With adequate width, can provide space for “staying” activities such as relaxing, shopping, eating, and socializing
- Manages roadway drainage

### Considerations

- Coordinate streetscape/utility work to minimize street cuts
- The adjacent property owner is responsible for any sidewalk maintenance and repair, pursuant to NYC Charter Section 2904 and Section 19-152 of the New York City Administrative Code

### Application

- On both sides of all streets that are 22 feet wide or wider. Exceptions include shared streets and streets in certain historic districts per LPC. See GEOMETRY: SHARED STREET
- Ribbon sidewalks are appropriate in R1-R6 zoning districts; full sidewalks are used elsewhere

### Design

Sidewalks should be as wide as possible appropriate to foot traffic and available street width

Sidewalks should always be provided on both sides of the street

See SIDEWALKS in the MATERIALS chapter for information on options for sidewalk materials

A park's internal path located near a roadway does not substitute for a sidewalk

If the sidewalk is more than 25 feet wide, there should be a clear path adjacent to the building line and an 8-foot clear path adjacent to the curbside furnishing zone. See FURNITURE chapter

Sidewalks must conform to ADA requirements for a minimum clear-path width and provision of spaces where wheelchair users can pass one another or turn around

Provide an unobstructed clear path of 8 feet or one half the sidewalk width (whichever is greater) in commercial, high-density residential, and transit-adjacent areas

Sidewalks in low-rise residential areas should be at least 5 feet wide

Wherever possible, sidewalk cross-slope should not be greater than 2%

Sidewalks must meet load-bearing, friction, and other requirements per relevant standard specifications and regulations

ADA-compliant pedestrian ramps must be provided at all pedestrian crossings; separate ramps should be aligned with each crosswalk and be centered with the sidewalk. See GEOMETRY: PEDESTRIAN RAMP

Color of detectable warning strips on pedestrian ramps should contrast with surrounding pavement: red for unpigmented concrete, bright white for dark pigmented concrete. See MATERIALS: UNPIGMENTED CONCRETE and MATERIALS: PIGMENTED CONCRETE (DARK). See DOT Standard Details of Construction drawing H-1011

The area within 18 inches of the curb should be kept free of all obstructions

New York City Mayor's Executive Order No.22 of 1995 (the "Clear Corner Policy") states that to the maximum extent possible, structures and objects should not be placed in the corner quadrant

For recommended clearances between obstructions, see FURNITURE chapter, Revocable Consent Rules (Rules of the City of New York, Title 34, Chapter 7, Section 7-06(c)), DOT Highway Rules (Rules of the City of New York, Title 34, Chapter 2, Sections 2-10 and 2-14), DCWP's rules regarding newsstands (Rules of the City of New York, Title 6, Chapter 2, Subchapter G), and Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (US Access Board, 2011)

Include planted areas and stormwater source controls within sidewalks wherever possible when a maintenance partner is identified

If work includes tree planting, consider the location of utility infrastructure, including DEP sewers and water mains

Maximize trees and other green cover wherever clearance allows. See LANDSCAPE: TREE BEDS and LANDSCAPE: SIDEWALK PLANTINGS

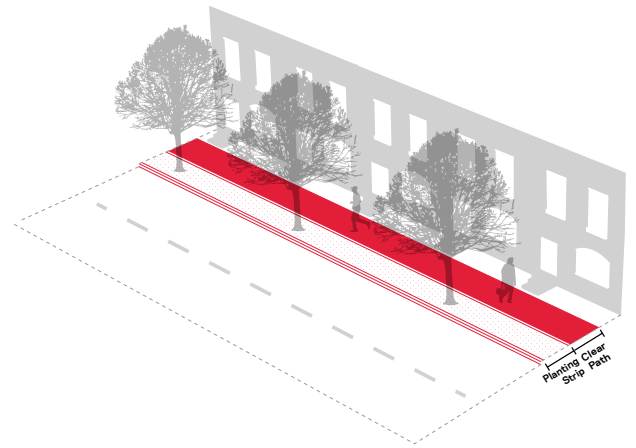
Utilize recycled content in paving materials



## Ribbon Sidewalk

### Usage: Wide

A sidewalk that is separated from the roadway by a continuous, unpaved planting strip. Most existing ribbon sidewalks in the city have a lawn planting strip, but more sustainable landscaping options should be utilized whenever possible. Alternatively, planting strips can be designed as pilot stormwater management practices to help collect stormwater runoff. See LANDSCAPE: STORMWATER MANAGEMENT PRACTICES.



*Ocean Parkway Service Road, Brooklyn*



*Rockaway Beach, Queens*

### Benefits

See benefits of GEOMETRY: FULL SIDEWALK

Provides greater space for tree roots than a full sidewalk with individual tree beds, improving long-term tree health. See GEOMETRY: FULL SIDEWALK and LANDSCAPE: TREE BEDS

Provides a modest improvement in stormwater detention from the sidewalk and/or roadway as compared to a full sidewalk. See GEOMETRY: FULL SIDEWALK

Provides a more attractive streetscape in areas of low- to moderate-density residential land use

### Application

Areas within zoning districts R1 through R6

Consider wherever pedestrian volumes can be accommodated and curbside activity is low

### Design

See geometric design guidance for GEOMETRY: FULL SIDEWALK and materials guidance for MATERIALS: SIDEWALKS

Ribbon sidewalks should be at least 5 feet wide or as required to match the existing ribbon width in the adjacent surrounding sidewalk; they should be wider along arterials and collector roads

Planting strips adjacent to ribbon sidewalks must be planted with groundcover vegetation for erosion control if a stormwater management practice is not used; herbaceous plant material, preferably native or adapted species, should be used rather than grass wherever possible, as turf absorbs water from tree roots, has little benefit to habitat, and requires the use of pesticides, herbicides, fungicides, and lawnmowers that can potentially damage tree roots. See LANDSCAPE: STORMWATER MANAGEMENT PRACTICES

Where there are fire hydrants in the planting strip adjacent to a ribbon sidewalk, a 5-foot-by-5-foot slab of 6-inch-thick concrete on 6-inch, crushed-stone base extending from the curb to the sidewalk is required

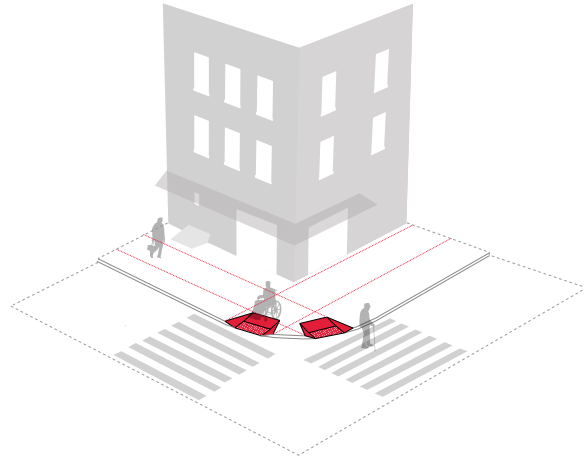
Similar considerations apply to other elements, such as lampposts and signal posts

Where feasible and if there is a maintenance partner, utilize stormwater management practice within planting strip rather than groundcover vegetation alone. See LANDSCAPE: STORMWATER MANAGEMENT PRACTICES

## Pedestrian Ramp

### Usage: Wide

Pedestrian ramps are a critical component in providing safe and accessible means of travel. Pedestrian ramps provide safe transitions between the roadway and sidewalk and are an essential tool for all pedestrians, particularly the aging population and people with ambulatory and vision disabilities. Ramps are required to include a color-contrasting detectable warning surface to communicate boundaries between pedestrian and vehicular paths and unprotected drop-offs to pedestrians who have vision disabilities.



2nd Avenue, Manhattan.



96th Street, Manhattan

### Benefits

Maintains an accessible path of travel for pedestrians with mobility disabilities and those with strollers or other wheeled devices

Provides visual and tactile cue for pedestrians with vision disabilities when entering or exiting pedestrian space

### Considerations

Pedestrian ramps are needed wherever a sidewalk or other pedestrian walkway crosses a curb

Any corner, corner quadrant, or crosswalk alteration triggers the obligation to provide ADA-compliant ramps to the maximum extent feasible

Perpendicular (dual) pedestrian ramps are preferred over apex (single) ramps. Each corner should have one pedestrian ramp for each crosswalk. Single ramps are allowed as a design solution in the absence of a feasible ADA-compliant solution. Apex ramps require DOT approval

### Application

At all corners, medians, and mid-block crossings where pedestrian walkways exist

### Design

The design and construction of a pedestrian ramp must follow the Americans with Disabilities Act (ADA) 2010 *Standards for Accessible Design*, best practice guidelines found in the Public Right-of-Way Accessibility Guidelines, and local rules, specifications, and bulletins

If the minimum design standards cannot be met, provide ADA compliance to the maximum extent feasible. Coordinate with DOT to demonstrate and document alternative designs in cases where it is structurally impracticable or technically infeasible to provide a fully ADA-compliant pedestrian ramp. (See [www.nycpedramps.info](http://www.nycpedramps.info) for inspection forms.)

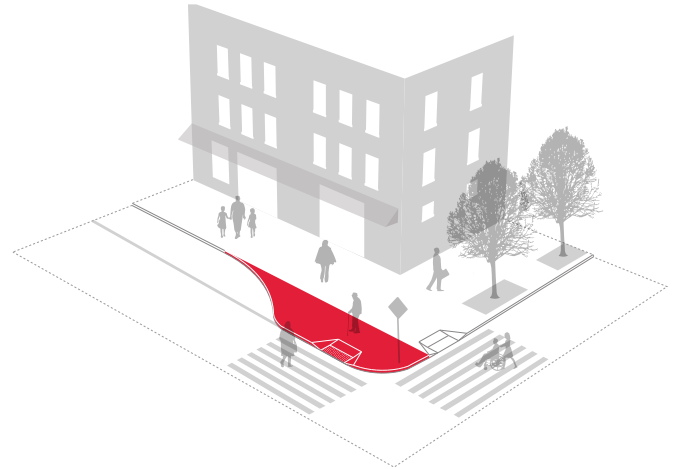
Detectable warning surfaces should be red when adjoining light-colored sidewalks, such as unpigmented concrete. Detectable warning surfaces should be bright white when adjoining dark-colored surfaces, such as pigmented concrete, asphalt pavers, or bluestone. See MATERIALS: UNPIGMENTED CONCRETE, MATERIALS: PIGMENTED CONCRETE, MATERIALS: HEXAGONAL ASPHALT PAVER, and MATERIALS: BLUESTONE FLAG



## Curb Extension

### Usage: Wide

An expansion of the curb line into the lane of the roadway adjacent to the curb (typically a parking lane) for a portion of a block either at a corner or mid-block. Also known as neckdowns, curb extensions can enhance pedestrian safety by reducing crossing distances, relieve sidewalk crowding, and provide space for functional elements such as seating, plantings, bike share stations, and furniture. In addition, two curb extensions can be located on either side of a street to create a mid-block narrowing or at an intersection to create a gateway. See GEOMETRY: MID-BLOCK NARROWING and GEOMETRY: GATEWAY.



Metropolitan Avenue, Brooklyn



Bay Street, Staten Island

### Benefits

Calms traffic by narrowing the roadway

Makes the crosswalk more apparent to drivers, encouraging them to stop in advance of the crosswalk, and reduces illegal parking within crosswalk

At a corner, slows turning vehicles and emphasizes the right-of-way of pedestrians

Shortens crossing distance, reducing pedestrian exposure

Enhances visibility of pedestrians to drivers

Reinforces lane discipline through intersection, preventing vehicle passing maneuvers in parking lane

Provides additional pedestrian space and reduces crowding, particularly for queuing at crossings and bus stops or at a subway entrance

Reduces sidewalk clutter by creating space for street furniture, bus stops, street vendors, etc.

Defines the ends of angle parking

Discourages truck turns onto streets with No Truck regulations and discourages or prevents vehicles from taking banned turns (see Rules of the City of New York, Title 34, Chapter 4, Section 4-13)

### Considerations

May impact street drainage or require catch basin relocation

May impact underground utilities

May require loss of curbside parking

May complicate delivery access and garbage removal

May impact snow plows and street sweepers

May impact ability to install future curbside bike or bus facilities



Permits, revocable consents, and/or maintenance agreements may be required for certain furniture elements

### Application

Within a curbside parking lane

Corners with marked pedestrian crosswalks in retail districts, directly adjacent to schools, at intersections with demonstrated pedestrian safety issues, on wide streets, or in areas of high foot traffic

At mid-block crossings (see GEOMETRY: MID-BLOCK NARROWING)

Intersections where a two-way road transitions to oncoming one-way operation so as to block wrong-way traffic from proceeding straight onto the one-way portion (a “blockbuster”)

Next to subway entrances or other sidewalk pinch points so as to increase pedestrian walking or queuing space

Consider elongated curb extensions for some or most of a block (i.e., a widened sidewalk with lay-by areas) in areas where a full sidewalk widening would be desirable but some loading, drop-off, or parking access must be maintained

Cannot be used where curbside travel (including bus, bike, or general traffic) lane exists, such as those created through peak-period parking restrictions

Feasibility is evaluated based on engineer review of design vehicle turning movements

### Design

Curb extension width is typically two feet less than the width of the parking lane. Minimum curb extension length is typically equal to the full width of the crosswalk, however it can be longer when appropriate or necessary

Must accommodate design vehicle; when a curb extension conflicts with design vehicle turning movements, the curb extension should be reduced in size rather than eliminated wherever possible

At crossings that have low pedestrian visibility, curb extension should be long enough to “daylight” the crossing, i.e., provide open sight-lines to the pedestrian crossing for approaching motorists; the additional curb extension space can be used to provide plantings (see LANDSCAPE: CURB EXTENSION) or community facilities such as bike parking

Detectable warning strips are required at pedestrian crossings where the transition from pedestrian space to

roadway is flush, and should be red when adjoining light-colored sidewalks, such as unpigmented concrete, or bright white when adjoining dark-colored surfaces, such as pigmented concrete, asphalt pavers, or bluestone. See MATERIALS: UNPIGMENTED CONCRETE, MATERIALS: PIGMENTED CONCRETE, MATERIALS: HEXAGONAL ASPHALT PAVER, and MATERIALS: BLUESTONE FLAG

Edge objects, such as planters, granite blocks, and flexible delineators, should be placed in and around the painted curb extensions to create a consistent boundary and sense of enclosure, buffer it from motor vehicle traffic, and clearly indicate the crosswalk to pedestrians with vision disabilities. Paint is used to distinguish it visually from the adjacent roadway

The design and placement of street furniture, trees, and plantings on a curb extension must not impede pedestrian flow, obstruct clear path, or interfere with “daylighting” the intersection, emergency operations, or sight lines

When constructed in concrete, pedestrian ramps with detectable warning surfaces are required at pedestrian crossings. See GEOMETRY: PEDESTRIAN RAMP

Reflective vertical elements should be used to alert drivers and snow plow operators to the presence of curb extensions in operational materials

Curb extension must be designed so as to maintain drainage of stormwater from the gutter and not cause ponding; depending on site-specific grading conditions, this might include properly locating or relocating catch basins or utilizing design treatments that channel water through, around, or in between curb extension and the curbline

When a curb extension is used adjacent to a fire hydrant, the length of the curb extension should be equal to or greater than the No Parking zone (typically 15 feet in either direction) and the hydrant should be moved onto the curb extension

Where space permits, more functional curb extension designs, such as those with plantings, seating, or bike parking, should be used whenever possible. See LANDSCAPE: SIDEWALK PLANTINGS

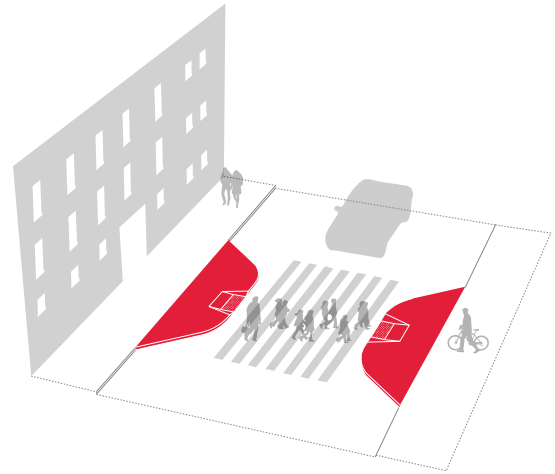
Where feasible and if there is a maintenance partner, design planted areas within curb extension so as to capture stormwater according to current standards. See LANDSCAPE: STORMWATER MANAGEMENT PRACTICES

Paving on a curb extension should match that of the surrounding sidewalks

## Mid-Block Narrowing

### Usage: Wide

Two curb extensions that create a pinch point. A mid-block narrowing (also referred to as a “choker”) physically or visually constricts the roadway, thereby slowing vehicular traffic or alerting drivers to the presence of a mid-block crosswalk. The curb extensions themselves can be of any variety, for example with plantings or other functional elements. A mid-block narrowing is equivalent to a gateway located mid-block. See GEOMETRY: GATEWAY.



Interim mid-block narrowing at Midtown Arcades: W 51st Street, Manhattan



Permanent mid-block narrowing: 97th Street, Queens

### Benefits

Provides safety and traffic calming benefits as described in GEOMETRY: CURB EXTENSION

Calms mid-block traffic speeds, particularly when vertical elements (e.g., bollards, trees, bike parking, etc.) are included in curb extensions

Enhances drivers' awareness of presence of crosswalk at mid-block crossing

Provides space for greening, community facilities, bike parking, and/or stormwater source control measures

### Considerations

At mid-block crossings on two-way streets, it is generally preferable to include a raised median or pedestrian safety island rather than or in addition to a mid-block narrowing, when space allows. See GEOMETRY: RAISED MEDIAN and GEOMETRY: PEDESTRIAN SAFETY ISLAND

### Application

See application guidance for GEOMETRY: CURB EXTENSION

Local streets with demonstrated speeding issues and/or a mid-block crossing

### Design

See design guidance for GEOMETRY: CURB EXTENSION

Reduce lane width at mid-block narrowing to impact vehicle speeds; on low-traffic residential streets, mid-block narrowing can be combined with other design treatments, including raised crosswalks, raised speed reducers, or vertical elements for maximum effectiveness. See GEOMETRY: RAISED CROSSWALK and GEOMETRY: RAISED SPEED REDUCER

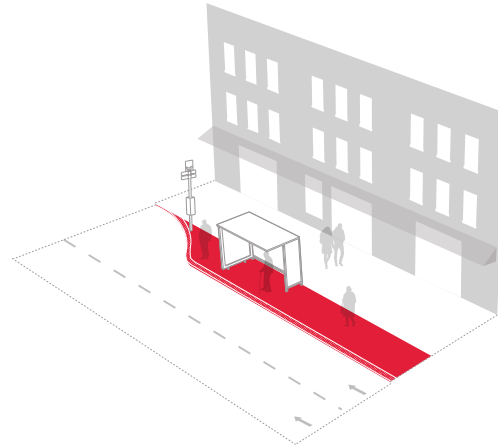
Locate trees and/or plantings within curb extensions of mid-block narrowing where appropriate. See LANDSCAPE: TREE BEDS and LANDSCAPE: CURB EXTENSION



## Bus Bulb

### Usage: Wide

A curb extension at a bus stop that allows buses to remain in the moving lane while picking up and discharging passengers. Bus bulbs may also be designed to better support bus passengers through the inclusion of higher curbs, bus stop shelters, seating, pre-boarding payment equipment, and other bus-supportive facilities.



Nostrand Avenue and Fulton Street, Brooklyn

### Benefits

Provides safety and traffic calming benefits as described in GEOMETRY: CURB EXTENSION

Speeds bus movement on streets with traffic congestion by eliminating the need for buses to maneuver in and out of the moving lane

Speeds bus movement by reducing the likelihood of bus stops being blocked by other vehicles

Can allow faster bus passenger boarding

Can provide comfort and convenience to bus riders through dedicated waiting space and inclusion of bus-related amenities

When utilized at a bus stop under an elevated train line, where the bus does not pull over to the sidewalk and passengers regularly stand in the roadway, provides a safer waiting space

### Application

See application guidance for GEOMETRY: CURB EXTENSION

At bus stops along bus routes where it has been determined by DOT and MTA NYCT that bus bulbs improve bus service



## Design

For detailed design guidance, see Select Bus Service Station Design Guidelines (DOT & MTA NYCT, 2018)

See additional design guidance for GEOMETRY: CURB EXTENSION

Bus bulbs should be long enough to encompass the front and rear doors of the buses that will be using it, and should extend the length of the bus stop whenever possible

Design bus bulbs with care to accommodate accessibility needs, taking into account the full range of buses that might be using the stop

Bus bulbs that are not at sidewalk grade must be accessible via ramp with a maximum cross-slope of 2%

To achieve near level boarding, bus bulbs may have a higher curb-reveal, up to 10.5 inches

A detectable edge treatment should be applied to the street edge of the bus bulb, and should be red when adjoining light-colored sidewalks, such as unpigmented concrete, or bright white when adjoining dark-colored surfaces, such as pigmented concrete, asphalt pavers, or bluestone. See MATERIALS: UNPIGMENTED CONCRETE, MATERIALS: PIGMENTED CONCRETE, MATERIALS: HEXAGONAL ASPHALT PAVER, and MATERIALS: BLUESTONE FLAG

While bus bulbs are typically constructed in concrete, it is possible to use operational materials which can be implemented more quickly and at lower cost

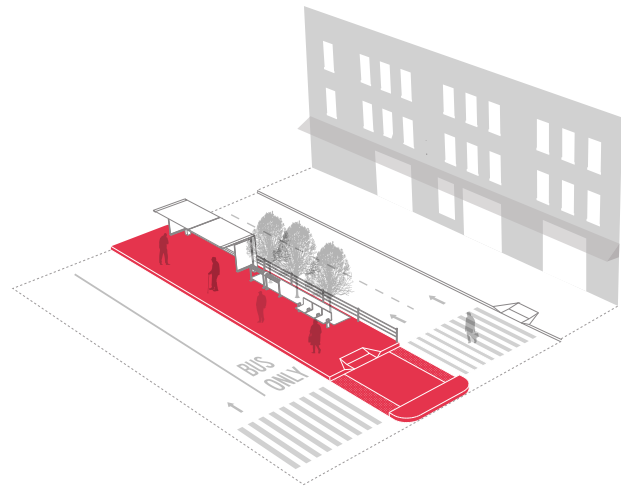


Nostrand Avenue and Clarkson Avenue, Brooklyn

## Bus Boarding Island

### Usage: Wide

A raised area, not connected to the adjacent sidewalk, with dedicated waiting and boarding area for bus passengers. Boarding islands provide many of the benefits of bus bulbs while also avoiding curb, bike, and catch-basin conflicts. Usage is most desirable on streets with parking-protected bike lanes and frequent bus service.



3rd Avenue and 57th Street, Manhattan



E 161st Street, Bronx

### Benefits

See benefits of GEOMETRY: BUS BULB

See benefits of GEOMETRY: PEDESTRIAN SAFETY ISLAND

Reduces conflicts with curb activity by moving bus stop away from the curb

Reduces conflicts with bikes by physically separating bus stop from bike path

Avoids need to relocate existing catch basins

When utilized at a bus stop under an elevated train line, where the bus does not pull over to the sidewalk and passengers regularly stand in the roadway, provides a safer waiting space

### Application

Streets with high curb demand or heavy right-turn volumes

Streets with parking-protected bike lanes

Streets under elevated trains where the bus does not pull over to the sidewalk, and bus bulbs are unsuitable or costly

### Design

See design guidance for GEOMETRY: PEDESTRIAN SAFETY ISLAND

Minimum bus boarding island widths vary from 8.5 feet to 12 feet depending on the type of bus using the island, the space necessary to deploy the wheelchair ramp, and whether a fence is placed on the back of the island

Boarding island length varies depending upon the buses using the island, the likelihood of two buses arriving at once, and the necessary length of the cut-through and access ramp

For shorter blocks, island should extend to full length of block. This allows for a pedestrian access on both sides of the island and serves as a pedestrian refuge at two crosswalks. If not possible, a secondary signalized crossing or enhanced crossing should be considered at one end of the island

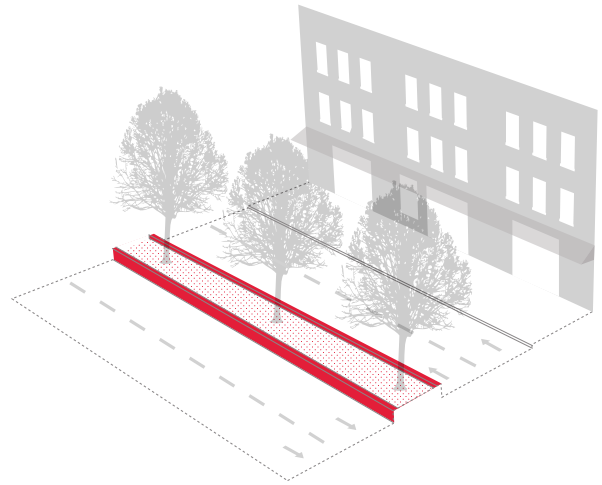
To achieve near-level boarding, bus boarding islands should have a higher curb-reveal, up to 10.5 inches

A shelter should be sited on the island as an amenity to bus riders and to provide a vertical element signal to drivers

## Raised Median

### Usage: Wide

A raised area separating different lanes, traffic directions, or roadways within a street. The raised median can be either curb height (6–7 inches) or, where appropriate, 12–24 inches high. The width as well as design of raised medians can vary widely. They can range from narrow raised concrete islands to tree-lined promenades to intensively landscaped boulevard medians. In contrast to pedestrian safety islands, raised medians extend for most or all of the street block. See GEOMETRY: PEDESTRIAN SAFETY ISLAND.



Grand Concourse, Bronx



253rd Street, Queens

### Benefits

Reduces risk of left-turn and vehicle head-on collisions

Calms traffic by narrowing roadway

Enhances pedestrian safety and accessibility by reducing crossing distances and providing refuge for pedestrians to cross road in stages

Discourages dangerous mid-block crossing when used with fencing or planting

If designed for walking access, can provide additional pedestrian activities and amenities such as benches

Greens and beautifies the streetscape if trees and/or plantings are incorporated. See LANDSCAPE: RAISED MEDIAN

Improves environmental quality and can incorporate stormwater source controls

Can provide space for a pedestrian walkway and/or grade-separated bike lane, particularly as part of a boulevard treatment. See GEOMETRY: GRADE-SEPARATED BIKE LANE

### Considerations

May impact underground utilities and manholes

Design must account for impact of raised median on emergency vehicle movement and access

Design must account for impact of raised median on driveway access where roadway narrowing makes it more difficult for vehicles to maneuver

Landscaping (excluding street trees) or stormwater source controls require a partner for ongoing maintenance, including executing a maintenance agreement

If there is a maintenance partner, design of the landscaped area should consider the inclusion of an irrigation system to reduce the cost of long-term maintenance and enhance overall plant health

Changes in traffic circulation resulting from addition of raised median should be understood so as to not force drivers to travel on inappropriate routes or make U-turns



### Application

Consider on all two-way multi-lane streets

On streets of limited width, it may be preferable in some situations to include other treatments (e.g., expanded sidewalks or dedicated transit or bike facilities) rather than a raised median if there is not adequate room for all treatments and travel lanes

### Design

Raised medians should be a minimum of 7 feet wide to provide detectable warnings and refuge to pedestrians at crossings

Raised medians should extend beyond the crosswalk at intersections wherever possible, while accommodating vehicle turning movements; the "nose" of the raised median should include bollards to protect pedestrians from wayward vehicles

Turning radii must be sufficient for the design vehicle and may constrain the length or width of the median "nose." This adjustment may shift the pedestrian cut through away from the desire line

Provide a walkable path across the raised median at crossings. When the median (with a standard 7-inch curb) is less than 17 feet wide, an 8- to 10-foot-wide cut-through, flush with the roadway, is appropriate. On medians wider than 17 feet, pedestrian ramps (1:12 grade with 5-foot landing areas) can be used to provide access

Provide a large area at crossings to permit groups of pedestrians to safely wait

Provide tactile cues for pedestrians with vision disabilities to indicate the border between the pedestrian refuge area and the motorized travel lanes

Include street trees, plantings, and unpaved or permeable surfaces wherever safe and feasible, using structural soil where appropriate. See LANDSCAPE: TREE BEDS, LANDSCAPE: RAISED MEDIAN, and MATERIALS: PERVIOUS CONCRETE

Where feasible and if there is a maintenance partner, design planted areas within raised median so as to capture stormwater according to current standards. See LANDSCAPE: STORMWATER MANAGEMENT PRACTICES

If work includes tree planting, consider the location of utility infrastructure, including DEP sewers and water mains; also consider visibility for motorists, cyclists, and pedestrians

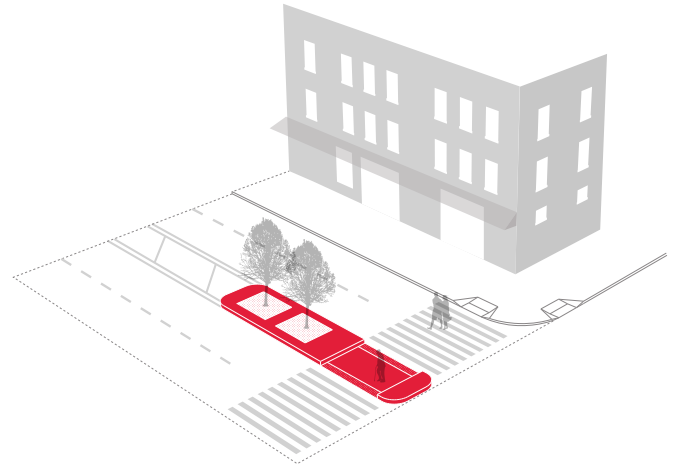
Grade roadways to direct stormwater towards raised medians if the raised medians include stormwater source controls, for example through the use of double or inverted roadway crown

Raised medians must be designed so as to maintain drainage of stormwater and not cause ponding

## Pedestrian Safety Island

### Usage: Wide

A raised area located at crosswalks that serves as pedestrian refuge separating traffic lanes or directions, particularly on wide roadways. Also known as a “median refuge island.” Used at pedestrian crossings when a full raised median is not feasible. A pedestrian safety island confers most of the same benefits as full raised medians at pedestrian crossings. Full raised medians should be used rather than pedestrian safety islands wherever possible. See GEOMETRY: RAISED MEDIAN.



211th Street and 23rd Avenue, Queens



Riverside Drive, Manhattan

### Benefits

Enhances pedestrian safety and accessibility by reducing crossing distances and providing refuge for pedestrians to cross road in stages

Calms traffic, especially left turns and through-movements, by narrowing roadway at intersection

Reduces risk of vehicle left-turn and head-on collisions at intersection

Can green and beautify the streetscape with trees and/or vegetation, potentially including stormwater source controls

Trees increase the visibility of the island, potentially enhancing safety

### Considerations

May impact underground utilities

Landscaping (excluding street trees) or stormwater source controls require a partner for ongoing maintenance, including executing a maintenance agreement

If there is a maintenance partner, design should consider the inclusion of irrigation system for long term maintenance

### Application

See application guidance for GEOMETRY: RAISED MEDIAN

### Design

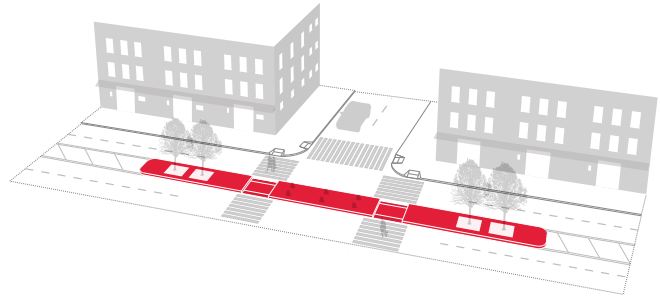
See design guidance for GEOMETRY: RAISED MEDIAN

Typical island accommodates two street trees and, where appropriate, safety bollards. See LANDSCAPE: TREE BEDS and LANDSCAPE: RAISED MEDIAN (CURB HEIGHT). Street trees must not block vehicles' line of sight to the traffic signal

## Median Barrier

### Usage: Limited

A raised median or pedestrian safety island extended through an intersection to prevent turns and through-movements to and from the intersecting street. Pedestrian access can be maintained with pedestrian refuges and bike access with gaps in the median. As with typical raised medians, trees or plantings can be included within the median barrier. See GEOMETRY: RAISED MEDIAN and GEOMETRY: PEDESTRIAN SAFETY ISLAND.



Grand Concourse, Bronx

### Benefits

Reduces or eliminates short-cut and cut-through traffic

When applied consistently to an area, reduces traffic speeds

Can green and beautify the streetscape with trees and/or vegetation, improving environmental quality and potentially incorporating stormwater source controls

Enhances pedestrian safety by discouraging dangerous mid-block crossing

Enhances safety at the intersection by reducing potential vehicle movements and conflicts, particularly left turns

Reduces risk of vehicle head-on collisions

Reduces risk of motorists running a red light or stop sign when approaching from side street

Calms traffic on side street by requiring turn and on major street by narrowing roadway

Enhances pedestrian safety and accessibility by reducing crossing distances and providing refuge for pedestrians to cross the road in stages



### Considerations

May impact street drainage or require catch basin relocation

May impact underground utilities

Emergency vehicle access needs must be accommodated

Landscaping (excluding street trees) or stormwater source controls require a partner for ongoing maintenance, including executing a maintenance agreement

If there is a maintenance partner, design should consider the inclusion of irrigation system for long term maintenance

If outfitted to capture stormwater, careful consideration must be given to design, overflow control, and plant species

### Application

Consider on local streets with speeding or cut-through/short-cutting problems

One-way or two-way local streets at their intersections with two-way collector or arterial roadways

### Design

Design median barriers to impact motor vehicle movement but not bike movement; utilize bike channels or similar design strategies to allow passage by cyclists

Include planted areas and stormwater source controls within median barriers wherever possible when a maintenance partner is identified

Include street trees, plantings, and unpaved or permeable surfaces wherever safe and feasible, using structural soil where appropriate. See LANDSCAPE: TREE BEDS, LANDSCAPE: RAISED MEDIAN, and MATERIALS: PERVIOUS CONCRETE

If work includes tree planting, consider the location of utility infrastructure, including DEP sewers and water mains

Design any planted areas within median barrier so as to capture stormwater according to current standards

See additional design guidance for GEOMETRY: RAISED MEDIAN

# Traffic Calming

## Lane Narrowing & Lane Removal

### Usage: Wide

Lane narrowings remove excess width from existing traffic lanes without changing the number of lanes. Lane removals, also known as "road diets," reassign underused traffic lanes to other functions. These design techniques, while not traffic calming devices, have powerful traffic calming benefits. Both may be accomplished by adding markings, turning lanes, pedestrian safety islands, expanded pedestrian space, on-street or separated bike lanes, parking, or other functions.



**LEFT and RIGHT:** Before and after DOT installed a "road diet" in 2016: Grand Concourse and E 149th Street, Bronx

### Benefits

Reduces opportunities for speeding and aggressive driving, thereby decreasing the severity and frequency of crashes

Organizes the roadway to provide clearer instruction to drivers, cyclists, and pedestrians

Provides space for pedestrian safety islands, assigned turn lanes, wide parking lanes, bus lanes, bike lanes, expanded sidewalks/pedestrian space, or other uses

### Considerations

Traffic conditions must be considered in planning lane removals; detailed analysis may be needed

Commercial loading and other uses should be considered in planning lane narrowing

Planned uses, such as bus lanes or bike lanes, should be taken into consideration

Effects of narrowings on turning movements should be tested

### Application

Consider lane narrowings on corridors with excessively wide lanes

Multi-lane corridors with excess capacity (more traffic lane capacity than traffic volume) are excellent candidates for lane removal

Multi-lane corridors may be good candidates for lane removal in concert with other treatments, such as signal timing changes

Lane narrowing and removal should be prioritized on corridors with safety or speeding concerns, or where prioritization of non-general traffic is desirable

### Design

Lane narrowings and removals should result in standard-width lanes

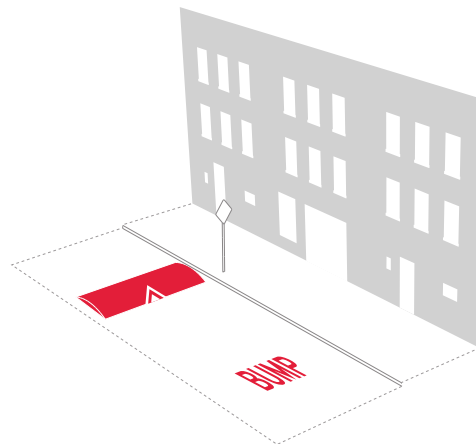
When other treatments are included in a lane narrowing/removal, see specific guidelines for those treatments



## Raised Speed Reducer

### Usage: Wide

A raised area of a roadway that deflects both the wheels and frame of a traversing vehicle with the purpose of reducing vehicle speeds. The two basic types of raised speed reducers are speed humps and speed cushions. Both are typically raised 3 to 4 inches above the level of the roadway, and both have a proven speed-reducing track record in New York City. While speed humps span the width of the street, a speed cushion is divided into narrow segments, so that vehicles with wider wheel bases (buses, emergency vehicles, large trucks) are not affected.



### Benefits

Compels drivers to travel at speeds no higher than the street's design speed

### Considerations

Speed humps may impact emergency vehicle movement

May generate additional noise

### Application

May be requested by the public, Community Boards, or elected officials with approval based upon speed, crash, street-geometry, and street-operations criteria

Speed humps are not appropriate on "local" or "through" truck routes or MTA bus routes, emergency vehicle response routes, or street blocks with FDNY houses or hospitals located on them

Neither speed humps nor speed cushions are appropriate on streets with more than one moving lane per direction

School locations are given priority

### Design

Space raised speed reducers to maintain desired operating speeds

Appropriate warning signs and roadway markings should accompany raised speed reducers



*Sterling Place, Brooklyn*

Locate raised speed reducers in the middle of the roadway, with the gutters kept clear for proper road drainage

Use signage or other methods to alert operators of snow-clearing vehicles to the presence of raised speed reducers

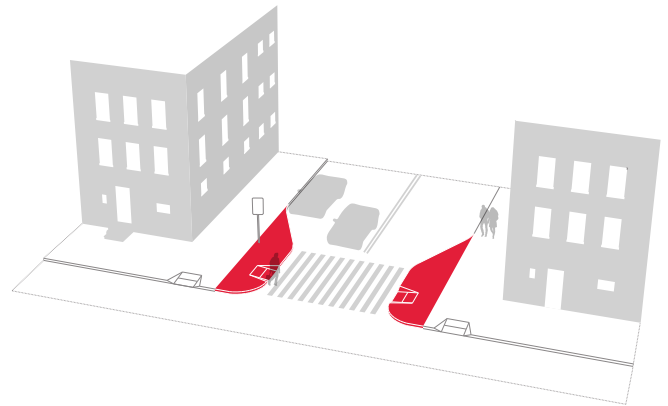
While raised speed reducers are an effective method to retrofit streets to reduce motor vehicle speeds in lieu of street reconstruction, all reconstructed streets should be designed to achieve desired speeds, e.g., using appropriate roadway width and alignment, horizontal deflection, traffic controls, trees, and other traffic calming treatments

Utilize recycled content in paving materials

## Gateway

### Usage: Limited

A combination of traffic calming and visual measures used at the entrance to a low-speed street to slow entering vehicles and discourage through traffic. Useful at all roadway transitions to slower-speed environments, gateways are especially suited to entrances to residential side streets and shared streets. The design elements of a gateway can include curb extensions, a raised crosswalk or driveway treatment, a raised median, landscaping or trees, and community facilities such as seating and public art. See GEOMETRY: SHARED STREET, GEOMETRY: CURB EXTENSION, GEOMETRY: RAISED CROSSWALK, and GEOMETRY: RAISED MEDIAN.



Prospect Place and Kingston Avenue, Brooklyn

### Benefits

Decreases vehicular speeds and discourages through traffic without blocking or prohibiting vehicular access

Demarcates transitions to low-speed, shared street, or pedestrian-oriented areas. See GEOMETRY: SHARED STREET

Provides pedestrians with priority movement across the treated leg of the intersection

### Considerations

May impact street drainage or require catch basin relocation

May impact underground utilities

May require loss of curbside parking in some cases

Planted materials typically require a maintenance partner, and may require a permit or revocable consent

May impact ability to install future curbside bike or bus facility

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If gateway includes a raised crosswalk, snow plows must be given advance warning. See **GEOMETRY: RAISED CROSSWALK**

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### Application

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Entrances to shared streets. See **GEOMETRY: SHARED STREET**

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Consider at entrances to streets with low vehicle volumes or speeds from streets with high vehicle volumes or speeds

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### Design

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Include at a minimum curb extensions to narrow the roadway; preferably, vertical deflection should also be created using a raised crosswalk or ramped driveway treatment; if the street is two-way, a raised median or pedestrian safety island can be included, space permitting. See **GEOMETRY: CURB EXTENSION**, **GEOMETRY: RAISED CROSSWALK**, **GEOMETRY: RAISED MEDIAN**, and **GEOMETRY: PEDESTRIAN SAFETY ISLAND**

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Other design elements can “narrow” a street visually, including plantings, public art, bike parking, and community facilities such as seating

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If work includes tree planting, consider the location of utility infrastructure, including DEP sewers and water mains

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Where feasible and if there is a maintenance partner, design planted areas within gateway so as to capture stormwater according to current standards. See **LANDSCAPE: STORMWATER MANAGEMENT PRACTICES**

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If gateway includes planted curb extensions, see **LANDSCAPE: CURB EXTENSION** for design guidance



## Raised Crosswalk

### Usage: Limited

A marked pedestrian crosswalk at an intersection or a mid-block location constructed at a higher elevation than the adjacent roadway. A raised crosswalk is essentially a speed table that meets the adjacent curbs, and has a full-width crosswalk contained within the flat portion of the table, usually 10- to 15-feet wide. It combines the benefits of a raised speed reducer with increased accessibility and enhanced visibility for the pedestrians crossing. See GEOMETRY: RAISED SPEED REDUCER.

### Benefits

Enhances access for people with ambulatory disabilities by providing level crossing

Compels drivers to travel at speeds no higher than the street's design speed

Improves drivers' awareness of presence of pedestrian crossing, particularly at mid-block crossing locations

Can alert drivers that they are entering a slower-speed, pedestrian-oriented street environment

Allows convenient pedestrian circulation between high foot traffic destinations on opposite sides of a street

Encourages motorists to yield to pedestrians

### Considerations

May impact street drainage or require catch basin relocation

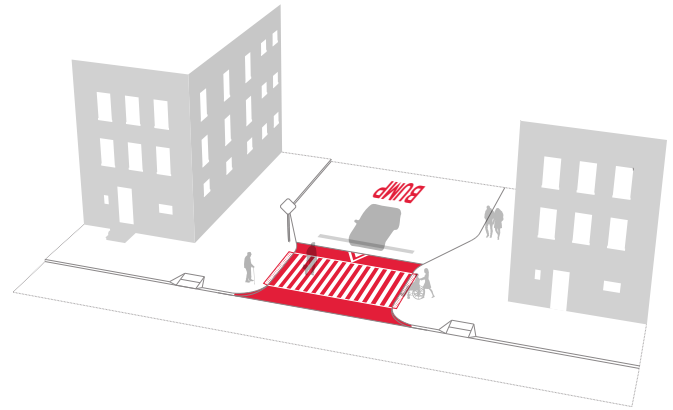
Attention should be given to accommodation of and navigation by people with vision disabilities

### Application

Any crosswalk location that also meets the criteria for raised speed reducers. See GEOMETRY: RAISED SPEED REDUCER

Consider at areas of particularly high pedestrian crossing demand on narrower streets (maximum of two moving lanes), such as locations with pedestrian generators, particularly for children and seniors (e.g., major commercial or cultural destinations, transit entrances, parks, schools) on opposite sides of the street

Consider as a more robust option for mid-block crossings, particularly enhanced crossings



E 5th Street and Fort Hamilton Parkway, Brooklyn

Consider on the outer roadways of multi-lane boulevards at crossings

Not appropriate for arterial roadways

### Design

Appropriate warning signs and roadway markings should accompany raised crosswalk

Use signage or other methods to alert snow-clearing vehicle operators to the presence of raised crosswalk

Detectable warning strips should be provided at crosswalk location. They should be red when adjoining light-colored sidewalks, such as unpigmented concrete, or bright white when adjoining dark-colored surfaces, such as pigmented concrete, asphalt pavers, or bluestone. See MATERIALS: UNPIGMENTED CONCRETE, MATERIALS: PIGMENTED CONCRETE, MATERIALS: HEXAGONAL ASPHALT PAVER, and MATERIALS: BLUESTONE FLAG

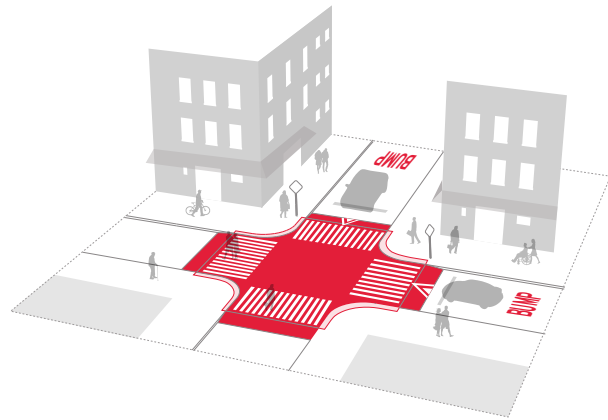
See design guidance for GEOMETRY: RAISED SPEED REDUCER

Utilize recycled content in paving materials

## Raised Intersection

### Usage: Pilot

An entire intersection raised above the level of the surrounding roadways. The intersection is typically raised to sidewalk height.



Cambridge, Massachusetts (Credit: Cara Seiderman)



London, United Kingdom (Note: for illustrative purposes only)

### Benefits

Vertical deflection at entry to intersection encourages reduced vehicle speeds

Improves drivers' awareness of presence of pedestrian crossings

Visually turns intersection into a pedestrian-oriented zone

Enhances access for people with ambulatory disabilities by providing level crossing

Encourages motorists to yield to pedestrians

### Considerations

May impact street drainage or require catch basin relocation

### Application

Intersections with a high volume of pedestrian crossings and low target vehicle speeds

Intersections with a history of pedestrian crashes or speeding issues

Intersections where enhancing pedestrian movement is a major goal, such as transit stops or commercial areas

Avoid on truck and transit routes and at other locations where speed humps and speed tables are not appropriate

### Design

Appropriate warning signs and roadway markings should accompany raised crosswalk

Use enhanced, high-visibility street materials to further draw attention to raised intersection

Detectable warning strips should be provided to delineate the edge between the sidewalk and the roadway. They should be red when adjoining light-colored sidewalks, such as unpigmented concrete, or bright white when adjoining dark-colored surfaces, such as pigmented concrete, asphalt pavers, or bluestone. See **MATERIALS: UNPIGMENTED CONCRETE**, **MATERIALS: PIGMENTED CONCRETE**, **MATERIALS: HEXAGONAL ASPHALT PAVER**, and **MATERIALS: BLUESTONE FLAG**

Use signage or other methods to alert operators of snow-clearing vehicles to the presence of raised speed reducers

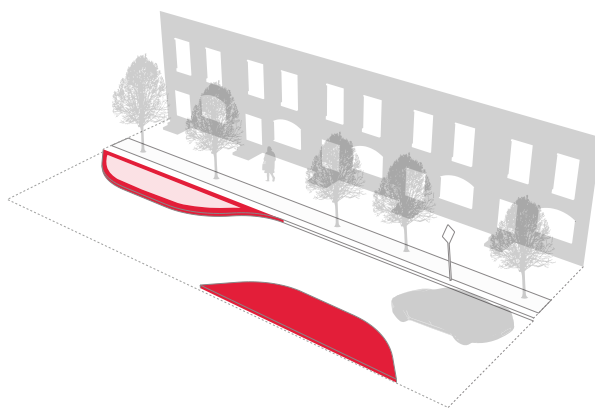
Utilize recycled content in paving materials

Coordinate streetscape/utility work to minimize street cuts

## Chicane

### Usage: Pilot

A series of narrowings or curb extensions that alternate from one side of the street to the other forming S-shaped curves to slow traffic. Chicanes discourage or make it impossible for drivers to drive in a straight line. This can reduce vehicular speeds. See GEOMETRY: CURB EXTENSION.



71st Avenue, Queens



E 53rd Street, Brooklyn

### Benefits

Forces drivers to drive more slowly and with greater awareness, particularly at mid-block locations

Can green and beautify the streetscape with trees and/or vegetation, improving environmental quality and potentially incorporating stormwater source controls

### Considerations

May impact street drainage or require catch basin relocation

May impact underground utilities

May require loss of curbside parking

Landscaping or stormwater source controls require a partner for ongoing maintenance, including executing a maintenance agreement

May impact snow plows and street sweepers

### Application

Consider on wide, low-volume, local streets (maximum of two moving lanes) with demonstrated speeding issues

Avoid on bus routes, truck routes, and major bike routes

### Design

Interim chicanes use roadway markings to delineate a curving travel lane, with rubber speed bumps placed at curves to discourage vehicles from driving over markings

Interim chicanes are offset from the parking lane and do not result in parking loss

Permanent chicanes use concrete curb extensions that alternate from one side of the street to the other, and may involve parking loss. See GEOMETRY: CURB EXTENSION

Use reflective vertical elements to alert drivers and snow plow operators to presence of chicanes

Locate trees and/or plantings within chicane curb extensions when appropriate. See LANDSCAPE: TREE BEDS and LANDSCAPE: ROADWAY PLANTINGS

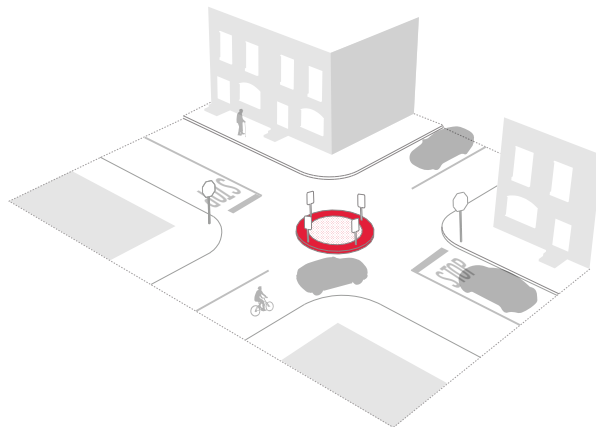
Where feasible and if there is a maintenance partner, design planted areas within chicane curb extensions to capture stormwater according to current standards. See LANDSCAPE: STORMWATER MANAGEMENT PRACTICES



## Neighborhood Traffic Circle

### Usage: Pilot

A round traffic island in the center of a traditional intersection. Primarily applicable to lower-traffic intersections as a horizontal speed reduction method for through traffic.



Greeley Avenue and Freeborn Street, Staten Island

### Benefits

Reduces speeds, particularly when applied consistently to an area, while maintaining traffic flow

Can green and beautify the streetscape with trees and/or vegetation, improving environmental quality

Inclusion of plantings or art within the island creates an attractive focal point for the neighborhood

### Considerations

May impact underground utilities

Landscaping requires a partner for ongoing maintenance, including executing a maintenance agreement

Landscaping must be designed and maintained so that it does not hinder visibility

Attention should be given to accommodation of and navigation by people with ambulatory and vision disabilities

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**Application**

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Consider at existing stop-controlled intersections, particularly all-way stops

Consider at intersections of streets with low target speeds (25 mph or below) or low vehicle volumes

A roundabout should be considered instead where traffic volumes on intersecting roads are more than 10% of overall traffic volumes. See GEOMETRY: ROUNDABOUT

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**Design**

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Design speeds for movement around the circle should be 10 to 15 mph; exit speeds should be limited to 15 mph through the circle's design wherever possible

Daylight parking spaces adjacent to the traffic circle to facilitate emergency vehicle and truck access

Use signs within the center island and reflective materials on the curb to improve center island visibility

A protective apron of concrete or textured pavement may be provided around the circle to accommodate wide-turning vehicles; where geometric constraints exist and truck volumes are low, trucks may be accommodated by use of a fully mountable roundabout island or allowing left turns in front of the island

Install approved circulatory signage directing through traffic to proceed to the right of the circle through the intersection

Locate trees and/or plantings when possible. See LANDSCAPE: TREE BEDS and LANDSCAPE: ROADWAY PLANTINGS

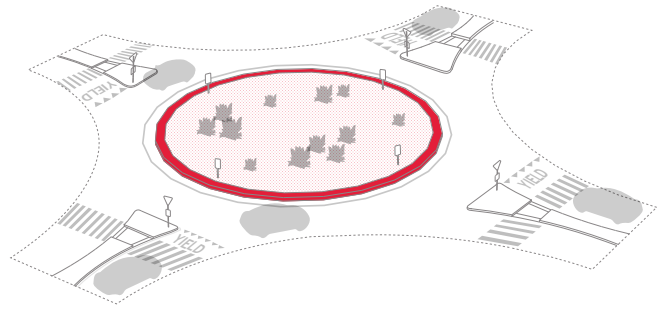
Where feasible and if there is a maintenance partner, design planted areas to capture stormwater according to current standards. See LANDSCAPE: STORMWATER MANAGEMENT PRACTICES

If work includes tree planting, consider the location of utility infrastructure, including DEP sewers and water mains

## Roundabout

### Usage: Limited

An intersection with circular, one-way (counter-clockwise) traffic around a central circle in which entering traffic yields to traffic already in the roundabout. Roundabouts can vary in size (diameter) and number of lanes and can be modified with signalized crosswalks. Roundabouts are distinguished from “old-style” traffic circles/rotaries by their rules for yielding on entry and key design features targeting low design speeds.



Intervale Avenue and Dawson Street, Bronx



153rd Avenue and 88th Street, Queens

### Benefits

Slows all traffic in all directions at all times, thereby decreasing the number and severity of crashes

Allows simultaneous movement of crossing vehicular streams, often processing vehicular traffic more efficiently than signalization

Eliminates possibility of vehicle head-on collisions

Reduces the number of potential vehicular conflict points as compared to a standard signalized intersection

Eliminates left turns, a primary cause of crashes

Enhances pedestrian safety when used at appropriate intersections

When used in place of a stop- or signal-controlled intersection, may reduce vehicle emissions and travel times by reducing start-and-stop driving

Reduces need to widen streets approaching intersection to store vehicles under signalized operation

Can green and beautify the streetscape with trees and/or plantings, improving environmental quality and potentially incorporating stormwater source controls

Inclusion of features not directly accessed by the public within the roundabout island, such as landscaped areas or art, creates an attractive focal point for the neighborhood

### Considerations

May require increased spatial footprint for intersection, but not approaches

May impact street drainage or require catch basin relocation

May impact underground utilities

May require loss of curbside parking



May impact circulation at existing driveways adjacent to intersection

May impact direct pedestrian access and circulation

Landscaping or stormwater source controls require a partner for ongoing maintenance, including executing a maintenance agreement

If outfitted to capture stormwater, careful consideration must be given to design, overflow control, and plant species

Attention should be given to accommodation of and navigation by people with ambulatory and vision disabilities

### Application

Intersections with 1) no more than 90% of volume on the main facility and 2) having at least three approaches, high vehicle-turning volumes or percentages, or speeding issues

Consider at locations with poor safety records, or where signalization has led or may lead to operational issues for pedestrians and/or cyclists

### Design

Deflection should be created for entering vehicles to reinforce yielding behavior; at two-way legs of the intersection, use splitter islands to provide deflection as well as to allow pedestrians to cross in two segments

Detectable warning strips should be provided at all crosswalk locations, and should be red when adjoining light-colored sidewalks, such as unpigmented concrete, or bright white when adjoining dark-colored surfaces, such as pigmented concrete, asphalt pavers, or bluestone. See **MATERIALS: UNPIGMENTED CONCRETE**, **MATERIALS: PIGMENTED CONCRETE**, **MATERIALS: HEXAGONAL ASPHALT PAVES**, and **MATERIALS: BLUESTONE FLAG**

Limit entry and exit speeds through deflection and/or raised crosswalks

Roundabout geometry should accommodate the design vehicle; use an apron of visually-contrasting paving around the central island and/or adjacent to intersection corners to slow motor vehicle movements while accommodating larger vehicles such as trucks

To improve center island visibility, use reflective signs within the center island and reflective materials along the curb

Locate trees and/or plantings within roundabout center islands; include planted areas and stormwater source controls when a maintenance partner is identified where compatible with required sight distance. See **LANDSCAPE: TREE BEDS** and **LANDSCAPE: ROADWAY PLANTINGS**

Where feasible and if there is a maintenance partner, design planted areas within roundabout islands so as to capture stormwater according to current standards. See **LANDSCAPE: STORMWATER MANAGEMENT PRACTICES**

If work includes tree planting, consider the location of utility infrastructure, including DEP sewers and water mains



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# Materials





# Materials

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# 3



# Introduction

## About this Chapter

This chapter identifies materials for sidewalks, curbs, and roadways that are either approved citywide standards or alternatives for specified locations.

## Applicability and Exceptions

All projects that significantly impact public and private streets should follow these guidelines. DOT approval will be based on site-specific conditions and cost-effective engineering standards and judgment based on the policies outlined in the Introduction to this Manual, with the safety of all street users being of paramount importance.

## Usage Categories

Materials are divided into four usage categories: Standard, Distinctive, Historic, and Pilot.

### Standard

Standard materials are required for use in all contexts outside of historic districts, unless DOT and PDC approve a Distinctive treatment. Projects utilizing the Standard materials in the identified contexts will generally only require a permit from DOT.

DOT is responsible for the maintenance of roadways and crosswalks. As such, materials not listed here as Standard are rarely installed in these contexts.

### Distinctive

Any material not deemed Standard by DOT will be considered Distinctive and requires review and approval by DOT and PDC. Distinctive materials identified in this chapter are visually appealing and are proven to be durable, and DOT encourages their use in certain circumstances.

All Distinctive sidewalk and curb materials require a maintenance agreement between DOT and the entity proposing the materials (typically the adjacent property owner(s) or a jurisdictional organization). Per the Rules of the City of New York Section 2-09(f)(4)(xvi), all approved Distinctive materials must be replaced in kind; however, any changes to existing Distinctive materials must be approved by DOT and PDC prior to their implementation.

Proposals for Distinctive material must meet one of the following criteria:

- Encompass an entire block,
- Pertain to a streetscape project,
- Feature a design integral to an adjacent open plaza space, or
- Are compatible with the prevailing material on blocks adjacent to the site for which it is proposed

DOT reviews the proposal for consistency with this Manual and for compliance with the criteria listed above. If the proposal does not satisfy these requirements, DOT may require design revisions or reject the proposal.

PDC reviews the proposal for its aesthetic impact on the streetscape and conformance with the criteria listed above. PDC strongly discourages proposals for piecemeal treatments. For more information on PDC's guidelines, visit their website at [www.nyc.gov/designcommission](http://www.nyc.gov/designcommission). See Sidewalk Review Process Diagram.

### Historic

Historic materials are Standard in historic districts designated by LPC and are subject to its requirements. Historic materials used outside of historic districts are considered Distinctive.

LPC adopted new rules, effective January 22, 2019, governing the replacement of sidewalks in historic districts; for more information visit [www1.nyc.gov/site/lpc/applications/new-adopted-rules.page](http://www1.nyc.gov/site/lpc/applications/new-adopted-rules.page). Pursuant to the Rules of the City of New York, Title 63, Section 2-19, LPC has created a list of historic districts where paving was a significant feature and where sufficient historic or tinted paving remains to convey this historic condition ("Historic District: Regulated Sidewalk Material"). LPC will update the list as new districts are designated. Sidewalk work in these areas require approval from LPC prior to the start of construction; historic materials are considered Standard and will require less review. Sidewalk work in all other designated historic districts ("Historic District: Non-Regulated Sidewalk Material") no longer require LPC approval; DOT generally requires tinted concrete with saw cut joints be used. Historic materials used outside of historic districts are considered Distinctive and therefore require PDC approval. See Sidewalk Review Process Diagram.



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### Pilot

Pilot materials exhibit environmentally sustainable properties and are being tested by DOT. It is anticipated that Pilot materials, if successful, may be classified in future editions of this Manual either as Standard or Distinctive.

### Specification Sources

The recommendations in this chapter supplement rather than replace existing engineering standards. Readers are directed to the sources noted below, those listed in APPENDIX B, and any other applicable resources.

Detailed information on the specifications for Standard materials is contained in the DOT/DDC Standard Highway Specifications. Typical construction details are provided in the DOT/DDC Standard Details of Construction. Sections and Items labeled as "Special" in this chapter are not part of the Standard Highway Specifications, but may be obtained by contacting [specs@ddc.nyc.gov](mailto:specs@ddc.nyc.gov). Information regarding standard procedures and approval requirements is provided in the Instructions for Filing Plans and Guidelines for the Design of Sidewalks, Curbs, Roadways, and Other Infrastructure Components.

The design guidance described here does not supersede any existing federal, state, or local laws, rules, or regulations. All projects remain subject to relevant statutes, such as the Zoning Resolution of the City of New York, CEQR, and appropriate reviews and approvals of oversight agencies. When materials are being selected, inclusive design resources such as the *2010 ADA Standards for Accessible Design* should be consulted to achieve a maximum degree of accessibility.

Material selection and design for projects in flood-vulnerable areas may involve additional considerations as resiliency best practices continue to develop. Consult the latest version of MOR's *Climate Resiliency Design Guidelines*.

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Sidewalk and curb materials not included in this chapter may be proposed, but are generally discouraged and require full engineering and design review by DOT, LPC, or PDC, as well as approvals from other governmental entities. Such materials, if approved, require a maintenance agreement.

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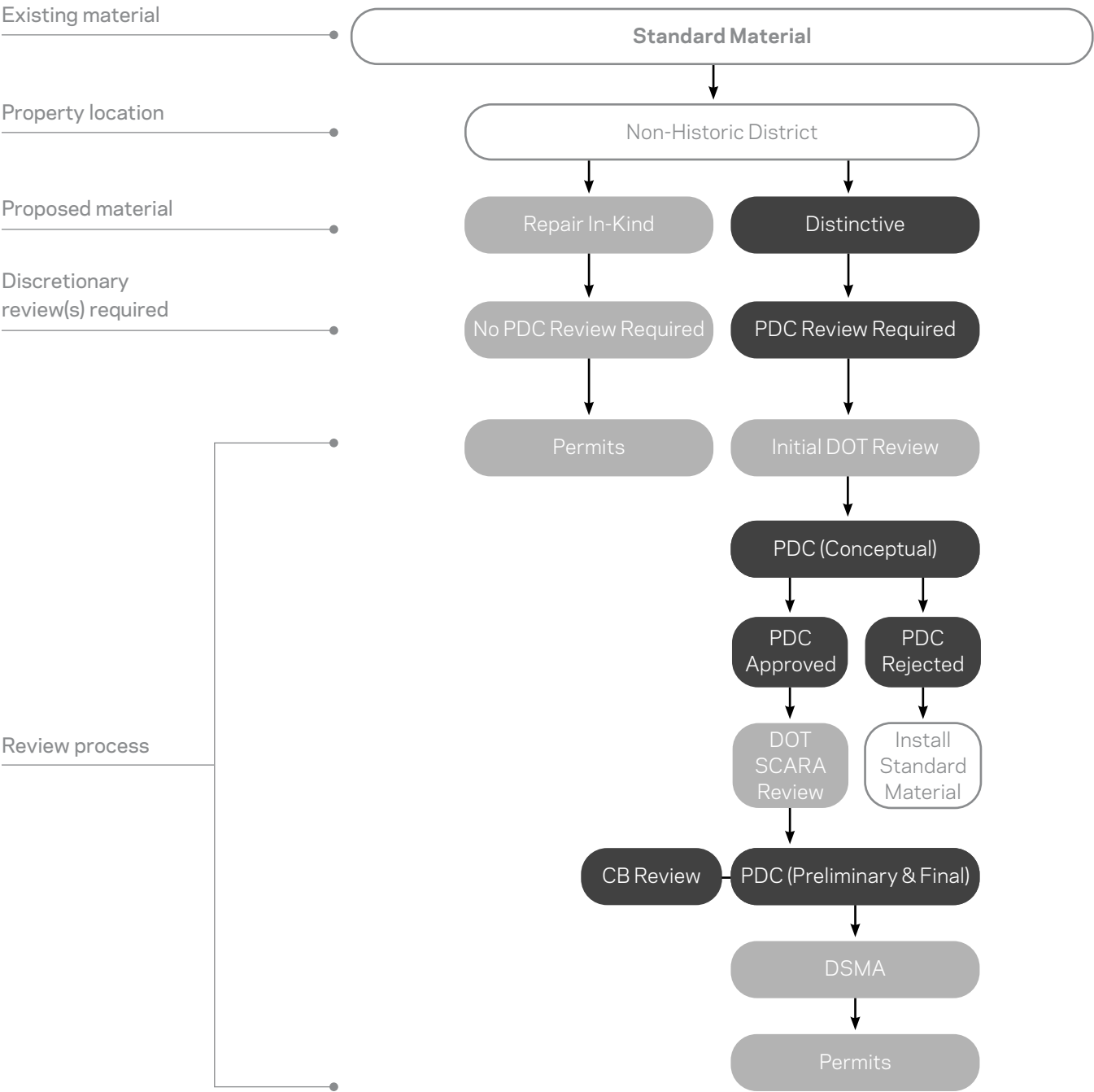
### Sidewalk Permits

Installation of sidewalks associated with new building construction is coordinated by DOB through the Builder's Pavement Plan. For more information on sidewalk permits, reviews, and approvals, see DOT's *Street Works Manual*. For the Instructions for Filing Plans and Guidelines for the Design of Sidewalks, Curbs, Roadways, and Other Infrastructure Components, visit [www.nyc.gov/streetworksmannual](http://www.nyc.gov/streetworksmannual). See Section 2-09 of Title 34 of the Rules of the City of New York for requirements related to sidewalk, curb, and roadway work.

### Maintenance Agreements

Each treatment in this chapter has a statement indicating whether or not the material requires a maintenance agreement before being installed. This agreement typically requires that the adjacent property owner, installing entity, or some other entity will generally be responsible for maintaining that material and providing appropriate insurance and indemnification.

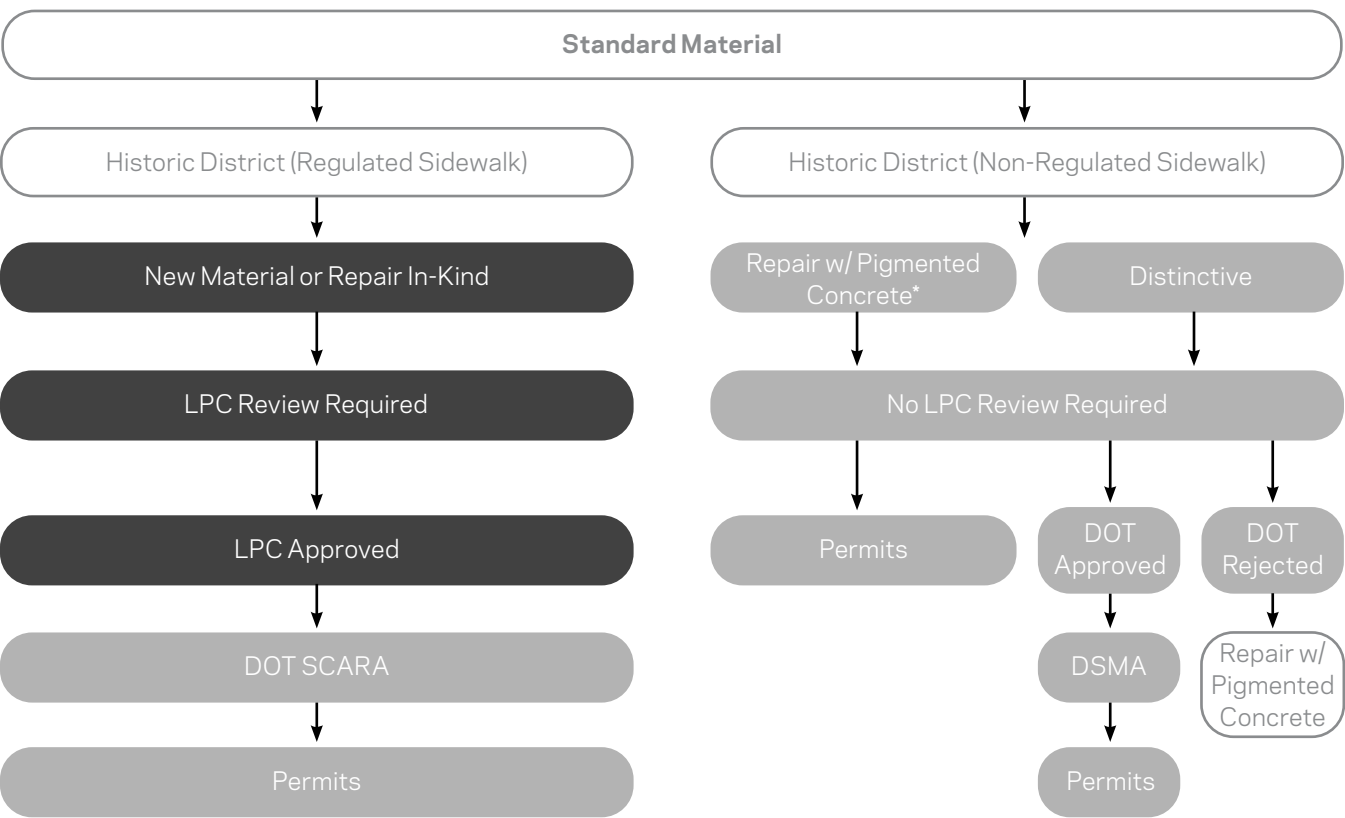
Sidewalk Review Process Diagram:  
Standard Sidewalk and Curb Materials



**Legend**

DOT Process

PDC/LPC Process



**Acronyms**  
**DSMA:** Distinctive Sidewalk Maintenance Agreement  
**LPC:** Landmarks Preservation Commission  
**PDC:** Public Design Commission  
**CB:** Community Board  
**SCARA:** Sidewalk, Curb, & Roadway Application ([www.nyc.gov/html/dot/downloads/pdf/instfilingplan.pdf](http://www.nyc.gov/html/dot/downloads/pdf/instfilingplan.pdf))

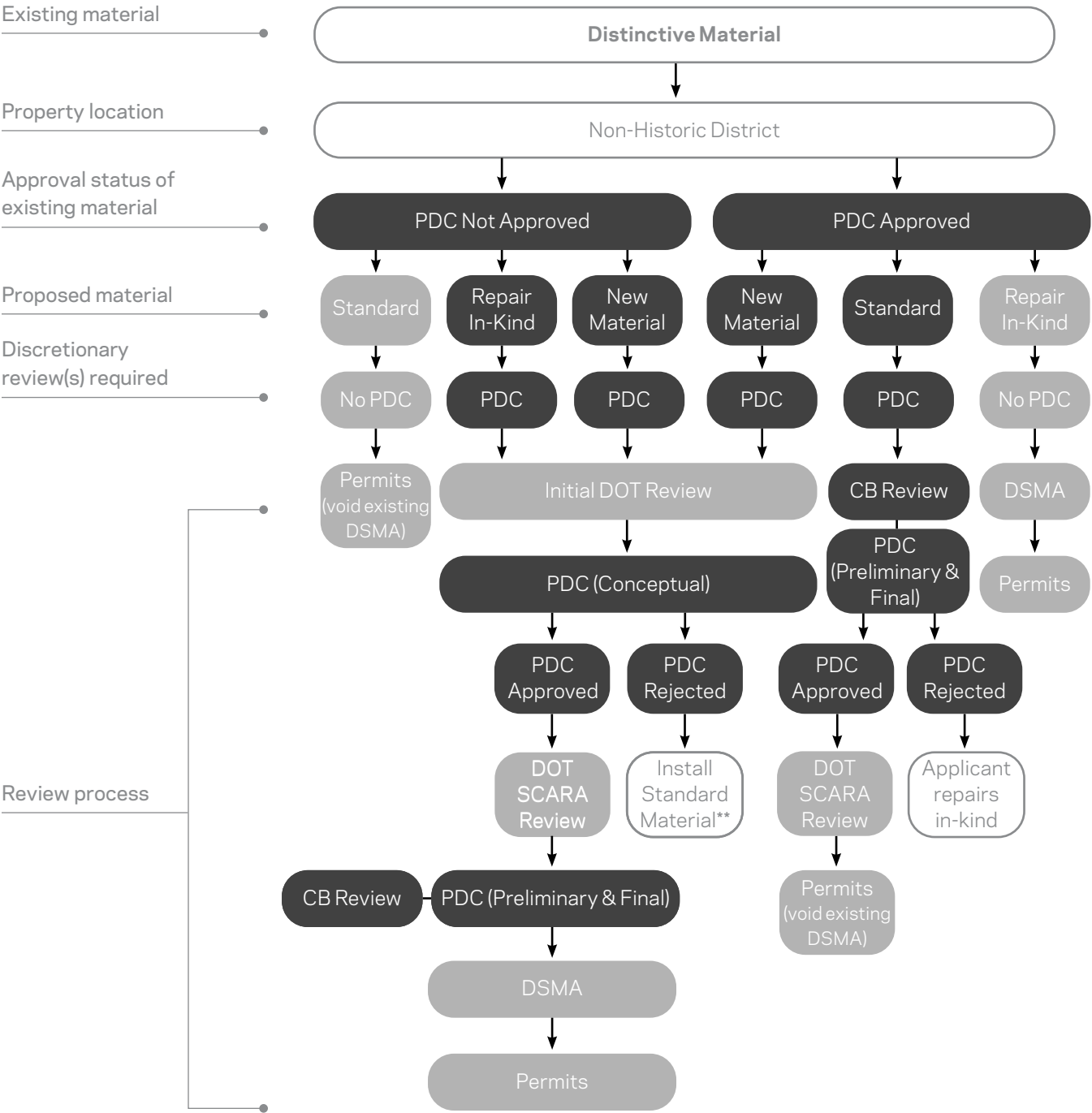
*Note: Standard Material refers to MATERIALS: UNPIGMENTED CONCRETE and MATERIALS: PIGMENTED CONCRETE.*

*Note: Adjacent property owner or jurisdictional organization submits proposals for Distinctive materials to DOT for an initial review. The submission usually comprises architectural drawings, site photographs, project descriptions, and other supporting materials as necessary.*

*Note: For permits, applicant's contractor must submit for appropriate construction permits from DOT prior to starting any work.*

*\* In Historic District (Non-Regulated Sidewalk), pigmented concrete is considered Standard. See MATERIALS: PIGMENTED CONCRETE.*

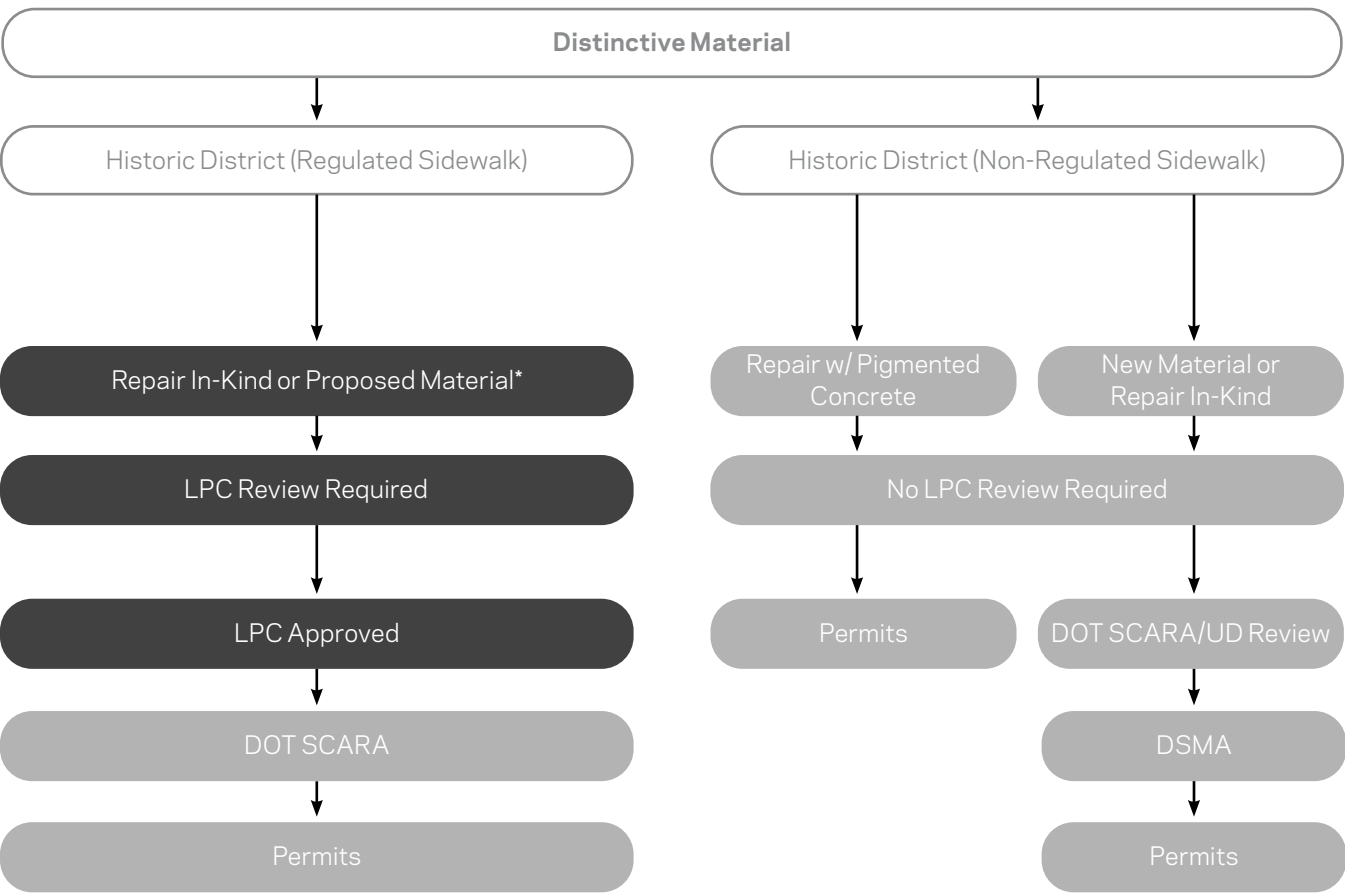
Sidewalk Review Process Diagram:  
Distinctive Sidewalk and Curb Materials



**Legend**

DOT Process

PDC/LPC Process



**Acronyms**  
**DSMA:** Distinctive Sidewalk Maintenance Agreement  
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**SCARA:** Sidewalk, Curb, & Roadway Application ([www.nyc.gov/html/dot/downloads/pdf/instfilingplan.pdf](http://www.nyc.gov/html/dot/downloads/pdf/instfilingplan.pdf))  
**UD:** Urban Design Unit

*Note: Standard Material refers to MATERIALS: UNPIGMENTED CONCRETE and MATERIALS: PIGMENTED CONCRETE.*

*Note: Adjacent property owner or jurisdictional organization submits proposals for Distinctive materials to DOT for an initial review. The submission usually comprises architectural drawings, site photographs, project descriptions, and other supporting materials as necessary.*

*Note: For permits, applicant's contractor must submit for appropriate construction permits from DOT prior to starting any work.*

*\* Pursuant to LPC Rules, certain treatments may be approved at a Staff level. See Landmarks Preservation Commission, Title 63, Section 2-19 SIDEWALKS of the Rules of the City of New York.*

*\*\* If PDC rejects replacing an approved Distinctive sidewalk with a new Distinctive sidewalk, the applicant must repair the approved Distinctive sidewalk in-kind.*



# Sidewalks

Sidewalks are paths for pedestrians alongside a road (see GLOSSARY). The primary function of a sidewalk is to provide for pedestrian movement and access to buildings, parks, and other destinations. Sidewalks also function as sites for loading and unloading vehicles, as places for outdoor dining and commerce, and as public meeting and gathering spaces. Sidewalks also serve as opportunities to locate other street improvements, such as stormwater management, plantings, and street furniture.

See FULL SIDEWALK in the GEOMETRY chapter for more information about sidewalks.

The furnishing zone is the area of the sidewalk usually immediately adjacent to the curb where street trees, signs, above-ground utilities, and street furniture are typically located (see GLOSSARY). Furnishing zones provide a physical buffer and a visual transition between the vehicles in the roadway and the pedestrians on the sidewalk, while also affording a clear area for organizing the various elements of street furniture that might otherwise appear cluttered. This area is generally 5 feet wide, or as wide as the tree pits along the blockface.

Furnishing zones are most appropriate on streets with at least moderate levels of both pedestrian and vehicle traffic—usually commercial shopping streets. Furnishing

zones are best used when applied to entire blocks or a series of blocks comprising a corridor, rather than to sidewalks in front of individual small properties which would create a “patchwork” effect. Some materials in this chapter are exclusively for use in furnishing zones.

Issues with pavement heaving due to tree root growth in limited soil volume are common and expensive to repair. Where feasible, use of suspended pavement systems should be considered. Suspended pavement systems can be used with all of the sidewalk materials featured in this section.

All materials listed in this section may be used in permanent pedestrian plazas as well. See GEOMETRY: PEDESTRIAN PLAZA.

# Unpigmented Concrete

## Usage: Standard

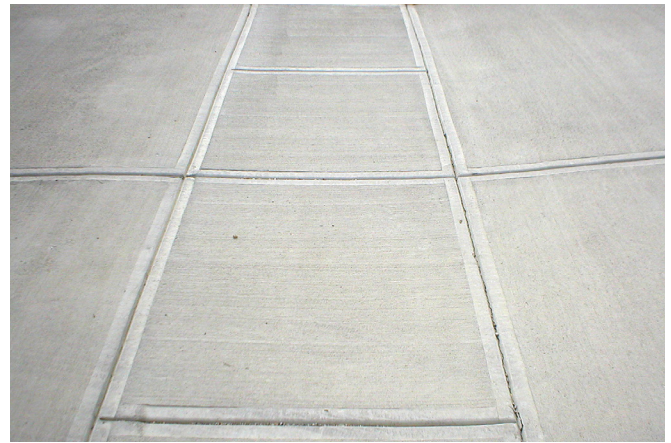
Mixture comprised of cement(s), aggregate(s), water, and other chemical admixtures, smoothed and then allowed to harden, forming a solid sidewalk surface.

**Specification source:** DOT Standard Specifications Section 2.02, 2.15, 2.22, 3.05

**Detail source:** DOT Standard Details of Construction drawing # H-1045



Riverside Drive, Manhattan



## Benefits

Provides durable sidewalk surface with high friction coefficient

Widely available and cost-effective

Provides solid footing for flush-mounted furniture anchors

## Considerations

Sidewalk heaving may occur next to street trees if suspended pavement systems are not used

## Application

Appropriate for sidewalks on all non-commercial and non-historic streets and select commercial streets unless otherwise specified

## Design

Flag size: 5 feet by 5 feet

Joint: "tooled joint" or saw-cut joint-scoring patterns

Typically requires 6-inch gravel base

Sustainability opportunity: Supplementary cementitious materials (SCM)

Sustainability opportunity: Recycled concrete aggregate (RCA)

## Maintenance

Adjacent property owners are generally responsible for maintaining this material

Difficult to patch in sections where utility cuts or defects occur

Patching may result in different coloration

# Pigmented Concrete (Dark)

Usage: Standard\*

Same mixture as unpigmented concrete, but with an added pigment for use in high-density commercial districts. Pigmented concrete can be treated with silicon carbide to add sparkle, making it a Distinctive material. See MATERIALS: UNPIGMENTED CONCRETE. This is one of two kinds of pigmented concrete — see also MATERIALS: PIGMENTED CONCRETE (HISTORIC MATERIALS).

\*Inclusion of silicon carbide in the aggregate makes this a Distinctive material.

\*See below for details of where Standard usage applies.

**Specification source:** DOT Standard Specifications Section 4.13

**Silicon carbide specification source:** DOT Standard Specifications Section 4.13



State Street, Manhattan



Benefits

See benefits of MATERIALS: UNPIGMENTED CONCRETE

Dark pigmenting visually enhances sidewalk and emphasizes urban character in areas with denser commercial and retail density

Saw-cut joints provide cleaner look, simulating individually hewn blocks of stone

Silicon carbide:

Sparkle adds distinction and visual enhancement to pigmented concrete, especially at night

Considerations

See considerations of MATERIALS: UNPIGMENTED CONCRETE

Application

Standard in commercial districts C4-4 through C4-7, C5 and C6, as defined in the Zoning Resolution of the City of New York, per Section 2-09(f)(4) of Title 34 of the Rules of the City of New York

Silicon carbide:

Because this is a Distinctive sidewalk treatment, it is best used when applied to entire blocks, rather than to the sidewalks of individual small properties which would create a “patchwork” effect

Design

See design guidance for MATERIALS: UNPIGMENTED CONCRETE

Sustainability opportunity: Supplementary cementitious materials (SCM)

Sustainability opportunity: Recycled concrete aggregate (RCA)

Maintenance

See maintenance for MATERIALS: UNPIGMENTED CONCRETE

Adjacent property owners are generally responsible for maintaining this material



## Pigmented Concrete (Historic Materials)

Usage: Historic

Same mixture as unpigmented concrete, but with an added pigment to simulate granite slabs or bluestone flags in historic districts, as per LPC guidelines, or in historic, non-landmarked neighborhoods, as per PDC guidelines. See MATERIALS: UNPIGMENTED CONCRETE. This is one of two kinds of pigmented concrete—see also MATERIALS: PIGMENTED CONCRETE (DARK).

**Specification source:** DOT Standard Specifications Section 4.13



Concrete pigmented to simulate granite: 9th Avenue, Manhattan



### Benefits

See benefits of MATERIALS: UNPIGMENTED CONCRETE

Reinforces historic character

Saw-cut joints provide cleaner look, simulating individually hewn blocks of stone, and add to the historic character of this treatment

Less costly than bluestone flags or granite slabs

### Considerations

See considerations of MATERIALS: UNPIGMENTED CONCRETE

Different in appearance from new granite or bluestone

### Application

Appropriate, pending LPC review, in historic districts where LPC sidewalk regulations remain in force as a replacement for granite or bluestone that is beyond repair

Appropriate, pending PDC review, in historic, non-landmarked neighborhoods as a replacement for granite or bluestone that is beyond repair

### Design

See design guidance for MATERIALS: UNPIGMENTED CONCRETE

Flag size and pigmentation to match existing granite slabs or bluestone flags per LPC or PDC guidelines

Sustainability opportunity: Supplementary cementitious materials (SCM)

Sustainability opportunity: Recycled concrete aggregate (RCA)

### Maintenance

See maintenance for MATERIALS: UNPIGMENTED CONCRETE

Adjacent property owners are generally responsible for maintaining this material

All sidewalk repair or replacement in historic districts requires written approval from LPC

# Concrete with Exposed Aggregate

Usage: Distinctive

Exposed aggregate, such as pebble-sized stone, can be added to unpigmented or pigmented concrete mixtures to create texture and increase the distinctive quality. Aggregates can vary in size and color to achieve different effects.

**Aggregate specification source:** DOT Standard Specifications

**Pigmented concrete with exposed light-colored aggregate:** Special Section 4.13 E

**DOT sand-colored concrete with exposed aggregate:** Special Section 4.13 E



Sand-colored concrete sidewalk with exposed aggregate: Prospect Park West, Brooklyn



## Benefits

See benefits of MATERIALS: UNPIGMENTED CONCRETE

Exposed aggregate creates a textured and more natural appearance

Exposed aggregate camouflages dirt and gum in high-traffic areas

Because this is a Distinctive sidewalk treatment, it is best used when applied to entire blocks, rather than to the sidewalks of individual small properties which would create a “patchwork” effect

Requires PDC approval

## Considerations

See considerations for MATERIALS: UNPIGMENTED CONCRETE

## Design

See design guidance for MATERIALS: UNPIGMENTED CONCRETE

Sustainability opportunity: Supplementary cementitious materials (SCM)

Sustainability opportunity: Recycled concrete aggregate (RCA)

## Application

**Pigmented concrete with exposed light-colored aggregate:**

May be used in commercial areas with high foot traffic

## Maintenance

See maintenance for MATERIALS: UNPIGMENTED CONCRETE

Adjacent property owners are generally responsible for maintaining this material

Use of these materials generally requires a maintenance agreement

**Sand-colored concrete with exposed aggregate:**

Appropriate for sidewalks adjacent to waterfronts, parks, and other open spaces



## Concrete with London Paver Scoring

Usage: Distinctive

Cast-in-place concrete scored to look like London Pavers.

**Specification source:** DOT Standard Specifications  
Special Section 6.06 LP



Brooklyn Bridge pedestrian access ramp, Manhattan



### Benefits

See benefits of MATERIALS: UNPIGMENTED CONCRETE

Reinforces civic character of an area

Less expensive than unit pavers

### Considerations

See considerations of MATERIALS: UNPIGMENTED CONCRETE

### Application

For sidewalks fronting on government buildings and other civic structures such as bridges and memorials

Because this is a Distinctive sidewalk treatment, it is best used when applied to entire blocks, rather than to the sidewalks of individual small properties which would create a "patchwork" effect

Requires PDC approval

### Design

Flag size: 18 inches by 36 inches; joints must be saw cut to ¼ depth of pavement

Requires concrete base

Sustainability opportunity: Supplementary cementitious materials (SCM)

Sustainability opportunity: Recycled concrete aggregate (RCA)

### Maintenance

See maintenance for MATERIALS: UNPIGMENTED CONCRETE

Adjacent property owners are generally responsible for maintaining this material

Use of this material generally requires a maintenance agreement



# Hexagonal Asphalt Paver

Usage: Distinctive

Asphalt precast into hexagonally shaped paver. This material is primarily used on sidewalks adjacent to parks, and conveys park-like character.

**Specification source:** DOT Standard Highway Specifications Section 3.04 and 6.60



Richard Tucker Park, Broadway and Columbus Avenue, Manhattan



## Benefits

- Interlocking hexagonal shape fits tightly together and resists shifting and buckling
- This material is widely available and cost-effective
- Dark color hides dirt and stains
- Asphalt pavers can be recycled

## Considerations

- Dark color may contribute to heat-island effect
- Loose pavers can hinder the mobility of pedestrians, people with disabilities, and cyclists

## Application

- Hexagonal asphalt pavers are appropriate for sidewalks adjacent to parks
- Requires PDC approval

## Design

- Paver size: 8 inches between parallel sides
- Can be sand-set for easier installation or mortar-set for stronger structural properties
- Sustainability opportunity: High recycled asphalt (RAP) content

## Maintenance

- Adjacent property owners are generally responsible for maintaining this material
- Use of this material generally requires a maintenance agreement, except when installed by Parks
- Unit pavers can become loose over time and will require regular maintenance
- Hexagonal pavers are relatively easy to reset or replace, especially for utility access

# Bluestone Flag

Usage: Historic

Historic stone unit paver with subtle variations in color, grain, and surface. The preservation and in-kind replacement of bluestone flags are typically required in new construction projects within historic districts; the installation of new bluestone flags is typically recommended in locations adjacent to existing bluestone.

**Specification source:** LPC guidelines, DOT Standard Specifications Section 6.07



Bleecker Street, Manhattan



Benefits

- Reinforces historic character
- Adds distinction and visual enhancement to sidewalk
- Stone conveys connection to natural environment

Considerations

- Vulnerable to breakage
- Substantially higher cost than concrete

Application

This material is Standard in historic districts where LPC sidewalk regulations remain in force or other areas with existing bluestone pavers where historic fabric remains intact, per LPC guidelines

Design

- Bluestone: minimum 2.25-inch thick New York State bluestone to match size and color of existing flags
- Finish: Thermal

- Joints: Hand-tight
- Sustainability opportunity: Salvaged bluestone

Maintenance

- In historic districts, adjacent property owners are generally responsible for maintaining this material
- Use of this material outside historic districts requires a maintenance agreement
- Due to the possibility of bluestone pavers cracking or becoming uneven, application requires attentive maintenance
- Wherever possible, existing material should be salvaged and reused
- Bluestone-tinted concrete can be used to fill gaps when recycling existing bluestone flags
- All sidewalk repair or replacement in historic districts requires written approval from LPC
- Repairs and maintenance are more complex and require more highly-skilled labor



# Granite Slab

## Usage: Historic

Historic stone paver, with varieties of color, texture, and veining. Can be cut to extremely large sizes to span underground vaults. The preservation and in-kind replacement of granite slabs are normally required in new construction projects within historic districts; the installation of new granite slabs is typically recommended in locations adjacent to existing granite.

**Specification source:** LPC guidelines, DOT Standard Specifications Section 6.04



Hudson Street, Manhattan



## Benefits

- Reinforces historic character
- Adds distinction and visual enhancement to sidewalk

## Considerations

- Not intended to support heavy vehicles when spanning underground vaults
- Higher up-front cost than concrete

## Application

This material is Standard in historic districts where LPC sidewalk regulations remain in force or other areas with existing granite pavers where historic fabric remains intact, per LPC guidelines

## Design

- Granite: to match size and color of existing flags, 3-inch minimum thickness
- Slip resistance: minimum 0.60 coefficient of friction wet

## Maintenance

- In historic districts, adjacent property owners are generally responsible for maintaining this material
- Use of this material outside historic districts requires a maintenance agreement
- Difficult to repair or patch in sections
- All sidewalk repair or replacement in historic districts requires written approval from LPC



# Granite Block

Usage: Distinctive

Historic smooth-finish granite block unit pavers often referred to as “cobblestones,” commonly used throughout New York City in the nineteenth century. This treatment is for use in the furnishing zone and may also be used in plazas within landmarked districts.

**Specification source:** DOT Standard Specifications  
Section 2.06, 6.06



Gansevoort Plaza, Gansevoort Street and 9th Avenue, Manhattan (Credit: DDC)



Granite blocks in the furnishing zone

Benefits

- Visually delineates separation of street uses
- Reinforces historic character, where applicable

Considerations

- Can be slippery when wet
- Uneven surface can hinder the mobility of pedestrians, people with disabilities, and cyclists

Application

Furnishing zone and around tree beds. See LANDSCAPE: CONNECTED TREE BED

Design

- Can be sand-set for easier installation and greater permeability wherever impermeable installation generates stormwater runoff
- Can be mortar-set for stronger structural properties. In Parks-maintained spaces, mortar is required

Requires PDC approval

Finish: Natural, aged, or tumbled is typical and produces a rough surface texture that is commonly seen throughout the city

Finish: Thermal or flamed produces a smooth surface texture that is typically ADA-compliant; consider using in pedestrian zones and around benches

Sustainability opportunity: Salvaged blocks

Sustainability opportunity: Permeable installation

Maintenance

- Adjacent property owners are generally responsible for maintaining this material
- Use of this material requires a maintenance agreement, except when installed by Parks around tree beds
- When set in sand, stones can become loose over time and will require regular maintenance, including weeding
- Relatively easy to reset or replace, especially for utility access

# Precast Square Paver

Usage: Distinctive

Precast, square asphalt or concrete pavers. This treatment is for use exclusively in the furnishing zone.

**Specification source:** DOT Standard Specifications  
Section 6.06



Willoughby Street, Brooklyn



## Benefits

- This material is widely available and cost-effective
- Asphalt pavers can be recycled

## Considerations

- Loose pavers can hinder the mobility of pedestrians, people with disabilities, and cyclists

## Application

Furnishing zone and around tree beds. See LANDSCAPE: CONNECTED TREE BED

## Design

- Paver size: 8 inches by 8 inches
- Consider permeable versions with joints that allow water to infiltrate; ensure a proper sub-base and appropriate soil selection

- Can be mortar-set for stronger structural properties
- The area within 18 inches of the curb should be kept free of obstructions
- Requires PDC approval
- Sustainability opportunity: High recycled asphalt (RAP) content
- Sustainability opportunity: High-SRI coloring

## Maintenance

- Adjacent property owners are generally responsible for maintaining this material
- Use of this material requires a maintenance agreement
- Unit pavers can become loose over time and will require regular maintenance
- Relatively easy to reset or replace, especially for utility access



## Permeable Interlocking Concrete Paver (PICP)

### Usage: Distinctive\*

Permeable Interlocking Concrete Pavers (PICPs) have voids at the joints to allow water to pass through into an open-graded reservoir below.

\*PICPs have been approved as Standard for use on sidewalks at school locations in lieu of a planting strip. (See: Adopted Zoning Text Amendment 26-421, adopted April 30, 2012.) In addition, PDC has approved this treatment for use in the furnishing zone of city sidewalks. In all cases, PICPs are considered a Distinctive material, and require a maintenance agreement.

**Specification source:** Special Section GI-2.03



Varick Street, Manhattan



### Benefits

Reduces impermeable surface, thereby increasing water infiltration

Reduces peak sewer discharge during storm events

Reduces likelihood of ponding and slick or icy conditions

Helps reduce urban heat island effect

### Considerations

Extra care must be taken where there is water-sensitive subsurface infrastructure

Only certain soil types are appropriate as sub-bases for infiltration

Porosity of the pavers can convey harmful chemicals into the soil

Vegetative growth in joints will occur if there is no regular maintenance

Sand should not be applied to surface

### Application

Most effective on slopes less than 5%

Must have adequate sub-surface conditions to detain stormwater and level bottom to allow for uniform infiltration

Can be proposed for use in parking lane, gutter strip, sidewalk, or plaza area

Avoid sites where there is potential for soil and groundwater contamination



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#### Design

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ASTM No. 8, 89, or 9 stone is recommend to fill paver joints. Requires open graded stone infiltration bed

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Bottom of infiltration bed should be at least 2 feet above high water table and 2 feet above bedrock

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Sustainability opportunity: Coat pavers with photocatalytic treatment or high-SRI surface

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Sustainability opportunity: Manufacture pavers using color additives to increase the SRI or incorporate recycled materials

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#### Maintenance

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Use of this material requires a maintenance agreement

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Regular maintenance is required, including vacuuming of surface to restore permeability when joints become clogged

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Unit pavers can become loose over time

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Relatively easy to reset or replace

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## Pervious Concrete

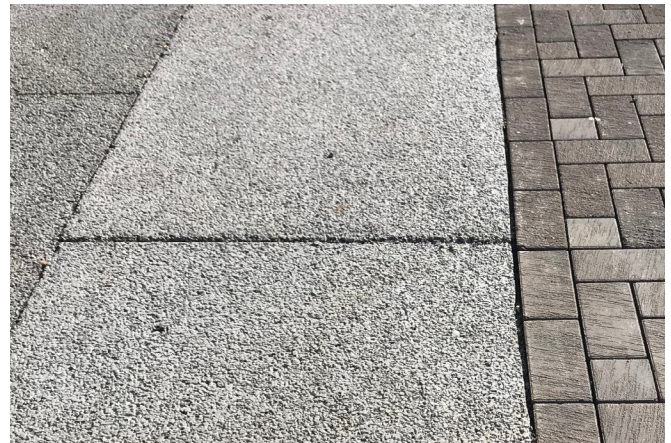
### Usage: Pilot

Concrete mixture using admixtures to allow a smaller amount of cementitious paste to coat the aggregate, and using little or no sand or fine aggregate, leaving substantial void content. This allows water to pass through to an open-graded reservoir underneath.

**Specification source:** Special Section GI-2.04



*Seth Low Houses, Brooklyn*



### Benefits

See benefits of MATERIALS: UNPIGMENTED CONCRETE

Reduces impermeable surface, thereby increasing water infiltration

Reduces peak sewer discharge during storm events

Reduces likelihood of ponding and slick or icy conditions

Helps reduce urban heat island effect

### Considerations

See considerations for MATERIALS: UNPIGMENTED CONCRETE

Extra care must be taken where there is water-sensitive sub-surface infrastructure

Only certain soil types are appropriate as sub-bases for infiltration

Porosity of the concrete can convey harmful chemicals into the soil

Sand and certain chemical de-icers should not be applied to surface

Contractors should be certified to install cast-in-place pervious concrete, which requires specially-trained concrete finishers

Slump, air content, and strength tests are not applicable to pervious concrete

### Application

Pervious concrete is a pilot material that the city is testing at select locations

Use of this material beyond the city-led pilots will require a maintenance agreement

Most effective on slopes less than 5%

Must have adequate sub-surface conditions to detain stormwater and level bottom to allow for uniform infiltration

Can be used to pave an entire sidewalk or just hardscape between connected tree beds. See LANDSCAPE: CONNECTED TREE BED

Avoid sites where there is potential for soil and groundwater contamination

Not recommended for implementation over significant underground utility corridors

### Design

See design guidance for MATERIALS: UNPIGMENTED CONCRETE

Typically an 8- to 24-inch open graded stone infiltration bed is recommended

Generally 4 - 8 inches thick

Pervious concrete should maintain a 15 - 25% void content ratio

Bottom of infiltration bed should be at least 2 feet above high water table and 2 feet above bedrock

### Maintenance

Use of this material requires a maintenance agreement

Requires routine vacuuming of surface using a regenerative air sweeper to restore permeability



# Curbs

A curb is a step where the roadbed meets the sidewalk or other raised pathway (see GLOSSARY). Curbs serve three functions: a gutter to convey rainwater and detritus from the roadbed and sidewalks to the catch basins at the ends of the street; a visual and physical limit to the vehicular roadbed; and a finished edge to sidewalks and roadbeds.

# Cast-in-Place Concrete

## Usage: Standard

This is the standard method for installing concrete curbs. The mixture is comprised of cement(s), aggregate(s), water, and other possible chemical admixtures, such as air entrainer and pigment. When the mixture is finished, it is allowed to harden, forming a solid curb. Concrete curbs can be pigmented to match the adjacent sidewalk (See MATERIALS: PIGMENTED CONCRETE (DARK) and MATERIALS: PIGMENTED CONCRETE (HISTORIC MATERIALS)).

## Benefits

- This material is widely available and cost-effective
- Can easily be cast on site to fit curved sidewalk profiles
- Cast-in-place curbs are more resistant to displacement than stone alternatives

## Considerations

- Concrete curbs without steel facing are more vulnerable to breakage or crumbling
- Steel faced drop curbs per Standard Detail H-1015 should not be used where bike lanes cross curbs

## Application

This material is Standard for any street with unpigmented concrete sidewalks. See MATERIALS: UNPIGMENTED CONCRETE

## Design

- Size: 6 inches wide on top, 8 inches wide on bottom, 18 inches deep; 7-inch reveal above roadway
- Expansion joints of curb should line up with expansion joints of sidewalk
- Steel facing should be used on streets where repeated mounting by heavy vehicles may cause damage
- May require metal reinforcement bars as specified by DOT
- For pigmented concrete curbs, see MATERIALS: PIGMENTED CONCRETE (DARK) and MATERIALS: PIGMENTED CONCRETE (HISTORIC MATERIALS) for design guidance and specification information on pigmented concrete sidewalks

- Concrete curb specification source:** DOT Standard Specifications Section 4.08, 3.05
- Steel-faced curb specification source:** DOT Standard Specifications Section 2.13, 3.05, 4.09
- Concrete curb detail source:** DOT Standard Details drawing # H-1044
- Steel-faced curb detail source:** DOT Standard Details drawing # H-1010



87th Street, Queens

- Sustainability opportunity: Supplementary cementitious materials (SCM)
- Sustainability opportunity: Salvaged or recycled steel facing

## Maintenance

See maintenance for MATERIALS: UNPIGMENTED CONCRETE  
DOT generally maintains this material

# Granite

## Usage: Distinctive

Granite cut to long sections and laid as curbing. Saw-finishing, achieved by cutting the granite with a stone saw and polishing out saw marks, provides a smooth, clean look. Split finishing, typically achieved by hand-chiseling, exposes the natural cleft of the stone, giving a rough-hewn texture.

**Specification source:** DOT Standard Specifications Section 2.12, 4.07

**Saw-finish curb detail source:** DOT Standard Detail drawing # H-1056

**Split-finish curb detail source:** DOT Standard Detail drawing # H-1056A

## Benefits

Adds distinction and visual enhancement to sidewalk

Reinforces historic character (if applicable)

Extremely durable

Can be removed and replaced as needed

## Considerations

Much higher material cost than concrete

## Application

This material is appropriate for all streets, especially commercial districts, including use in combination with concrete sidewalk

Granite curb is usually required in historic districts, adjacent to individual landmarks, or in areas with existing granite curb where the historic fabric remains intact

## Design

Size: 5 inches to 8 inches wide on top, 4 inches of minimum width on bottom, 16 inches deep

Must have lip with batter and rounded edge

Slip resistance at top of curb: minimum 0.60 coefficient of friction when wet

Sustainability opportunity: Salvaged granite curb



Gansevoort Street, Manhattan.

## Maintenance

DOT generally maintains this material

Low-maintenance, resists cracking and discoloration

Difficult to patch and must therefore be replaced by section if severely damaged



# Crosswalks

Crosswalks are areas of roadbed that are delineated to indicate where pedestrians are expected to cross (see GLOSSARY). In certain instances, crosswalks may have patterns or be constructed from materials that further increase their visibility or add character to a neighborhood. This section is intended to include only surface materials approved for creating distinctive crosswalks. It does not include guidance on using standard thermoplastic markings to designate crosswalks for traffic control purposes. For this information, please refer to the most recent version of the federal *Manual on Uniform Traffic Control Devices* (MUTCD).

In addition to the materials listed in this section, all materials listed in the ROADWAYS section may also be used in crosswalks, according to the application guidance provided.

## Granite Paver

Usage: Historic

Stone unit pavers are known for durability and associated with high-quality traditional streets.

**Specification source:** DOT Standard Specifications Sections 2.06 and 6.04



Front Street, Brooklyn



### Benefits

Visually enhances crosswalk

Creates accessible, smooth crossing surface

### Considerations

Significantly higher cost than a standard asphalt crosswalk

### Application

Crosswalks on historic streets or where a Distinctive material is desired and there are low volumes of heavy-vehicle traffic

Should not be used where frequent utility cuts are likely

### Design

Crosswalks generally should comply with MUTCD standards

Paver size: minimum 4 inches for shortest dimension, maximum 30 inches for longest dimension, minimum 5-inch thickness for vehicular roadbed

Pavers that have a ratio of length to width greater than 2:1 should only be used when set in poured concrete because of the likelihood of breakage under heavy-vehicle traffic

Granite must have a textured surface that provides sufficient slip resistance to meet a minimum 0.60 coefficient of friction when wet

Sustainability opportunity: Salvaged pavers

### Maintenance

DOT maintains this treatment in historic districts

Use of this material outside of historic districts requires a maintenance agreement

Due to the possibility of pavers cracking or becoming uneven, and asphalt shoving at the borders, application requires attentive maintenance

---

# Roadways

Roadways represent the paved central portion of the street that allows access to and movement through an area (see GLOSSARY). Most roadways are primarily designed for motor vehicle use.



# Asphaltic Concrete

Usage: Standard

Commonly known as asphalt, this material is a mixture of asphalt bitumen and stone aggregate, usually laid on a concrete base and compacted by a roller to form a smooth and solid road surface.

**Specification source:** DOT Standard Specifications Section 2.05, 3.01, 4.01, 4.02

**Detail source:** DOT Standard Details drawing H-1034 and related

Benefits

- Provides smooth and durable road surface with high friction coefficient
- Material is widely available and cost-effective
- Impervious quality channels water to the curb on crowned roadways
- Dark color hides dirt and stains and creates background for high-contrast markings
- Easy to maintain and patch
- Can be pigmented or imprinted for varied purposes
- Asphalt can be recycled

Considerations

- Prone to rutting and shoving under high volumes of heavy vehicles
- Contributes to heat-island effect
- Sends runoff to catch basins, thereby contributing to combined-sewer overflows (CSOs) during large rainstorms

Application

- Standard for roadbeds of all city streets unless otherwise specified
- Preferred road surface for cycling
- DOT generally maintains this material

Design

- Minimum 3-inch-thick wearing course, typically
- Roadway should be crowned to drain stormwater from the road surface



69th Street, Queens

- Typically requires concrete base
- Sustainability opportunity: High recycled asphalt (RAP) content
- Sustainability opportunity: Warm-mix asphalt
- Sustainability opportunity: High-SRI asphalt
- Sustainability opportunity: Porous asphalt in parking lanes

Maintenance

- Easier to repair than other roadway materials

# Porous Asphalt

Usage: Pilot

Asphaltic concrete with open-graded aggregate, in which the amount of fine particles is kept to a minimum, and in which the binder content is lower, allowing water to pass through into an open-graded reservoir.

No specification source



Craig Road N, Governors Island



## Benefits

- See benefits of MATERIALS: ASPHALTIC CONCRETE
- Reduces impermeable surface, thereby increasing water infiltration
- Exhibits structural properties similar to conventional asphalt
- Reduces peak sewer discharge during storm events
- Reduces likelihood of ponding and slick or icy road conditions
- Helps reduce urban heat island effect

## Considerations

- See considerations for MATERIALS: ASPHALTIC CONCRETE
- Extra care must be taken where there is water-sensitive sub-surface infrastructure
- Only certain soil types are appropriate as sub-bases for infiltration

- Porosity of pavement can convey harmful materials into the soil
- Sand and certain chemical de-icers should not be applied to surface

## Application

- Porous asphalt is a pilot material that the city is testing at select locations
- Use of this material beyond the city-led pilots will require a maintenance agreement
- Can be proposed for use in parking lanes, parking lots, and recreational paths
- Most effective on slopes less than 5%
- Must have adequate sub-surface conditions to detain stormwater and level bottom to allow for stormwater infiltration
- Avoid sites where there is high potential for soil and groundwater contamination

Not recommended for implementation over significant underground utility corridors

---

**Design**

Minimum 3-inch-thick wearing course, typically

Roadway should be crowned to drain stormwater from the road surface

Aggregate gradation should be engineered to provide open gradation and an adequate stone matrix

Bitumen content should be lower than in standard asphaltic concrete, as necessary for the provided gradation. See MATERIALS: ASPHALTIC CONCRETE

Do not seal coat

Typically, a 12–30-inch open graded stone infiltration bed is recommended.

Bottom of infiltration bed should be at least 2 feet above high water table and 2 feet above bedrock

Consider use in gutter area near pedestrian ramps to reduce ponding

---

**Maintenance**

Requires vacuuming of surface with regenerative air sweepers to maintain permeability and prevent clogging

Difficult and more expensive to replace or patch in sections where utility cuts or defects occur



*Porous asphalt in parking lot at the Bronx Zoo: Bronx*



# Concrete

## Usage: Standard

Mixture comprising cement(s), aggregate(s), and water, which may include other chemical admixtures that hardens to form a solid road surface. The mixture may be poured over metal reinforcement bars.

**Specification source:** DOT Standard Specifications Section 3.05, 4.05

**Detail source:** DOT Standard Details drawing H-1050

**Detail source (bus pad):** DOT Standard Details drawings H-1005, H-1005 A

## Benefits

- Provides durable road surface with high friction coefficient
- This material is widely available and cost-effective
- Resists rutting and shoving that can occur with asphalt
- Compared to asphalt, reduces impact of vehicle travel vibrations on sub-surface features and neighboring structures
- Higher SRI than asphalt, which helps reduce urban heat island effect

## Considerations

- Difficult and more expensive to replace or patch in sections where utility cuts or defects occur
- Noisier than asphalt

## Application

- May be considered for use in shared streets. See **GEOMETRY: SHARED STREET**
- Appropriate for roads with high motor vehicle volumes and/or gross weight
- Should be used wherever engineering criteria dictates, such as bridges, vaulted roadways, or bus pads
- Should not be used where frequent utility cuts are likely
- Will be evaluated case-by-case based on engineer review of roadway structure
- DOT generally maintains this material



West Side Highway, Manhattan

## Design

- Must have joints to allow for expansion no more than 20 feet apart
- May require metal reinforcement bars as specified by DOT
- Sustainability opportunity: Supplementary cementitious materials (SCM)

## Maintenance

- Patching may result in different coloration

## Pervious Concrete

### Usage: Pilot

Concrete mixture using minimal cementitious paste to coat the aggregate, and using little or no sand or fine aggregate, leaving substantial void content. This allows water to pass through to an open-graded reservoir underneath.

No specification source



Rego Park, Queens



### Benefits

Reduces impermeable surface, thereby increasing water infiltration

Reduces peak sewer discharge during storm events

Reduces likelihood of ponding and slick or icy conditions

Helps reduce urban heat island effect

Contractors should be certified to install cast-in-place pervious concrete

Slump and air content tests are not applicable to pervious concrete

Lower strength material than standard concrete

### Considerations

Extra care must be taken where there is water-sensitive sub-surface infrastructure

Only certain soil types are appropriate as sub-bases for infiltration

Porosity of the concrete can convey harmful chemicals into the soil

Sand and certain chemical de-icers should not be applied to surface

### Application

Pervious concrete is a pilot material that the city is testing at select locations

Use of this material beyond the city-led pilots will require a maintenance agreement

Most effective on slopes less than 5%

Must have adequate sub-surface conditions to detain stormwater and level bottom to allow for uniform infiltration

Avoid sites with frequent heavy vehicle traffic

---

Avoid sites where there is potential for soil and groundwater contamination

---

Not recommended for implementation over significant underground utility corridors

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### Design

---

See design guidance for MATERIALS: UNPIGMENTED CONCRETE

---

Typically an 8- to 24-inch open graded stone infiltration bed is recommended

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Generally 4 – 8 inches thick

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Pervious concrete should maintain a 15 – 25% void content ratio

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Bottom of infiltration bed should be at least 2 feet above high water table and 2 feet above bedrock

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### Maintenance

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Requires routine vacuuming of surface using a regenerative air sweeper to restore permeability, which typically requires a maintenance partner

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*Rego Park, Queens*



# Granite Block

Usage: Historic

Historic smooth-finish granite block unit pavers often referred to as “cobblestones,” commonly used throughout New York City in the nineteenth century.

**Specification source:** DOT Standard Highway Specifications Section 2.06, 6.04



Greene Street, Manhattan



## Benefits

- Reinforces historic character
- Calms vehicle traffic
- Can visually delineate separation of street uses or modal priorities
- Granite blocks are relatively easy to remove and reset, especially for utility access

## Considerations

- May generate significant noise from vehicle tires
- Uneven surface can hinder pedestrians, cyclists, and people with disabilities; attention must be given to navigation by people with disabilities at crosswalks, and by cyclists
- Can be slippery when wet
- See MATERIALS: GRANITE PAVER

## Application

- Should be used wherever there is existing granite block in historic districts where the historic fabric remains intact
- Use of this material is subject to LPC review when used in historic districts with existing granite blocks
- May be used to provide visual delineation to separate bike lanes from vehicle lanes or vehicle lanes from pedestrian areas
- Can be used to designate areas of the roadbed not intended for regular vehicle travel, such as pedestrian streets or textured gutters, aprons, or medians
- DOT generally maintains this material in historic districts, but any third party that excavates it must restore it in kind or as directed by DOT pursuant to Rules of the City of New York, Title 34, Section 2-11(e)(12)(vii)
- Use of this material outside of historic districts requires a maintenance agreement

---

**Design**

Can be sand-set for easier installation and maintenance and for greater permeability, or mortar-set for stronger structural properties

May require concrete base

Provision must be made for a smooth cycling surface, regardless of whether or not the roadway is part of a designated bike route. Design treatments include medium-to large-sized thermal-finished granite

Finish: Natural, aged, or tumbled is typical and produces a rough surface texture that is commonly seen throughout the city

Finish: Thermal or flamed produces a smooth surface texture that is typically ADA-compliant; consider using where there is a pedestrian path of travel

Sustainability opportunity: Salvaged blocks

Sustainability opportunity: Permeable installation

---

**Maintenance**

Stones can become loose over time and require intensive, regular maintenance



*SIM Crew replaces granite blocks: Bruckner Boulevard, Bronx*

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# Lighting





# Lighting

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# 4



## Introduction



E Houston Street, Manhattan

### About this Chapter

This chapter, which constitutes the current DOT Street Lighting Catalogue, outlines options for street and pedestrian lighting for New York City streets, bikeways, pedestrian bridges, pedestrian malls, plazas, and parks. Street lights currently installed on the street, but not included in this chapter, are not recommended for new projects. The street lights herein meet DOT engineering standards and technical requirements for safety and energy efficiency. Most are appropriate for use in a variety of contexts, pending DOT design review and approval.

### Selection Criteria

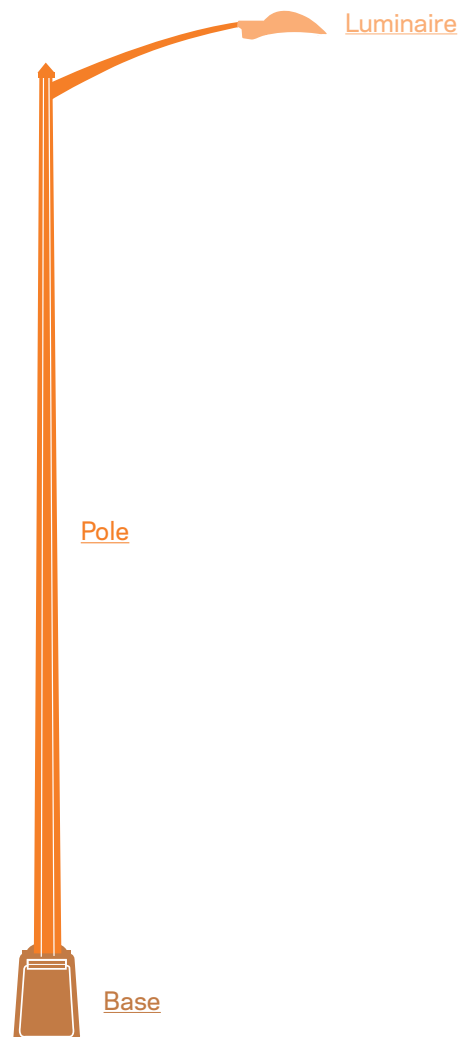
DOT uses guidelines established by the Illuminating Engineering Society of North America (IES) to provide sufficient light values and uniformity in the ROW and produce a comfortable and safe street environment. In addition to lighting characteristics, the agency considers the design qualities of poles and luminaires with an eye to maintaining an aesthetically consistent and coherent streetscape within a neighborhood or corridor. Accordingly, the agency does not approve block-by-block variations in types of street lights.

#### o Street Light Components

A street light comprises three elements: 1) the base (sometimes with a “skirt” that covers the base to achieve a desired appearance), 2) the pole, and 3) the LED luminaire. Some poles can be combined with different luminaires to achieve the desired aesthetic and engineering outcomes; in other cases, the combination of pole and luminaire cannot be changed. This chapter notes the luminaires with which each pole can be paired.

#### o Energy Standards

DOT requires the use of LED luminaires for all installations.





### o **Engineering Review**

In all cases, the suitability of the street light for a particular street and lighting condition must be approved by DOT's Street Lighting Engineering Unit (DOT Street Lighting).

## **Usage Categories**

Street lights and components are categorized as Standard, Distinctive, or Historic. DOT maintains equipment in each of these categories, and replaces damaged street lights.

### o **Standard**

The current Standard street light poles are the steel Octagonal and Davit for city streets, and aluminum Round for highways, with LED luminaires as indicated. The M-2A and the S-1A signal poles are Standard for use at traffic signal locations. The M-2A pole may be used to hold a standard street light arm and luminaire. In addition to the pedestrian poles featured in this Manual, other Standard pedestrian poles suitable for use are covered in DOT Street Lighting's Standard Drawings Book.

With DOT approval, modifications and alternate combinations of components are possible. Poles can be painted according to federal specifications in silver, black, or green. While such modifications are considered Standard, they typically require a maintenance agreement and DOT Street Lighting approval.

### o **Distinctive**

Street light poles, other than those that are listed as Standard or Historic, are considered Distinctive; they are installed as part of streetscape projects and other locally-funded initiatives. Unless they are in-kind replacements for damaged street lights, Distinctive lights require PDC approval. DOT is responsible for submitting Distinctive street light proposals to PDC on behalf of neighborhood associations and other groups that request the treatments. In preparation for these submittals, DOT works closely with applicants to develop consistent street lighting plans that are sensitive to local contexts. DOT maintains Distinctive street lights unless otherwise stated in a maintenance agreement.

### o **Historic**

Historic-style poles can only be used in LPC designated historic districts or in neighborhoods with substantial, intact historic fabric—i.e., three or more contiguous blocks. They require approval by LPC for use in historic districts and PDC approval for use in non-designated areas with substantial, intact historic fabric. The Historic street light poles are currently used with only the Teardrop and Shielded Teardrop Luminaires.

## **Inclusive Design**

Street lights and signals at corners must be sited so that they do not obstruct pedestrian ramps, ensuring sufficient access to the sidewalk for all pedestrians, including those using mobility devices. At crossings, the height of Accessible Pedestrian Signals must be reachable by a person using a mobility device, at a preferred height of 42 inches and a maximum height of 48 inches (see *2010 ADA Standards for Accessible Design*).

## **Resiliency**

Existing foundations at traffic signal locations in certain flood-vulnerable areas are being replaced with coastal storm foundations that incorporate a square concrete pedestal raising the electrical components above some flood depths. The city's *Climate Resiliency Design Guidelines* provide guidance on height. The pedestal is monolithically poured with the foundation. Raising the base of the traffic signals or street light poles reduces the chance that the electrical components of the poles will be submerged in salt water during future flooding events. Additionally, High Density Polyethylene (HDPE) conduit, a more cost-effective material that is not susceptible to corrosion from residual salt water after storm surge events, is replacing galvanized steel for all signal locations and street light locations in flood-vulnerable areas.

DOT is also testing solar-powered lighting at select locations in flood-prone areas. If these applications are successful, solar lighting could reduce the amount of time without street lighting after major flood events.

### Specifications

For design criteria, technical information, finishes, and color specification, refer to DOT's Bureau of Traffic Operations, Division of Street Lighting specifications. The latest edition is available for purchase for \$50 from the Office of the Agency Chief Contracting Officer, 55 Water Street, Ground Level, New York, NY, 10041. For further information, call (212) 839-9435. DOT Street Lighting's Standard Drawings Book, available at [www1.nyc.gov/html/dot/downloads/pdf/nycdot-street-lighting-standard-drawings.pdf](http://www1.nyc.gov/html/dot/downloads/pdf/nycdot-street-lighting-standard-drawings.pdf), includes Standard drawings for elements in the lighting catalogue.

### BUG Ratings

DOT Street Lighting evaluates LED luminaires using the IES BUG (Backlight, Uplight, and Glare) rating system as part of its specifications.

	Average Illuminance (fc)	Illuminance Uniformity
<b>Roadways</b>		
Collector*	1.0 - 1.2	4:1
Local**	0.8 - 1.0	4:1
<b>Intersections</b>		
Collector/Collector	2.0 - 2.5	4:1
Collector/Local	1.5 - 2.0	4:1
Local/Local	1.5	4:1
<b>Plazas, Under the El</b>	2.0	4:1
<b>Pedestrian Sidewalks</b>	0.6 - 0.8	Up to 6:1
<b>Shared Bikeways</b>	0.8 - 1.0	4:1

\* DOT's Lighting Division generally classifies avenues and boulevards as collector roadways

\*\* DOT's Lighting Division generally classifies cross streets as local roadways

### Lighting Levels, Color, and Uniformity

DOT's lighting-levels and uniformity guidelines are based on those established by the IES Roadway Lighting standard RP-8-14 (or more stringent where needed). DOT uses higher wattages on wide or commercial corridors and lower wattages on narrow or residential streets. DOT currently specifies 3000 Kelvin as the color temperature for all luminaires.

All street lighting designs must be approved by DOT Street Lighting Engineering Unit.

### Notes and Symbols

<b>HDG</b>	Hot Dipped Galvanized Steel
<b>IES</b>	Illuminating Engineering Society of North America
<b>IES Type</b>	IES classification of lighting based on its photometric properties. Five types are relevant to the city's street lights: I, II, III, IV, and V.
<b>LED</b>	Light-Emitting Diode
<b>SSL</b>	Standard Street Light: Standard pole (Octagonal) with LED Cobra Head luminaire. While Davit and Round poles are also standard poles, cost comparisons to the SS refer to the Octagonal.
<b>W</b>	Watts
<b>\$</b>	Costs: Shown for each pole or luminaire as a \$ symbol, representing relative costs compared to the Standard Street Light (SSL), the Octagonal Pole. A scale of one to five \$ symbols is used rather than specific monetary amounts because actual costs are subject to change.

TABLE 4A: POLES &amp; LUMINAIRES

Luminaires	Standard Poles			Distinctive & Historic Poles									
	Octagonal	Davit	Round 25'   40'	Alliance (Type S)	Bishops Crook	City Light	Flatbush Ave	TBTA	Type F	Type M	World's Fair Ped	Type B Ped	Flushing Meadows Ped
Cobra Head	●	●	●				●	●					
Teardrop					●		●	●	●	●			
Shielded Teardrop							●	●					
Alliance				●									
City Light						●							
Central Park												●	
Riverside												●	
Battery Park												●	
2085											●		
Flushing Meadows													●
LED Expressway			●										

Table 4a identifies which combinations of poles and luminaires are permitted.



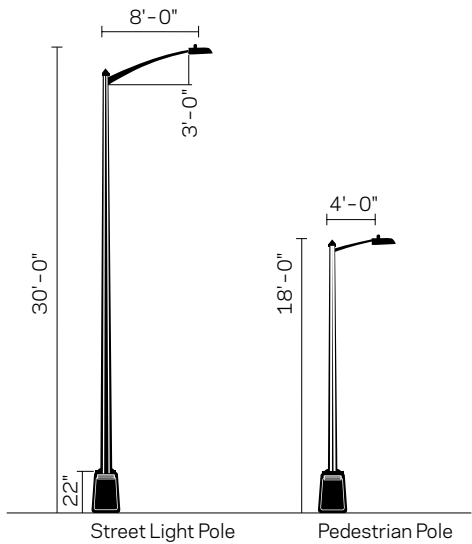
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# Standard Poles

# Octagonal Pole

## Usage: Standard

The tapered steel Octagonal pole, combined with the LED Cobra Head luminaire, constitutes a Standard Street Light (SSL).



## Applications

- Streets
- Single and twin-mounting

## Luminaire

### LED Cobra Head

Wide Roadway/Commercial Area:  
110W maximum LED  
IES Type II or III

Residential Street:  
78W maximum LED  
IES Type II or III

Pedestrian Arm:  
40W maximum LED  
IES Type II or III

## Material/Color

HDG Steel/silver —black and green are also allowed but require a maintenance agreement

## Cost Compared to SSL

\$

Octagonal is the Standard pole

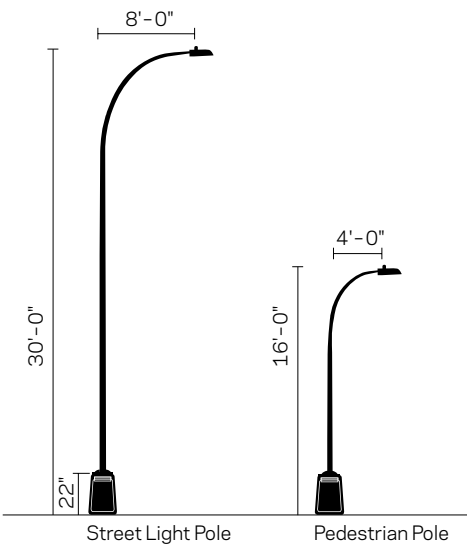


1st Street, Manhattan

# Davit Pole

Usage: Standard

The Davit pole is an elegant, curved alternative to the Octagonal pole that can be used in the same streetscape contexts. An aluminum version of the Davit, not covered here, is also used on highways.



Applications

- Streets
- Single and twin-mounting

Luminaire

LED Cobra Head

Wide Roadway/Commercial Area:  
110W maximum LED  
IES Type II or III

Residential Street:  
78W maximum LED  
IES Type II or III

Pedestrian Arm:  
40W maximum LED  
IES Type II or III

Material/Color

HDG Steel/silver — black and green are also allowed but require a maintenance agreement

Cost Compared to SSL

\$\$

Though also considered a Standard pole, the Davit is more expensive than the Octagonal



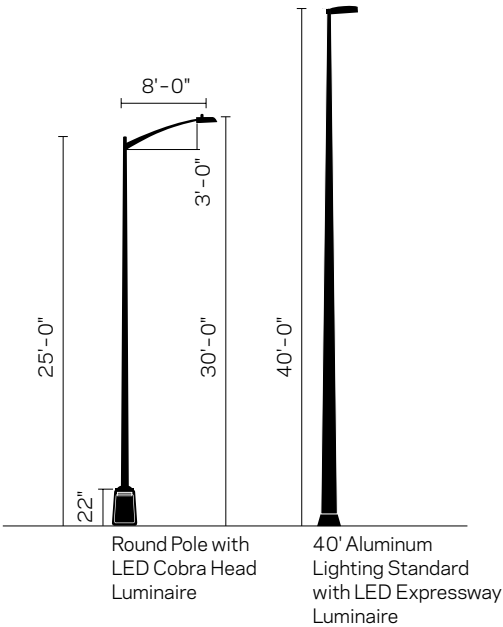
E Houston Street, Manhattan



# Round Pole

## Usage: Standard

The tapered aluminum Round pole, combined with the LED Cobra Head luminaire, constitutes a Standard Highway Street Light. As an alternative, the 40' Aluminum Lighting Standard is another street light option for expressways that can be installed with an LED Expressway luminaire.



## Applications

For use on highways within city limits

## Luminaire

### LED Cobra Head

Highway:  
110W maximum LED  
IES Type II or III

Highway Ramp:  
78W maximum LED  
IES Type II or III

### LED Expressway

Expressway:  
150W maximum LED  
IES Type III or IV

## Material/Color

Aluminum/silver

## Cost Compared to SSL

\$

Round is the Standard pole for highways



Round pole with 25-foot shaft and LED Cobra Head luminaire: FDR Drive, Manhattan

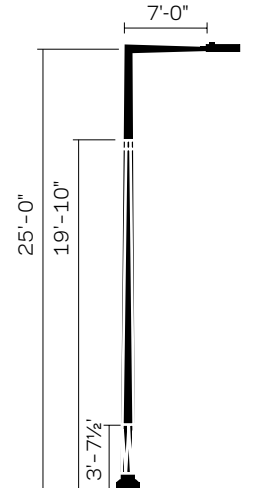
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# Distinctive & Historic Poles

## Alliance Pole (Type S)

### Usage: Distinctive

The Alliance street light was originally introduced in Lower Manhattan by the Alliance for Downtown New York. This street light is a contemporary alternative to the Standard Street Light.



### Applications

Commercial districts

Roadways with widths of 36 feet or more

PDC approval is required

### Luminaire

#### Alliance (Type S)

110W maximum LED

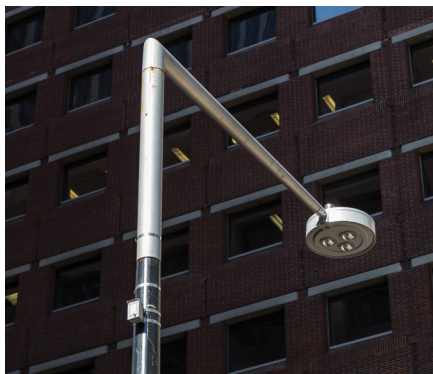
IES Type II or III

### Material/Color

HDG Steel/silver, black

### Cost Compared to SSL

\$\$\$\$\$



Water Street, Manhattan



## Bishops Crook Pole

### Usage: Historic

The Bishops Crook was the first of a number of decorative street lights to be introduced as early as 1900 on narrow city streets. Bracket versions of the Bishops Crook were also attached to the facades of buildings. The reproduction of the Bishops Crook was introduced in 1980 at Madison Avenue and 50th Street outside the Helmsley Palace Hotel (now the New York Palace Hotel).

### Applications

Historic districts or areas with substantial, intact historic fabric

Streets with roadway width of less than 36 feet

Within historic districts, LPC approval is required; outside of historic districts, PDC approval is required

### Luminaire

#### Teardrop

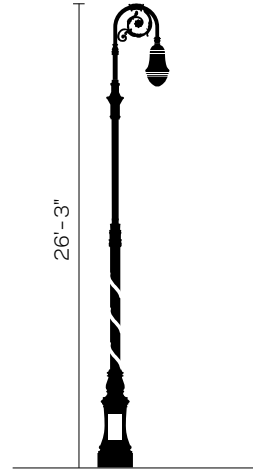
100W maximum LED  
IES Type III

### Material/Color

Ductile iron pole with aluminum arm/black

### Cost Compared to SSL

\$\$\$\$\$

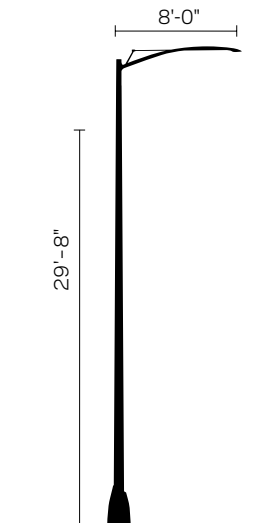


Orchard Street, Manhattan

## City Light Pole

### Usage: Distinctive

In 2004, an international design competition was held to develop a signature street light for New York City. The winning entry, the City Light, was added to DOT's lighting catalogue after extensive development and testing. This simple, elegant pole and luminaire provide less glare than other luminaires and complement both contemporary architecture and historic structures.



### Applications

Commercial or residential streets

PDC approval is required

### Luminaire

#### City Light

Wide Roadway/Commercial Area:

110W maximum LED

IES Type II or III

Residential Street:

78W maximum LED

IES Type II or III

### Material/Color

Aluminum/silver

### Cost Compared to SSL

\$\$\$\$\$



Essex Street, Manhattan

# Flatbush Avenue Pole

## Usage: Distinctive

The Flatbush Avenue pole was first installed in 1988 on Flatbush Avenue in Brooklyn. Its design is appropriate for wide streets, including those with historic character.

## Applications

Commercial and wide residential streets

Single, or twin-mounting on center medians

Streets with roadway width of 36 feet or more

PDC approval is required

## Luminaire

### LED Cobra Head

110W maximum LED

IES Type II or III

### Teardrop and Shielded Teardrop

150W maximum LED

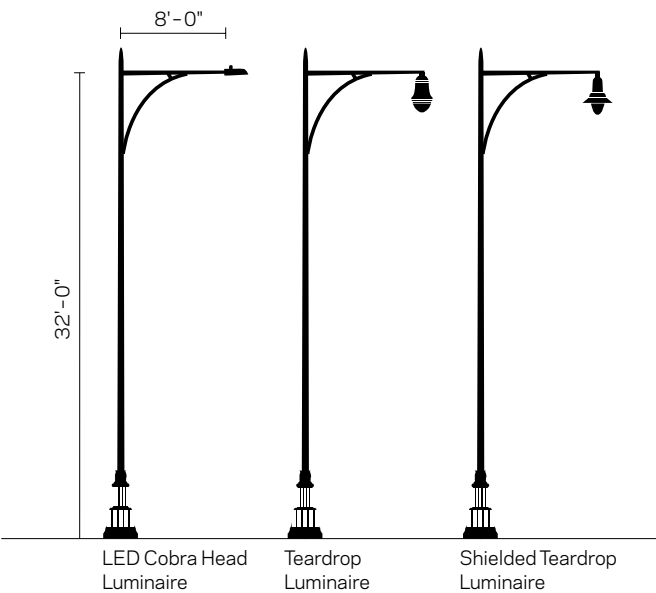
IES Type III

## Material/Color

Fabricated steel pole/black, silver, green

## Cost Compared to SSL

\$\$\$



Pole with Teardrop luminaire: Flatbush Avenue, Brooklyn

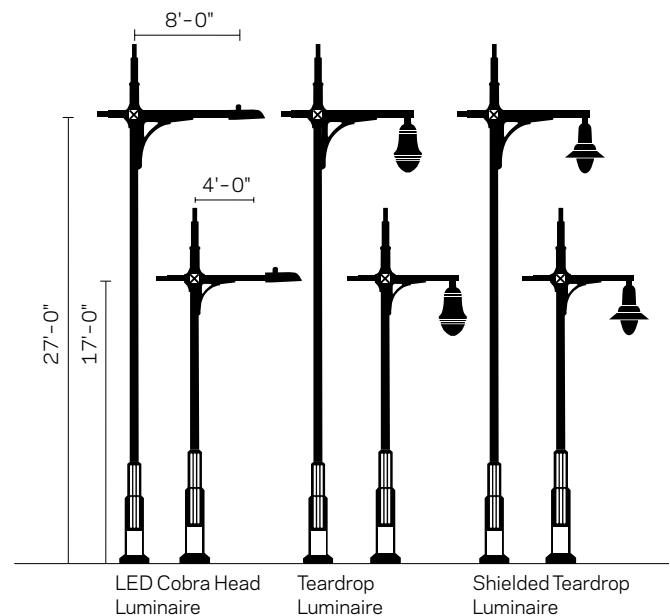




## TBTA Pole

### Usage: Distinctive

The TBTA (Triboro Bridge and Tunnel Authority) pole was introduced in the 1950s for mid-twentieth-century bridge construction projects such as the Robert F. Kennedy Bridge (formerly the Triboro Bridge). The TBTA pole replaced wooden lampposts that lit parkways during the 1920s and '30s. The Teardrop and Shielded Teardrop luminaires combine with the TBTA pole to produce a historic quality.



### Applications

#### Street Light Pole:

- Commercial and wide residential streets
- Single or twin-mounting
- Streets with roadway width of 36 feet or more

#### Pedestrian Pole:

- Parks, plazas, and esplanades

PDC approval is required

### Luminaire

#### LED Cobra Head

Wide Roadway/Commercial Area:

110W maximum LED

IES Type II or III

Residential Street:

78W maximum LED

IES Type II or III

#### Teardrop and Shielded Teardrop (historic districts only)

Commercial Area:

150W maximum LED

IES Type III

Residential Street:

100W maximum LED

IES Type III

### Material/Color

HDG steel/black, silver, green

### Cost Compared to SSL

\$\$\$\$\$

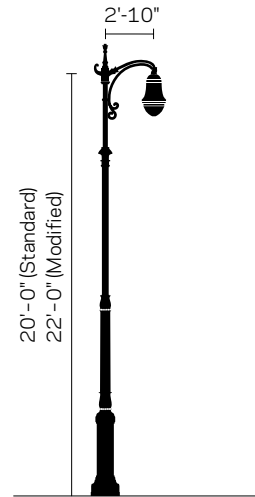


Pole with Shielded Teardrop luminaire: White Plains Road, Bronx

## Type F Pole

### Usage: Historic

The Type F pole, originally known as the Reverse Scroll Bracket, was developed in 1913 and installed on narrow streets downtown on Seventh Avenue. Bracket versions of the Reverse Scroll were also attached to the facades of buildings. The reproduction of the Reverse Scroll was introduced in the late twentieth century as the Type F pole.



### Applications

Selected historic districts

Streets with roadway width of less than 36 feet

Single or twin-mounting

Within historic districts, LPC approval is required; outside of historic districts, PDC approval is required

### Luminaire

#### Teardrop

100 W maximum LED

IES Type III

### Material/Color

Ductile iron pole/black

### Cost Compared to SSL

\$\$\$\$\$

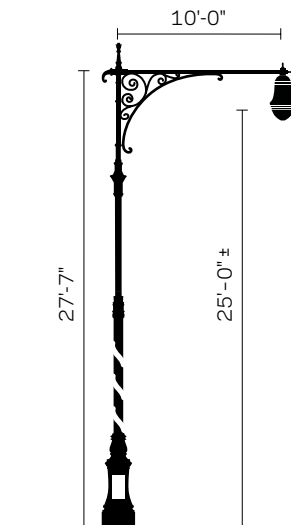


8th Street, Manhattan

## Type M Pole

### Usage: Historic

The Type M pole, originally known as the Mast-Arm post, was introduced in 1908 for wide streets at corners on Broadway north of Columbus Circle and on Seventh Avenue north of Central Park. Bracket versions of the Mast-Arm were also attached to the facades of buildings. The reproduction of the Mast-Arm was introduced in the late twentieth century as the Type M pole.



### Applications

Selected historic districts

Streets with roadway width of 36 feet or more

Single or twin-mounting

Within historic districts, LPC approval is required; outside of historic districts, PDC approval is required

### Luminaire

#### Teardrop

150 W maximum LED

IES Type III

### Material/Color

Ductile iron pole/black

### Cost Compared to SSL

\$\$\$\$\$



Atlantic Avenue, Brooklyn



# World's Fair Pedestrian Pole

Usage: Distinctive

The World's Fair pedestrian light was first installed in 1964 during the World's Fair held in Flushing Meadows Park in Queens. The pole is now installed in many city parks, in plazas, and along pedestrian malls and bikeways.

Applications

Parks, plazas, and esplanades

PDC approval is required

Luminaire

2085

76W maximum LED

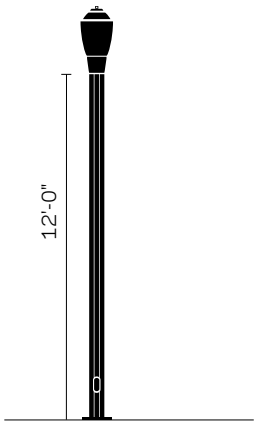
IES Type III or V

Material/Color

Steel/black, silver

Cost Compared to SSL

\$



Flushing Meadows Corona Park, Queens

## Type B Pedestrian Pole

### Usage: Distinctive

The Type B pedestrian light was originally introduced in 1911 by designer Henry Bacon for the Central Park Mall and later installed in other city parks. The current version of the Type B pole was developed in the late twentieth century and offers a more traditional design for pedestrian areas such as parks and plazas.

### Applications

Parks, plazas, esplanades, and pedestrian bridges

Not suitable for use on roadways, except under elevated structures

PDC approval is required

### Luminaire

**Riverside Park, Battery Park, Central Park, and 2085**

76W maximum LED

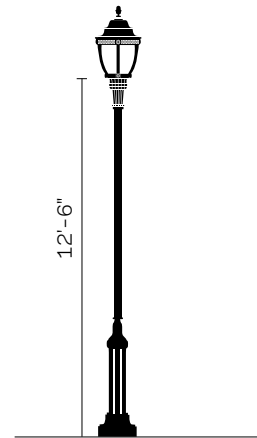
IES Type III or V

### Material/Color

Ductile iron pole/black

### Cost Compared to SSL

\$\$



Pole with Riverside Park luminaire: East River Park, Manhattan

# Flushing Meadows Pedestrian Pole

Usage: Distinctive

The Flushing Meadows pedestrian light was first installed in 2004 by Parks in Canarsie Park in Brooklyn. The pole is now installed in many city parks and plazas.

Applications

- Parks, plazas, esplanades, and pedestrian bridges
- Not suitable for use on roadways, except under elevated structures
- Consider aluminum pole in high salt environments
- PDC approval is required

Luminaire

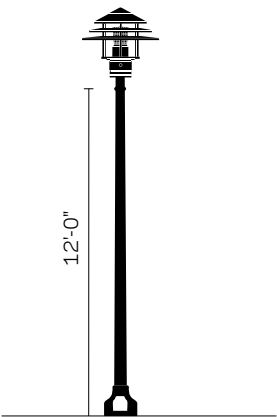
**Flushing Meadows**  
70W maximum LED  
IES Type III or V

Material/Color

HDG Steel or Aluminum/black, silver

Cost Compared to SSL

\$\$



East River Park, Manhattan



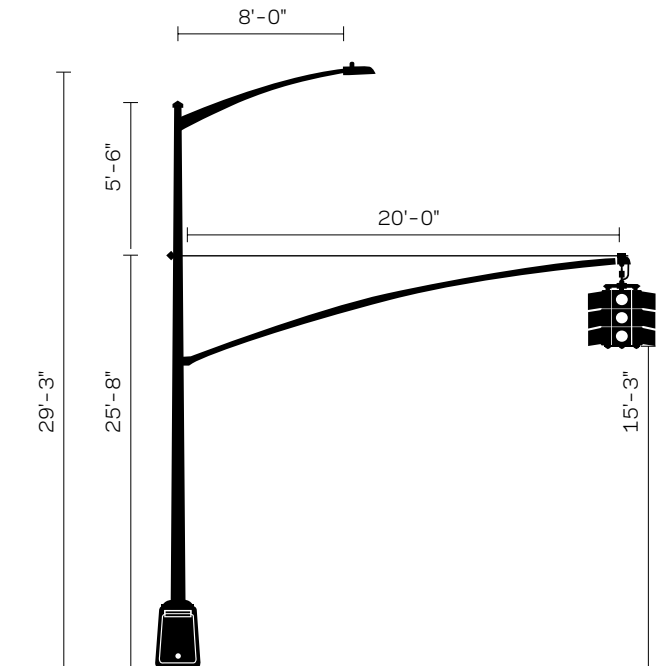
# 4.3 Signal Poles

## Type M-2A Signal Pole

### Usage: Standard

Introduced in 1964 as the M-2, the octagonal M-2A traffic signal pole is Standard for use at all traffic signal locations. A 5-foot mast-arm extension can be used to bring the signal farther out over the roadway, if necessary.

With a 7-foot shaft extension, the M-2A can be used to hold a standard street light arm and a luminaire. It can also be made to resemble nearby Distinctive poles.



Type M-2A signal pole with City Light pole: W 47th Street and 7th Avenue, Manhattan



Type M-2A signal pole with Type M pole and Teardrop luminaire (Historic): 114th Street, Manhattan

### Applications

Holds signals and/or signs

Single- or double-mounting

Two M-2A poles per intersection, diagonally opposite from each other

Sometimes mounted on a concrete coastal storm foundation to provide necessary clearance or avoid moisture in the base

If a luminaire is necessary, shaft extension provides required clearance from signal

5-foot mast-arm extension holds signal farther out over the roadway, if necessary

Accessible Pedestrian Signals (APS) must be included when a traffic signal with a pedestrian signal is newly installed or fully replaced (includes pole, foundation, conduit, and signal equipment) or relocated

### Luminaire

**LED Cobra Head** (Standard)

**Teardrop** (Historic)

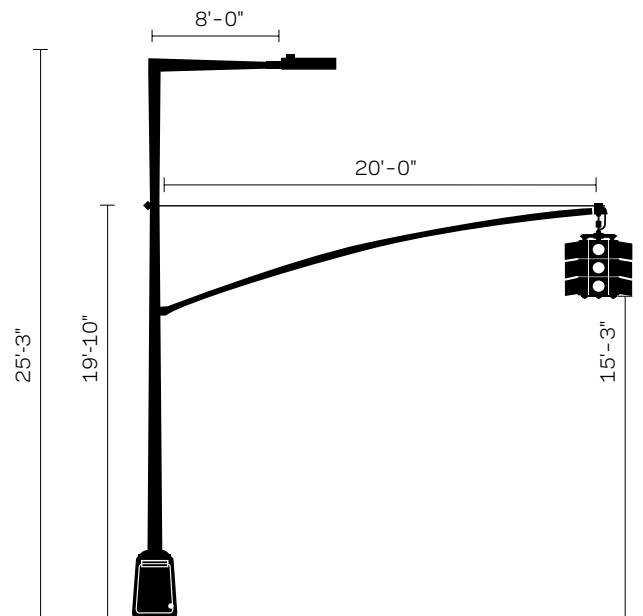
### Material/Color

HDG Steel/silver, black, green

## Alliance Signal Pole (Type S)

### Usage: Distinctive

The Alliance street lights were introduced in the Lower Manhattan financial district by the Alliance for Downtown New York. The signal pole can be used as a contemporary alternative to the standard M-2A signal pole only in conjunction with nearby Alliance street lights.



South Street, Manhattan

### Applications

Intersections

Accessible Pedestrian Signals (APS) must be included when a traffic signal with a pedestrian signal is newly installed or fully replaced (includes pole, foundation, conduit, and signal equipment) or relocated

### Luminaire

#### Alliance (Type S)

110W maximum LED  
IES Type II or III

### Material/Color

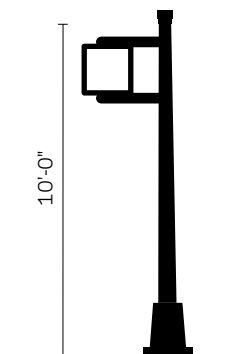
HDG steel/silver, black



## Type S-1A Signal Pole

### Usage: Standard

Introduced as the S-1 in 1965, the round S-1A signal pole holds pedestrian signals at corners where an M-2A signal pole or a light pole is not necessary. It also holds traffic signals on medians and traffic islands.



Type S-1A signal pole with a pedestrian signal: Madison Square Park, Manhattan

### Applications

Holds pedestrian and/or traffic signals

Accessible Pedestrian Signals (APS) must be included when a traffic signal with a pedestrian signal is newly installed or fully replaced (includes pole, foundation, conduit, and signal equipment) or relocated

### Luminaire

This pole does not hold a luminaire

### Material/Color

HDG Steel/silver, black, green

---

# Furniture





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# Furniture

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# Introduction



E 23rd Street, Manhattan

## About this Chapter

New York City's sidewalks host a wide variety of elements, from bike racks to bus shelters, meant to enhance pedestrian comfort, provide information and services, and encourage walking, biking, and transit use. Street furniture must be durable and well designed, and should visually complement the surrounding streetscape. This chapter describes the design and siting guidelines for street furniture.

## Clear Path

City regulations mandate that objects on sidewalks leave an unobstructed clear path for pedestrian flow. An 8-foot clear path must be maintained in areas with high pedestrian traffic, and a minimum 5-foot clear path must be maintained in areas with low pedestrian traffic. DOT may require up to 15 feet in locations with particularly high pedestrian volumes. Exceptions may be approved by DOT on a case-by-case basis. Most street furniture should be placed 18 inches from the curb to allow for motor vehicle access. To accommodate pedestrians with vision disabilities, the lowest edge of any ground-level protruding object should be no more than 2.25 feet above the sidewalk, and the lowest edge of any protruding object suspended above the sidewalk should be a minimum height of 7 feet.

## Clutter

DOT generally discourages the installation of street furniture and other permanent objects on streets where they may restrict pedestrian circulation and degrade the visual quality of the street.

## Design

Light poles, WalkNYC Wayfinding signs, seating, bike racks, bus shelters, and other fixed elements play a supporting role on New York City streets. Consistent design of those varied elements is an important consideration in their selection and siting.

Furniture should be designed to accommodate as wide a range of potential users as possible. Considerations include interface height, amount of force that must be applied to buttons or movable objects, color schemes and level of contrast with surrounding materials, and adjacent clear path.

### Property Lines

Property owners must determine the exact locations of their property lines by consulting the surveys provided to them upon purchase of their properties or by retaining licensed surveyors to prepare such surveys. While the metes and bounds of private properties are clearly described in deeds and other real property documents, existing outdoor structures may not be consistent with these boundaries.

### Resiliency

Street furniture and other permanent objects should be constructed using resilient materials that can withstand periodic temporary inundation by both fresh and salt water, particularly when located in flood-prone areas. Designers should focus particular attention on the elevation and protection of critical electrical components.

### Revocable Consents

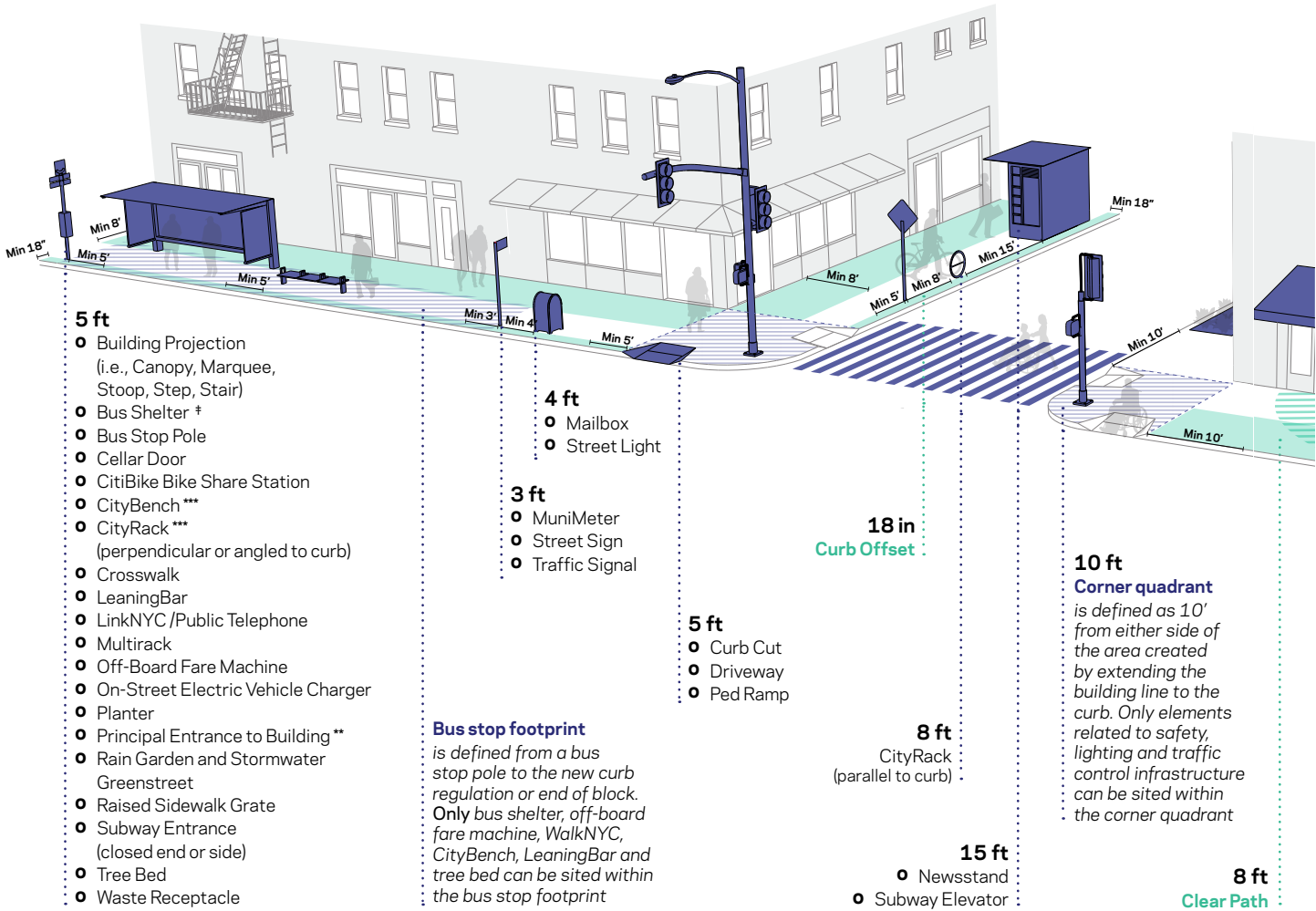
The city grants a revocable consent to construct and use certain structures on, over, or under its inalienable property—in this case, city roadways and sidewalks. The city retains its right to revoke this consent at any time, and PDC review may be required for revocable consents. For more information on revocable consents, visit [www.nyc.gov/html/dot/html/permits/revconif.shtml](http://www.nyc.gov/html/dot/html/permits/revconif.shtml).

### Security Structures

Security structures are fixed objects, such as bollards, installed around the perimeter of a building or public space to reduce the risk of vehicle-based attacks and blast impacts from vehicle-born explosives. A property owner who wishes to install security structures must apply for a revocable consent from DOT. The application is forwarded to the NYPD Counterterrorism Division, which reviews security-related information provided by the property owner. If the NYPD determines that security structures are necessary, it works with the property owner's architect/engineer to develop a conceptual plan of an effective security perimeter.

DOT then works with the owner and architect/engineer to develop plans that will provide the security perimeter required by NYPD and will fit in with all other structures that are already in, under, and above the affected streets. DOT then coordinates an expedited interagency review, including submission to PDC or LPC, of the plans. Plans are reviewed on a case-by-case basis to confirm that the structures are necessary and effective, minimize impact on pedestrian and vehicular traffic, and are aesthetically appropriate.



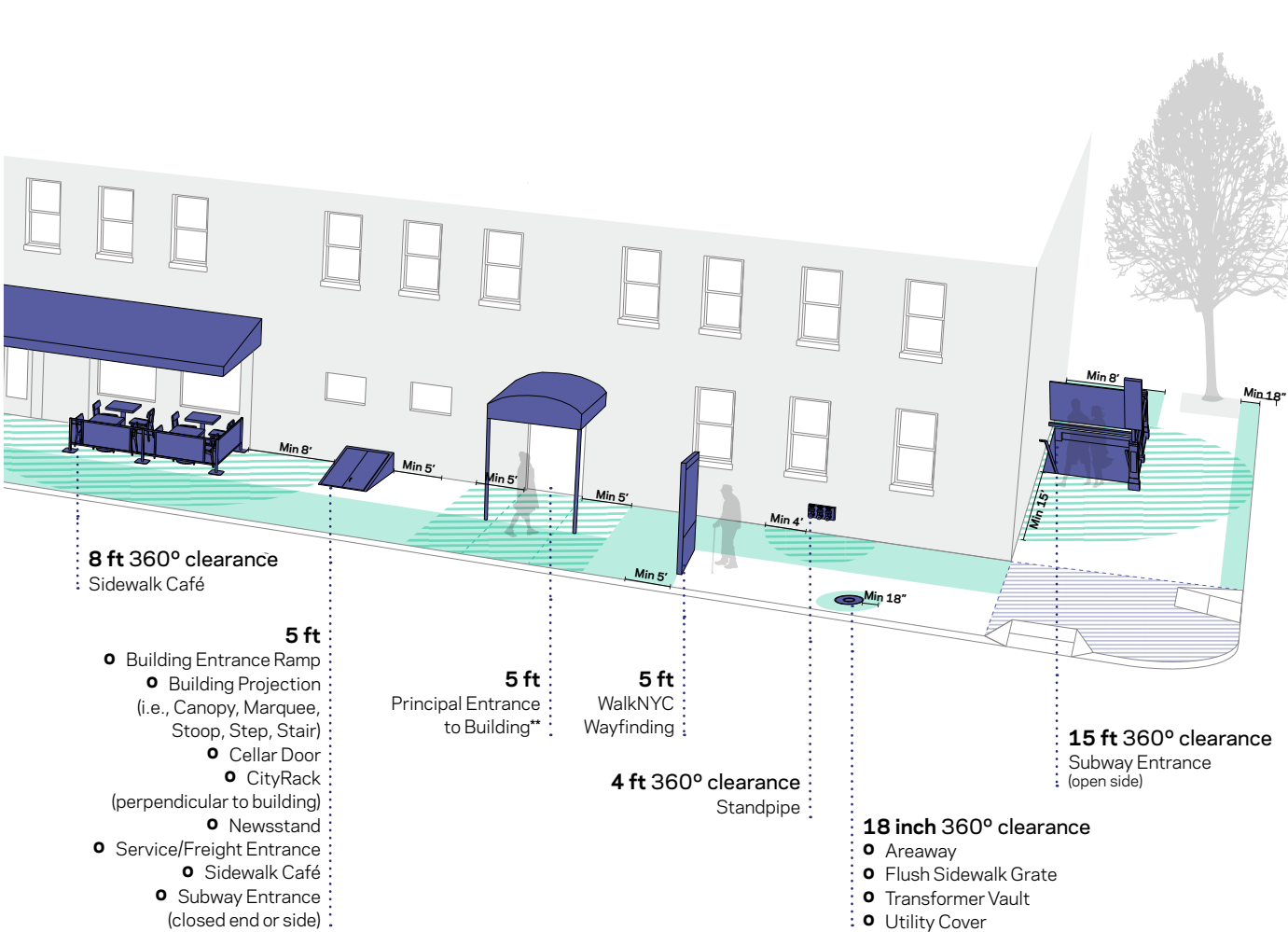


Element at curb

Distance*	Parallel clearance from:
25'	Main Entrance to School **
15'	Newsstand Subway Elevator
10'	Directional Sign Fire Hydrant
8'	CityRack (parallel to curb)
5'	Building Projection (i.e., Canopy, Marquee, Stoop, Step, Stair) Bus Shelter † Bus Stop Pole Cellar Door CitiBike Bike Share Station CityBench *** CityRack *** (angled or perpendicular to curb) Crosswalk Curb Cut Driveway LeaningBar LinkNYC /Public Telephone Multirack

Distance*	Parallel clearance from:
5'	Off-Board Fare Machine On-Street Electric Vehicle Charger Ped Ramp Planter Principal Entrance to Building ** Rain Garden and Stormwater Greenstreet Raised Sidewalk Grate Subway Entrance (closed end or side) Tree Bed WalkNYC Wayfinding Waste Receptacle (i.e., Trash Can, Recycling Can, Solar Trash Compactor)
4'	Mailbox Street Light
3'	MuniMeter Street Sign Traffic Signal
2'	FDNY Call Box

Any element not listed requires additional approval  
\* Distance must be measured in a straight line from the edge of the element requiring clearance to the edge of the element being sited  
\*\* Clearance extends perpendicularly to the curb  
\*\*\* Same clearances apply to any bench or bike rack  
† Bus Shelter must be sited a minimum of 3'-6" from curb



Element at building/property line

Distance*	Parallel clearance from:
25'	Main Entrance to School **
15'	Subway Elevator
10'	Loading Dock
8'	CityRack (parallel to building)
5'	Building Entrance Ramp Building Projection (i.e., Canopy, Marquee, Stoop, Step, Stair) Cellar Door CityRack (angled or perpendicular to curb) Newsstand Principal Entrance to Building Service/Freight Entrance Subway Entrance (closed end or side)

Element with 360° clearance

Distance	360° clearance from:
15'	NYCT/MTA/PATH Emergency Egress Subway Entrance (open side)
8'	Sidewalk Cafe
4'	Standpipe
1'-6"	Areaway Flush Sidewalk Grate Transformer Vault Utility Cover

**Legend**

- Element
- Clearance
- Special clearance
- 360° clearance

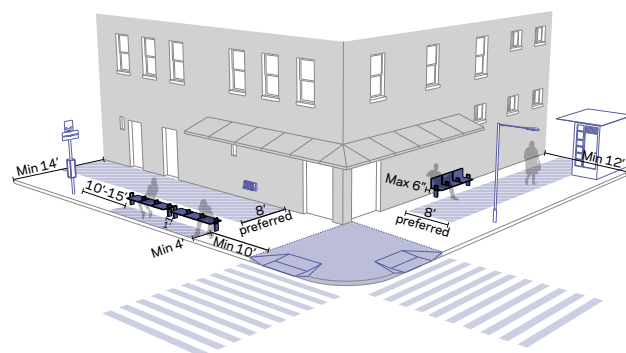
The siting diagram above specifies minimum clearances between furnishings and other elements of the right-of-way. In addition to minimum clearances, furnishings should not obstruct views of designated individual or scenic landmarks or of permanent public art. This table does not include all siting guidelines and is not an exhaustive list. It is provided as a reference tool, for informational purposes only.

---

# Seating

## CityBench

Through its CityBench program, DOT installs benches at bus stops and in commercial areas to support transit use and to encourage walking. DOT installs two types of benches; both are designed to enhance usability for older adults and people with ambulatory disabilities.



Backed CityBench



Backless CityBench

### Description

Backed: 7'-6" L x 20.5" W x 1'-6" H (seat) / 2'-10.375" H (back)

Backless: 7'-6" L x 20.5" W x 1'-6" H (seat) / 1'-10.625" (handle)

Variations in color and finish may be considered, but require PDC approval and a maintenance agreement with DOT

### Siting

Locations that meet DOT's strategic objectives — e.g., at bus stops without shelters and Access-A-Ride designated stops, near senior centers, along commercial corridors, and near cultural institutions

Benches adjacent and parallel to the building shall be installed no more than 12 inches from the building face

Benches adjacent and parallel to the curb must be placed 36 inches from the curb

Minimum clear path: 8 feet

See FURNITURE: SITING GUIDELINES

### Installation

DOT personnel install and maintain CityBenches

CityBenches must be installed on concrete; if distinctive paving materials are present, a concrete foundation can be utilized with appropriate detailing

### For More Information

New Yorkers can request a CityBench at [www.nyc.gov/citybench](http://www.nyc.gov/citybench)

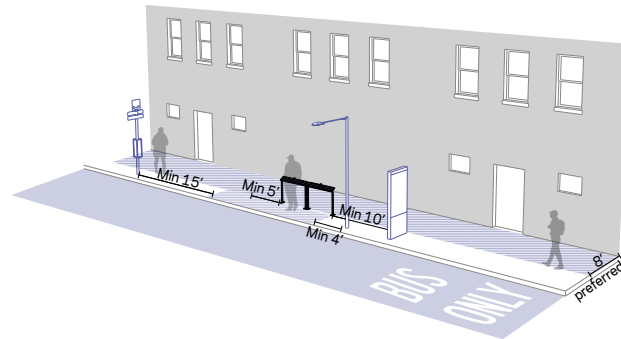
Email [citybench@dot.nyc.gov](mailto:citybench@dot.nyc.gov) to report damage

The installation of benches outside of the CityBench program is permitted but requires an agreement with DOT. For complete regulations regarding revocable consents, including siting requirements, refer to Rules of the City of New York, Title 34, Chapter 7 and on the web at [www.nyc.gov/html/dot/html/permits/revconif.shtml](http://www.nyc.gov/html/dot/html/permits/revconif.shtml)



## LeaningBar

The LeaningBar, a new element for Select Bus Service and other high ridership bus stops, complements CityBenches by providing another opportunity for transit riders to rest as they wait for the bus. Leaning can be especially appealing to older adults for whom sitting requires greater effort.



34th Street, Manhattan



### Description

8' L x 8" W x 2'-10.75" H

Anodized aluminum casting and stainless steel

### Siting

Currently, DOT sites LeaningBars along Select Bus Service routes, typically in line with the bus shelter, fare machines, WalkNYC Wayfinding signs and CityBenches

See FURNITURE: SITING GUIDELINES

### Installation

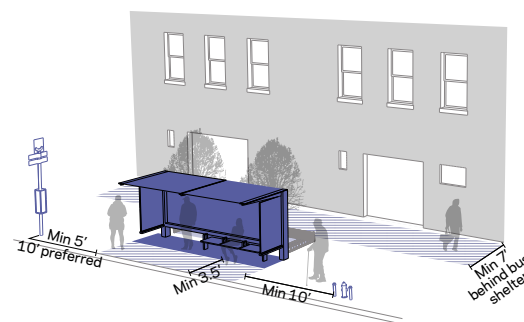
DOT personnel install and maintain LeaningBars

### For More Information

Email [LeaningBar@dot.nyc.gov](mailto:LeaningBar@dot.nyc.gov) for information or to report damage

## Bus Stop Shelter

Bus stop shelters are part of the Coordinated Street Furniture Franchise that is managed by JCDecaux. The award-winning, stainless-steel and glass design provides seating and protection for bus users. Bus stop shelters are supported by advertising and generate revenue for the city.



Castleton Avenue, Staten Island



Bedford Avenue, Brooklyn

### Description

Shelters are configured in five sizes:

Regular: 14' L x 5' W x 8'-11" H

Narrow: 14' L x 3'-6" W x 8'-11" H

Short: 10' L x 5' W x 8'-11" H

Little: 10' L x 3'-6" W x 8'-11" H

Double: 26' L x 5' W x 8'-11" H

Advertising panels on sides; clear glass on back

Stainless steel and glass

### Siting

Minimum clear path: 7 feet

All shelters must allow a straight unobstructed path of a minimum of 3 feet between the shelter and the curb

Installation requires 6-8 inches sub-surface clearance

See FURNITURE: SITING GUIDELINES

### Installation

As of 2019, all shelters available pursuant to the franchise agreement have been installed

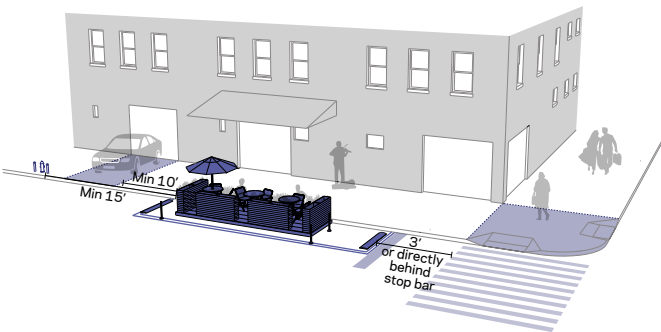
JCDecaux is responsible for all construction or maintenance related to bus stop shelters

### For More Information

To learn more about the Coordinated Street Furniture Franchise, call 311, visit [www.nyc.gov/dot](http://www.nyc.gov/dot), or email [streetfurniture@dot.nyc.gov](mailto:streetfurniture@dot.nyc.gov)

# Street Seat

A temporary seating installation in the furnishing zone or parking lane that creates an inviting location for eating, reading, working, meeting a friend, or taking a rest during the warm-weather months. Interested parties apply to DOT, select the design, and install and maintain the Street Seat. Any type of business or institution (such as a museum or community organization) that owns or operates the frontage at the ground floor of a building may be eligible to install and maintain a Street Seat. Business Improvement Districts (BIDs) and non-profit organizations without frontage are also eligible, if they work in partnership with a local business that does have frontage.



New School, E 13th Street and 5th Avenue, Manhattan



Pitkin Avenue and Rockaway Avenue, Brooklyn

## Description

Standard Design: 20' L x 6' W

Stainless steel, aluminum, lumber, composite, plastic

Designs on gravel without platform are preferred

Custom designs are allowed, and will be reviewed on a case-by-case basis

## Siting

All potential Street Seat sites are expected to be both safe and practical

Site must be a pleasant place to sit

Adjoining sidewalk must be free of major obstructions such as fire hydrants, driveways, newsstands, or bus stops

The lane along the curb cannot be a moving traffic lane at any time of day. The parking regulations at the curb must be suitable for the installation

All applications for Street Seats require support from the property owner and approval from the local Community Board prior to installation

The presence of certain types of underground utilities may render locations unsuitable for Street Seats

Applications must be resubmitted annually

See FURNITURE: SITING GUIDELINES

## Installation

Annual installation and removal are coordinated by the maintenance partner

DOT installs operational elements, such as signage, wheel stop bars, striping on the parking lane, and/or temporary plastic bollards

## For More Information

Visit [www.nyc.gov/streetseats](http://www.nyc.gov/streetseats)

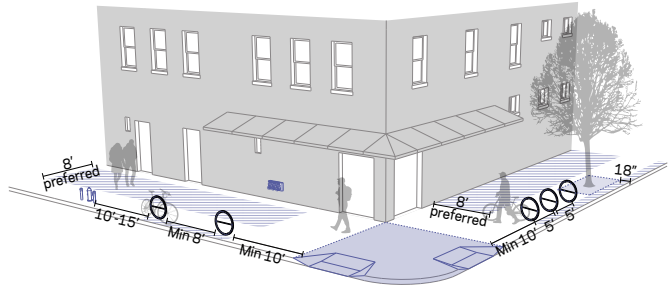


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# Bikes

## CityRack (Large Hoop)

CityRacks provide bike parking on sidewalks. Installations are driven by requests from the general public. The product of an international design competition held in 2009, the CityRack has been recognized for its combination of function and elegance, and has been added to the permanent collection of the Madsonian Museum of Industrial Design.



### Description

33.7"-diameter, cast-metal circle with a horizontal bar across the center

### Siting

Must be installed on city-owned property

12-foot minimum sidewalk width

Away from pedestrian flow, usually at the curb, and always away from crosswalks

If installed at the curb, clearance from the curb must be a minimum of 18 inches

Can only be installed on concrete

See FURNITURE: SITING GUIDELINES

### Installation

DOT installs and maintains large hoop CityRacks requested through the program

### For More Information

Visit [www.nyc.gov/cityracks](http://www.nyc.gov/cityracks) for more information or to fill out the online form to suggest a location for a CityRack

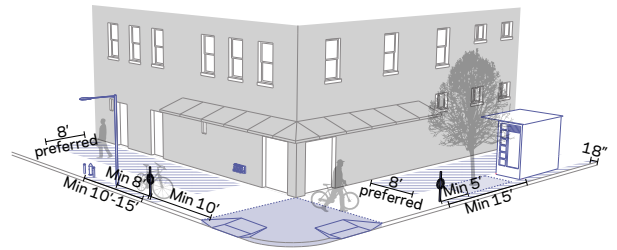
Email [cityrack@dot.nyc.gov](mailto:cityrack@dot.nyc.gov) to report damage



Large hoop CityRack

## CityRack (Small Hoop)

DOT developed the small hoop CityRack, or MeterRack, a mini version of the large hoop CityRack, in 2011 to provide more bike parking cost-effectively and to repurpose parking meter poles that are rendered obsolete by new MuniMeters. The MeterRack is the predominant bike rack on sidewalks along commercial corridors. See FURNITURE: CITYRACK (LARGE HOOP).



### Description

18"-diameter, cast-metal circle

### Siting

On existing, retired parking meter poles

See FURNITURE: SITING GUIDELINES

### Installation

DOT installs and maintains small hoop CityRacks on parking meter poles as they are retired

### For More Information

For more information, visit [www.nyc.gov/cityracks](http://www.nyc.gov/cityracks)

To report damage, email [cityrack@dot.nyc.gov](mailto:cityrack@dot.nyc.gov)

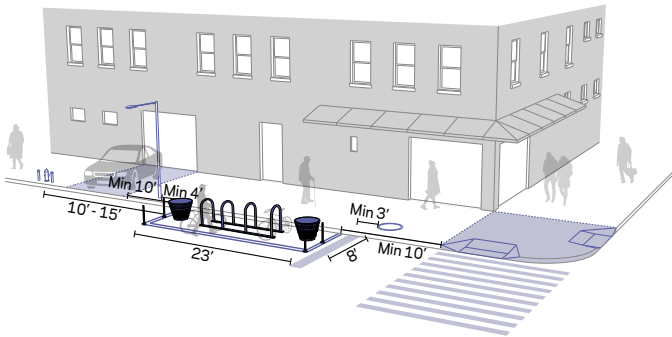


Small hoop CityRack



# BikeCorral

BikeCorrals are clusters of bike racks installed in the roadbed, along the curb line instead of on the sidewalk. Corrals are installed where demand for bicycle parking exceeds the available sidewalk space. Anyone can request a BikeCorral but must agree to be a maintenance partner and keep the corral clear of debris and snow. Potential maintenance partners may be businesses, community groups, or individual volunteers.



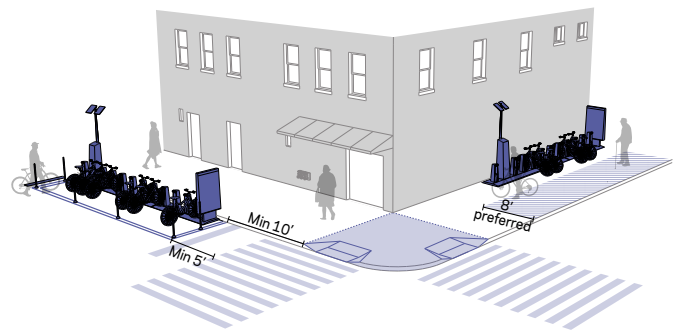
BikeCorral outside P.S. 118 Maurice Sendak Community School: 7th Street, Brooklyn

Description
23' min. L x 8' W
Powder coated or galvanized steel
Siting
<ul style="list-style-type: none"><li>15 feet: fire hydrants, bus stops, taxi stands or hotel loading zones, franchise structures, subway entrances</li><li>10 feet: corner quadrants, driveways, building entrances (building line installations only)</li><li>5 feet: above-ground structures</li><li>3 feet: tree-bed edges, grates, utility covers</li></ul>
DOT meets with applicants and determines if bike corrals are appropriate by measuring the potential site and assessing the demand for bike parking

DOT and the partner present proposed bike corrals to the local Community Board for its approval
See FURNITURE: SITING GUIDELINES
Installation
DOT designs bike corrals specific to the site
Some designs include large planter pots
BikeCorrals are maintained by the partner
Installation is done by DOT and always in a curbside or floating parking lane
For More Information
For more information, visit <a href="http://www.nyc.gov/bikecorrals">www.nyc.gov/bikecorrals</a>
To report damage, email <a href="mailto:bikecorrals@dot.nyc.gov">bikecorrals@dot.nyc.gov</a>

## Bike Share Station

Citi Bike, New York City's bike share system, provides access to a network of public bicycles intended for short, one-way trips. Lyft owns, operates, and maintains the bike share system, with oversight from DOT. The system comprises over 750 self-service docking stations for over 12,000 bikes, available for use 24 hours a day throughout the year. Stations generally hold 15 to 59 bicycle docks. The station design complements many of the city's other street furniture elements.



Pershing Square, Park Avenue and E 42nd Street, Manhattan



31st Street and Hoyt Avenue N, Queens

### Description

Modular plates (without bikes): 10' L x 3' W

Standard, four docks (with bikes): ~6' W

Angled, three docks (with bikes): ~4'-6" W

Double-sided, six docks (with bikes): ~9' W

Kiosk: 6'-6.565" H (kiosk top) / 11'-0.625" H (solar panel)

Typically composed of 4-15 plates (40-150 feet long) with 15 to 59 docks

Includes a wayfinding map that indicates locations of nearby bike share stations, transit connections, landmarks, etc.

Solar-powered and connected to a central computer via existing wireless networks; stations are not wired, trenched, bolted, or fixed into the ground

Plates can be non-contiguous, bridging obstacles such as tree beds with an 8-inch-wide connecting channel

Can be configured in a number of ways, including linear, L-shaped (i.e., turning around a corner), or back-to-back

### Siting

Located in curb lanes of roadways, on sidewalks, in plazas, or on publicly accessible private property

Siting guidelines differ based on location type

See FURNITURE: SITING GUIDELINES

### Installation

Stations are installed by Lyft

### For More Information

To learn more about bike share stations, visit [nycdotbikeshare.info](http://nycdotbikeshare.info)

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# Information & Services



## Electric Vehicle Charger

A pedestal, typically with a charging cord, for charging electric vehicles. In keeping with the city's greenhouse gas emission reduction goals as outlined in the *1.5°C Climate Action Plan* and *80x50*, the city is partnering with Consolidated Edison (Con Ed) to deploy over 60 on-street electric vehicle (EV) chargers across the city as a 3-year pilot program.

### Description

Pedestal with charging cord, cord management system, and customer interface for payment

The initial pilot deployment will use chargers provided by FLO, a subsidiary of AddEnergie

### Siting

Must be located within the furnishing zone

DOT and Con Ed collaboratively site EV chargers

See FURNITURE: SITING GUIDELINES

### Installation

Con Ed installs on-street chargers

### For More Information

To learn more about EV chargers, visit [www.nyc.gov/plugnyc](http://www.nyc.gov/plugnyc)



Rendering of pilot EV charger at Myrtle Avenue and Clermont Avenue, Brooklyn (Credit: WXY)

# LinkNYC Kiosk

LinkNYC is a communications network providing free high-speed public Wi-Fi in place of the city’s aging pay phone infrastructure. Managed by DoITT, CityBridge, the franchisee, will install 7,500 LinkNYC kiosks (“Links”) throughout the five boroughs. Each Link provides Wi-Fi, nationwide calling, a dedicated 911 button, charging ports for mobile devices, and access to maps, 311, and other services. NYCEM works with CityBridge to post emergency notices on the Links. The LinkNYC network is supported by advertising and generates revenue for the city.

## Description

35” L x 11” W x 9’-6” H

Aluminum and glass shell with LCD advertising displays, a touch-screen for user interface, and integrated LED lighting

## Siting

Links are primarily being installed to replace existing payphones

When new sites are proposed, DoITT consults the relevant Borough President, Council Member, Community Board, and Business Improvement District, and posts the sites on Open Data

All Links and payphones with advertising must be in districts zoned to allow commercial or manufacturing uses

A pedestrian clear path of 8 feet or one-half the sidewalk width must be maintained

Additional clearance requirements for Links and payphones are contained in Chapter 6 of Title 67 of the Rules of the City of New York

See FURNITURE: SITING GUIDELINES



14th Street, Manhattan

## For More Information

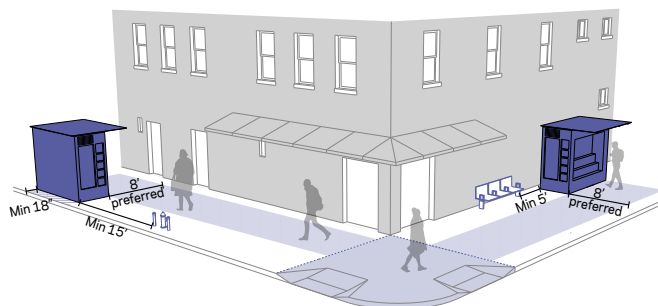
DoITT Website: [www1.nyc.gov/site/doitt/initiatives/linknyc.page](http://www1.nyc.gov/site/doitt/initiatives/linknyc.page)

CityBridge LinkNYC website: [www.link.nyc](http://www.link.nyc)

Visit [opendata.cityofnewyork.us](http://opendata.cityofnewyork.us) for more information on locations of installed, approved, and proposed sites for Links

## Newsstand

Newsstands are part of the Coordinated Street Furniture Franchise. They are fabricated from stainless steel and glass. The product displays can be customized by each operator from a standard kit of parts.



LEFT and RIGHT: Small and large newsstands: Wall Street, Manhattan



### Description

Newsstands are available in multiple sizes to accommodate varying site conditions, and PDC generally recommends the following dimensions:

- o 8' or 10' L x 4' W x 9' H
- o 10' or 12' L x 5' W x 9' H (although 8' L is acceptable when site conditions dictate)
- o 12' L x 6' W x 9' H (although 10' L is acceptable when site conditions dictate)

### Siting

New newsstand applications are administered by DCWP and reviewed by DOT and either PDC or LPC

JCDecaux installs new newsstands at locations approved by DCWP, DOT, and PDC. PDC's newsstand guidelines can be found at [www1.nyc.gov/site/designcommission/review/design-guidelines/newsstands.page](http://www1.nyc.gov/site/designcommission/review/design-guidelines/newsstands.page)

Minimum clear path: 9.5 feet

Minimum of 18 inches from the curb

Avoid installation at sites where the newsstand would block views of artwork or landmarked structures or where PDC has previously rejected placement, unless a change in site conditions since the initial PDC determination can be documented by the applicant

Installation of three or more newsstands at a single intersection is discouraged

Non-static digital advertising is only permitted in approved flashing sign districts

For complete siting criteria, refer to DCWP rules and regulations at [www1.nyc.gov/site/dca/businesses/license-checklist-newsstand.page](http://www1.nyc.gov/site/dca/businesses/license-checklist-newsstand.page)

See FURNITURE: SITING GUIDELINES

### Installation

Businesses apply to DCWP for licenses to operate newsstands in specific locations

Once a location and newsstand proportions are approved, the newsstand operator is responsible for reimbursing the franchisee (JCDecaux) for the cost of construction

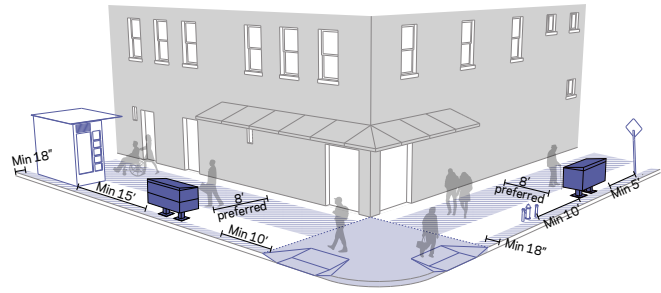
### For More Information

To learn more about the Coordinated Street Furniture Franchise, call 311, visit [www.nyc.gov/dot](http://www.nyc.gov/dot), or email [streetfurniture@dot.nyc.gov](mailto:streetfurniture@dot.nyc.gov)



## Multirack

A multirack is a newsrack — a self-service newspaper dispenser — designed to hold two or more publications. DOT encourages the use of multiracks in lieu of standard single newsracks because they help reduce streetscape clutter. Multiracks, like single newsracks, require registration with DOT, proof of insurance, and indemnification of the City of New York.



### Description

7'-6" max. L x 3' max. W x 5' max. H

Advertising is not allowed on multiracks

Typically made of powder-coated steel

### Siting

Various clearance requirements apply. Section 19-128.1 of Chapter 1 of Title 19 of the Administrative Code of the City of New York together with Section 2-08 of Chapter 2 of Title 34 of the Rules of the City of New York specify how and where a newsrack can be placed as well as the registration, maintenance, insurance, and indemnification requirements

See FURNITURE: SITING GUIDELINES

### Installation

Multiracks may be bolted if a DOT permit has been issued for that purpose

For installation on a distinctive sidewalk, written permission from the person or entity responsible for the maintenance of the distinctive sidewalk is required

### For More Information

Please contact the Newsrack Unit at [newsracks@dot.nyc.gov](mailto:newsracks@dot.nyc.gov)



Hunter College, Lexington Avenue, Manhattan

## MuniMeter

Multi-space parking meters, commonly referred to as MuniMeters, regulate parking along commercial and retail corridors across New York City. There are over 14,500 MuniMeters, each regulating multiple spaces. The first generation of MuniMeter was introduced in 1989, and in 2015 the city completed its transition to the current meter, reducing the number of individual meter devices required and increasing the number of parking spaces available on a given block. Motorists pay at the nearest MuniMeter using cash or credit cards and display their receipts on the dashboard.

### Description

- 18.7" L x 15.79" W x 67.48" H
- Anti-corrosive and anti-graffiti coated steel

### Siting

Locations for MuniMeters are selected based on the current policy of the Bureau of Parking, which takes into consideration the following criteria: demand for parking, duration of parking, overall supply of parking in area and type, enforcement oversight, surrounding land use, and community demographics

Should not be more than 6 car lengths from a covered parking spot

Locate at the borderline between properties where possible

Avoid locations that obstruct buildings or storefronts

Must be 30 inches from the curb

See FURNITURE: SITING GUIDELINES

### Installation

DOT personnel site and install MuniMeters

All removals and relocations require coordination with or removal by DOT

### For More Information

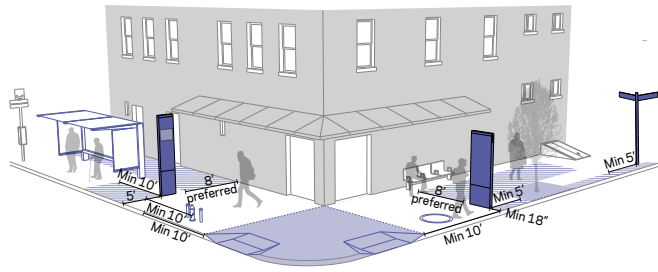
Individuals can request the installation of MuniMeters through 311 or [www.nyc.gov/dot](http://www.nyc.gov/dot)



MuniMeter

## WalkNYC Wayfinding

The WalkNYC Wayfinding system encourages walking, transit use, and cycling by providing easy-to-understand maps and directional information. DOT installs a family of wayfinding elements citywide.



### Description

Maps are “heads-up”—they are oriented according to the direction the user is facing

Three sign types serve pedestrians and transit users:

#### Pedestrian:

- Available in 3 sizes for maximum siting flexibility:
  - Path: 1'-6" L x 5" W x 8'-8" H
  - Area: 2'-10" L x 5" W x 8'-6" H
  - Neighborhood: 4'-2" L x 5" W x 8'-4" H
- Installed on sidewalks and in large public spaces, at decision-making points, difficult-to-navigate areas, transit hubs, and major destinations
- Map content highlights walking distances, subway and bus information, street names, building numbers, cardinal directions, and landmarks that provide critical orientation and route planning information

#### Fingerpost:

- 43" L flag, 11'-6" H
- Provides directional information to local destinations

#### Real-Time Bus Arrival Information:

- 2' L x 5" W x 10'-1" H
- Installed at stations along SBS routes and at other high ridership bus stops
- Provides real-time bus arrival information
- Maps include bus routes and route destinations in addition to the standard WalkNYC Wayfinding sign content



WalkNYC Wayfinding Path (Type A) pedestrian sign: Nostrand Avenue, Brooklyn



WalkNYC Wayfinding Area (Type B) pedestrian sign: Canal Street, Manhattan



## Siting

Minimum 18 inches from the curb

Maps are installed at bike share stations, at NYC Ferry landings, in most subway station mezzanines, and at a selection of other existing kiosks or sign locations citywide

See FURNITURE: SITING GUIDELINES

## Installation

DOT is responsible for installation and maintenance; signs may be installed as part of DDC capital projects

## For More Information

Visit [www.nyc.gov/walknyc](http://www.nyc.gov/walknyc) or email [walknyc@dot.nyc.gov](mailto:walknyc@dot.nyc.gov)



WalkNYC Wayfinding Neighborhood (Type C) pedestrian sign: Times Square, Broadway and W 46th Street, Manhattan



WalkNYC Wayfinding Fingerpost: 2nd Avenue and E 102nd Street, Manhattan



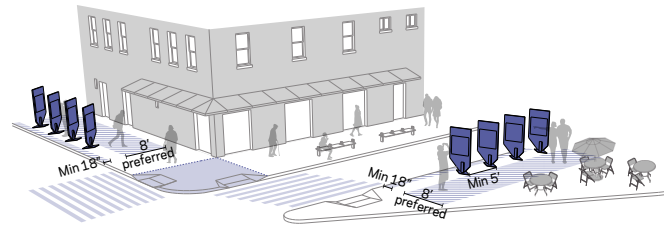
WalkNYC Real-Time Bus Arrival sign: E 125th Street and Madison Avenue, Manhattan

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# Other Elements

## Art Display Case

DOT partners with local institutions to curate rotating, temporary exhibits for standard art display cases, which are positioned in plazas and on large sidewalks around the city. See PROGRAMMING: DOT ART PROGRAM.



E 161st Street between Concourse Village West and Morris Avenue, Bronx



Water Street between Maiden Lane and Pine Street, Manhattan

### Description

3'-10" L x 7'-6" H

Displays art that is digitally printed onto vinyl and adhered directly to both sides

### Siting

Public plazas and wide sidewalks with a limited number of street elements

Sites in close proximity to mass transit and commercial corridors with a high density of foot traffic

Minimum clear path: 8 feet

Minimum of 18 inches from the curb

See FURNITURE: SITING GUIDELINES

### Installation

Suggestions for display sites and exhibits can be sent to [arts@dot.nyc.gov](mailto:arts@dot.nyc.gov)

DOT is responsible for the installation, maintenance and removal of art display cases

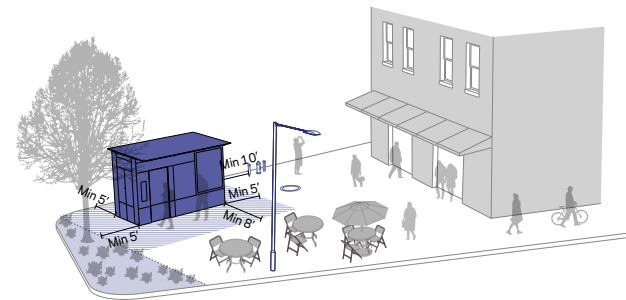
### For More Information

To learn more about the art display case, visit [www.nyc.gov/dotart](http://www.nyc.gov/dotart)



# Automatic Public Toilet (APT)

In response to the lack of public restrooms in New York City, JCDecaux, the Coordinated Street Furniture Franchisee, installs automatic public toilets (APTs). These self-cleaning, state-of-the-art facilities offer comfort, hygiene, accessibility, and security to the public.



LEFT and RIGHT: Exterior and interior of Automatic Public Toilet: Madison Square Park, Madison Avenue, Manhattan

## Description

12' L x 6'-7" W x 8'-9" H

Stainless steel and glass

## Siting

- On wide streets, only in commercial, manufacturing, or mixed-use districts
- On sidewalks or plazas on or adjacent to property owned or leased by a government agency or public authority, or under the jurisdiction of EDC
- On large traffic islands or public places bounded on all sides by mapped streets under the jurisdiction of DOT
- On or adjacent to parks or playgrounds, subject to the approval of Parks
- In close proximity to water, sewer, and electrical connections

- Minimum clear path in front: 8 feet; all other sides: 5 feet
- There must be no obstruction within 6 feet below the APT footprint
- Siting of APTs is subject to PDC review
- See FURNITURE: SITING GUIDELINES

## Installation

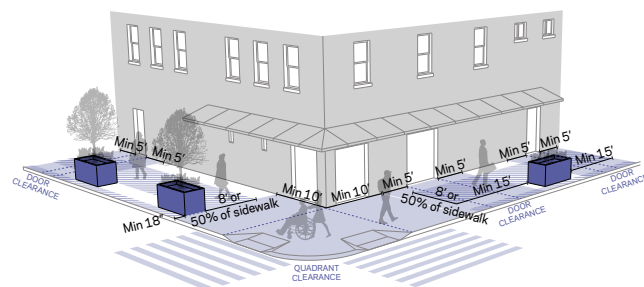
- DOT determines where to install APTs
- JCDecaux installs and maintains APTs at DOT's direction

## For More Information

To learn more about the Coordinated Street Furniture Franchise, call 311, visit [www.nyc.gov/dot](http://www.nyc.gov/dot), or email [streetfurniture@dot.nyc.gov](mailto:streetfurniture@dot.nyc.gov)

## Planter

Planters are decorative containers, of a variety of sizes and shapes, which support small trees and understory plantings. Planters are only encouraged where in-ground trees or plantings cannot be achieved.



168th Street, Manhattan



Flatbush Avenue, Brooklyn

### Description

Follow DOT's Permanent Planter Design Guidelines, available at [www.nycstreetdesign.info](http://www.nycstreetdesign.info); planters that do not adhere to these guidelines require PDC approval

Should be capable of providing suitable soil volume to allow trees to thrive; planters should provide a minimum 54 cubic feet of soil volume and may vary in dimension, with a 3-foot height preferred and a maximum 4-foot height

Construct with only one material that is durable and can withstand the elements; a thin wall profile is recommended as it provides more soil volume and is less obtrusive

Use waterproof and graffiti resistant surfaces; use a single color and avoid hue, brightness and saturation variations; neutral color palettes only

Taper planters above 3 feet in height to a narrower base and avoid tall cylinder shapes that restrict tree growth

Provide a lip (~2 inches) on the top of the planter

Ensure a reveal on the bottom of the planter

Planters should allow for uneven or sloped sidewalks while remaining level

Planters must have appropriate drainage

Advertising is not permitted on planters; limited sponsorship may be approved

See LANDSCAPE: PERMANENT PLANTER

### Siting

Located only on sidewalks that cannot support standard street trees or in-ground planting; may be located within the furnishing zone or against the building

Must be a minimum of 18 inches from the curb

8 feet or 50%, whichever is greater, of the sidewalk width must remain clear for 15 feet on either side of the planter

Smaller planters that support only understory plantings are sometimes used by DOT to delineate new pedestrian space; these planters are temporary and discouraged for permanent applications

See FURNITURE: SITING GUIDELINES

### Installation

Private applicants, community groups, BIDs, and other organizations may seek permission from DOT to install planters and will be responsible for maintenance

Planters are generally not fixed to the surface and are moveable by forklift or similar equipment

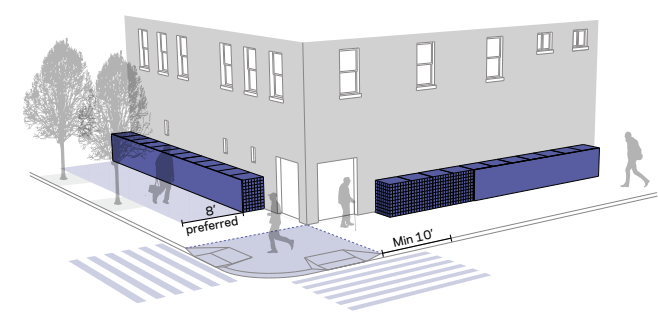
### For More Information

Refer to the Rules Related to Revocable Consents at [www.nyc.gov/html/dot/downloads/pdf/revconsent.pdf](http://www.nyc.gov/html/dot/downloads/pdf/revconsent.pdf)



# Temporary Flood Protection

Devices that can be deployed to reduce flood impacts to buildings, roadways, and other assets. NYCEM, in coordination with MOR and DOT, is siting barriers around the perimeters of strategic locations and critical facilities in flood-prone areas. These “blue-sky” barriers will be on site continuously, forming alignments that tie into high points and protect low-lying areas. Gaps in the alignments will accommodate facility access, pedestrian clear path, clearances from other street furniture, and other siting constraints. In the days prior to major storms, “just-in-time” measures will be deployed in these gaps to create complete flood barriers.



Beard Street, Brooklyn



East River Esplanade, Manhattan

## Description

Barriers: a wall of interconnected, rectangular containers of geotextile fabric with wire meshing, filled with sand or other organic matter. Artistic designs can be applied to the vertical face of the barrier

36-42" W x 36-48" H

Just-in-time measures: water-filled tubes stacked and strapped together to withstand floodwaters

Each tube 50' L and 24-36" in diameter

## Siting

NYCEM, in coordination with MOR, DOT, NYPD, DEP, Parks, and adjacent property owners as necessary, sites temporary flood protection measures

PDC approval is required

Access and circulation are paramount in the planning of temporary flood protection measures in the right-of-way

For building flood protection, deployable systems are installed around the perimeter of the building

For systems intended to provide flood protection to larger geographic areas like neighborhoods, temporary installation occurs in sidewalk or roadway areas, and should minimize pedestrian and vehicular flow impacts

See FURNITURE: SITING GUIDELINES

## Installation

NYCEM installs temporary flood protection measures

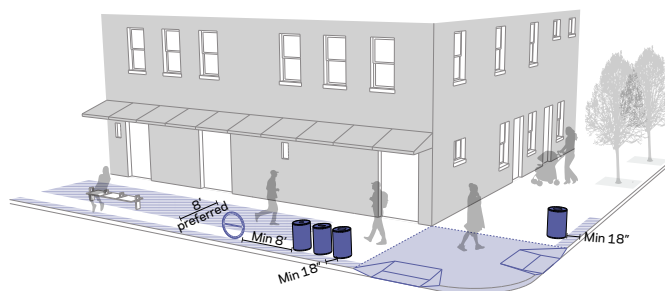
## For More Information

For more information on the Interim Flood Protection Measures Program, visit [www1.nyc.gov/site/em/ready/interim-flood-protection-measures-program.page](http://www1.nyc.gov/site/em/ready/interim-flood-protection-measures-program.page)



## Waste Receptacle

Among its other responsibilities, DSNY services over 25,000 waste receptacles – known as “baskets” – that offer pedestrians a convenient way to dispose of litter and recycling on the go. Of these, approximately 3,000 are public space recycling baskets, consistent in design with other streetscape furniture. DSNY is currently pursuing a redesign of the ubiquitous green wire mesh basket with a new standard for the modern NYC streetscape.



7th Avenue, Brooklyn



New waste receptacle design by Group Project, winner of 2019 BetterBin competition

### Siting

Commercial areas, where they may be emptied as frequently as five times a day

Mixed-use areas, where they can be serviced on residential refuse routes along with household trash two or three times a week

See FURNITURE: SITING GUIDELINES

### Sponsor-a-Basket Program

Sponsoring organizations, such as cultural institutions and Business Improvement Districts, can purchase the DSNY litter basket or a custom basket, with DSNY approval. All basket designs must meet DSNY specifications.

Sponsored waste baskets may bear the name or logo of the sponsoring organization, and must adhere to limitations on allowable advertising. Locations must be submitted for approval along with the Sponsor-a-Basket Letter of Intent

### For More Information

In 2019, DSNY selected a new waste receptacle after testing in Manhattan through the agency's BetterBin competition. For more information on the competition, visit [www.betterbin.nyc](http://www.betterbin.nyc)

For more information, refer to DSNY's website [www.nyc.gov/dsny](http://www.nyc.gov/dsny)

To sponsor or adopt a litter basket, call 311



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# Landscape







# Landscape

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# 6

# Introduction



Street trees provide significant benefits and should be planted wherever possible: W 95th Street, Manhattan (Credit: Parks)

## About this Chapter

This chapter provides general guidelines for the selection, design, installation, and maintenance of plantings in the public right-of-way (ROW). It reflects current practices and initiatives such as OneNYC, DOT's NYC Plaza Program, and DEP's Green Infrastructure Plan.

The chapter is organized by planting location, except for tree beds and stormwater management practices as these should be pursued wherever conditions allow. See **LANDSCAPE: TREE BEDS** and **LANDSCAPE: STORMWATER MANAGEMENT PRACTICES**.

## Benefits of Plantings in the ROW

Vegetation within the public ROW has been shown to provide significant environmental, health, and economic benefits. Generally, these benefits increase exponentially as the size of the planting increases; this is particularly true for trees.

All plantings:

- capture carbon dioxide and particles from the air
- reduce the urban heat island effect, decreasing energy costs related to air temperatures
- allow for passive and/or active stormwater management

- dampen street noise, providing health and psychological benefits
- provide urban wildlife habitat opportunities; including for pollinator species if carefully selected
- make streets appear narrower to drivers, thereby causing them to drive slower, and enhancing safety
- create a positive aesthetic that attracts customers to local businesses
- increase the value of adjacent properties
- make streets and neighborhoods more attractive
- improve pedestrian comfort by providing shade, cover from rain and/or protection from wind
- encourage outdoor activity

## Guidance Sources

More comprehensive guidance on the planning, design, installation, and maintenance of plantings within New York City is contained in sources such as *High Performance Landscape Guidelines: 21st Century Parks for NYC* (Design Trust for Public Space and NYC Parks, 2011), *High Performance Infrastructure Guidelines* (Design Trust for Public Space and DDC, 2005), *Tree Planting Standards* (NYC Parks, 2016), *Native Species Planting Guide for New York City* (NYC Parks, 2019), *Standards for Green*





*Right-of-way projects can provide opportunities for plantings: St. Nicholas and Amsterdam Avenues, Manhattan*

*Infrastructure* (DEP, 2017), the *Sustainable Urban Site Design Manual* (DDC Office of Sustainable Design, 2008), and *Design and Construction Excellence 2.0 Guiding Principles* (DDC, 2016).

Other resources include DEP's "NYC Green Infrastructure Program" website, NYC Parks' MillionTreesNYC website, the NYC Parks Interactive Tree Map, the New York State Stormwater Design Manual, the Cornell University Urban Horticulture Institute website, the New York Restoration Project website, EPA's "National Menu of Best Management Practices," and FHWA's *Roadside Best Management Practices that Benefit Pollinators*.

### Applicability and Exceptions

All new projects that significantly impact public and private streets should follow these guidelines. DOT approval will be based on site-specific conditions and cost-effective engineering standards and judgment, with the safety of all street users being of paramount importance.

### Usage Categories

This chapter does not apply usage categories to landscape treatments. Plantings are encouraged wherever site conditions allow and appropriate maintenance can be provided. Plants must always be chosen based on site-specific conditions.

There are certain treatments, noted throughout the chapter, that are considered standard. These treatments will be installed and maintained by the city. Other entities may also pursue these treatments and they will generally require less intensive review. Non-standard treatments may also be pursued, but may require more extensive review depending on the complexity and scope of the project.

### Reviews and Approvals

Installation of all plantings within the public ROW must be reviewed and approved by DOT and the agency that will be maintaining the plants. A tree-work permit from Parks is required to install new trees and for any work being performed within 50 feet of existing trees. Proposed stormwater management practices (also known as green infrastructure — see **LANDSCAPE: STORMWATER MANAGEMENT PRACTICES**) within the public ROW must be reviewed and approved by DEP, Parks, and DOT. New plantings may be subject to PDC or LPC review, particularly if they are part of a streetscape or open space project within their purview.

Designs for planted areas and green infrastructure within the public ROW are still evolving and being tested. Because these treatments may ultimately be maintained by city agencies, the appropriate agencies must be consulted early in the design process so that all such treatments are technically viable and maintainable.

### Maintenance Agreements

Parks is responsible for the maintenance of all trees within the public ROW and of Greenstreets, including select Stormwater Greenstreets. DEP maintains all stormwater management practices in the ROW that have been funded and approved by DEP. DOT maintains median plantings installed as part of Vision Zero Great Streets projects. Other plantings within the public ROW are encouraged but require coordination with appropriate agencies and a maintenance agreement with DOT.

For plantings requiring a maintenance agreement, proposals must be submitted to the appropriate DOT Borough Commissioner. Contact information for DOT Borough Commissioners can be found at [www1.nyc.gov/html/dot/html/contact/contact.shtml](http://www1.nyc.gov/html/dot/html/contact/contact.shtml) or by calling 311.

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**NYC Parks still builds traditional Greenstreets in any community but only if they come with independent and full funding. For more information see Parks' website on Green Infrastructure.**

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## General Guidelines



*Appropriate plant selection includes a diversity of species with year-round interest: Park Avenue and 97th Street, Manhattan (Credit: Lynden B. Miller)*

The following guidelines expand on the general policies and principles outlined in the Introduction, with more information pertaining to landscape planting design, installation, and maintenance.

### Project Team

All projects that incorporate plantings should include appropriate team members such as a landscape architect, consulting arborist (CA), horticulturist, and/or soil specialist. These team members should be involved at the onset of the design process. Appropriate consultation with city and/or state agencies having jurisdiction should also occur early in the project.

### Plant Selection

A successful planting design will match plants with existing site conditions and anticipated site use to achieve an aesthetically pleasing, functional, and long-lived landscape. Species selection must be guided by a comprehensive site analysis of the natural and built environment as well as the maintenance that plantings are anticipated to need and receive. Plant specification should

follow DOT and Parks standards, including Local Law 11 of 2013, and, whenever possible, plants should be sourced from a nursery within 200 miles of the project site.

Attention should be given to plants' color, form, foliage, and texture and how those elements can be combined to create year-round interest. Careful consideration should also be given to the forms and heights plants will reach at maturity and how they interact with other design elements, such as seating, signage, signals, and lighting as well as the built fabric including the sidewalk, roadway, and buildings. Avoid species that NYSDEC and/or Parks have determined to be invasive or that are susceptible to diseases and pests (see **DISEASES AND PESTS** section in **LANDSCAPE: GENERAL GUIDELINES**). Select plants that are known to compete well with invasive species; when feasible, preference should be given to native plantings that mimic plant communities in the native environment most reflective of the site context. Given site conditions, designers should accommodate the collection of stormwater where possible and select plants that can withstand both periodic inundation and drought. All species selection must be approved by the appropriate city agency during the review process.

### Soils

Soils are one of the most crucial considerations when proposing plants within the ROW. Soils that possess favorable horticultural characteristics (pH, nutrients,



NYC Parks maintains its own native plant nursery, the Greenbelt Native Plant Center (GNPC). The GNPC grows over 500 species of NYC native plants, some of which are appropriate to most urban design challenges. Qualified staff are available to consult on selecting appropriate species to meet design requirements and the Nursery is available to grow and provide plants from its stock of half a million trees, shrubs, ferns, grasses, and wildflowers (forbs). The GNPC also produces seed of over 65 native species for sowing operations.



*Willow Oaks planted at the same time with different available soil volumes. Note that the trees on the left, which have more soil than the trees on the right, are much larger: Pennsylvania Avenue, Washington, DC (Credit: Urban Horticulture Institute, Cornell University)*

drainage, soil texture, etc.) will allow the greatest array of plant species to thrive and reduce maintenance costs. These characteristics must be carefully considered and balanced in context of proposed species, plant tolerances, and overall project goals. Soils that do not support selected plant species, or alternatively, selecting species that do not thrive in a particular soil will have significant impacts on plant survivability and the overall success of a proposed landscape.

NYC Parks works with two regional nurseries that grow street trees to NYC standards. The agency primarily uses these nurseries for its planting contracts for streets and parks. With this approach, quality and consistency of plant material has improved while the available palette of species has increased. This method of procurement allows NYC Parks to oversee the growing operations of its trees and dictate the types of trees it wants to procure. NYC Parks' tree nurseries are able to grow and deliver trees for other agency contracts provided those projects are planned with this mechanism in mind; NYC Parks Forestry and Horticulture staff can provide detailed specifications to include in contracts as needed.

It is particularly important that enough soil volume is provided for the proposed planting; this measure contemplates depth as well as the total area of soil. Limited soil volume will stunt plant growth and contribute to plant decline or death. As such, maximize soil volume and choose plants that will grow well in the available soil volume. As most roots grow within the top layer of soil, increasing the soil surface area is most beneficial. However, also provide appropriate soil depth: at least 18 inches for grass or ground cover, 18-24 inches for shrubs, and 24-36 inches for trees. The soil depth should also relate to the rootball depth at planting.

Where pavement is necessary next to trees or plantings, consider a suspended pavement system (i.e. structural soils or structural framing systems/cells) to provide greater rooting area. Suspended pavement systems support the engineering requirements of pavement, while still allowing plant roots to grow in the subbase below. In most cases, pavements must be able to withstand typical loading and compaction requirements (95% proctor density), with



some locations requiring truck loading (AASHTO HS-20) standards be met. The added growing medium can also serve to increase the area for stormwater capture or detention. Additionally, by encouraging root growth within the subbase, these systems typically reduce sidewalk heaving caused by tree roots and the associated maintenance burden.

In order to determine if an existing or proposed soil has the appropriate characteristics it must be examined by a qualified laboratory. Soils should be tested for texture, pH, organic content, permeability, salt content, nutrients, bulk density, and presence of contamination. New soils should meet appropriate DOT and Parks specifications, which may vary depending on project specific conditions. Existing soils may be amended to bring soil characteristics within acceptable ranges. Methods for amending soils include applying lime or sulfur to adjust pH, adding sand or silt/clay to adjust soil texture, adding organic matter to improve permeability and correct nutrient deficiencies, loosening

compacted soil via mechanical or hand tools, and several other techniques. Qualified laboratories, following an examination, will provide recommendations for amending soils, if possible, to achieve optimal plant growth. If amendments cannot be made, the soil will need to be replaced to the required depth and width accordingly. Should there be contaminated soils on site, consult with the appropriate city or state agencies on the process for removal.

The following table describes generally desirable soil characteristics, however, soil must be examined and selected based on site-specific conditions and tailored to fit the needs of the project. It is important that proper sampling and testing methods are followed to ensure test results are accurate and represent the actual soil. A composite sample (taken from several locations within the area of interest, to a consistent depth, and at the same time) can provide an appropriate representative sample for testing purposes.

TABLE 6A: SOIL CHARACTERISTICS		
Soil Characteristic	Preferred Range or Values	Testing Method
pH	5.5 to 7.2 (slightly acidic soils generally have the greatest nutrient availability to plants; higher pH soils will require careful plant selection to ensure survivability)	Standard pH test
Organic Matter	3-8% is generally preferred, but conditions may call for more or less organic matter	Loss on ignition of moisture-free samples (organic matter should be at least six months old)
Soil Texture	Sandy Loam to loam is typically preferred, but specific conditions may call for a higher clay content to increase water holding capacity or a higher sand content to facilitate infiltration; under no circumstances may clay content exceed 15-20%	Bouyoucos hydrometer or decantation method to determine clay content; USDA sieve analysis for sand and silt content  Alt: ASTM D422
Salinity	< 1.0 millimhos per centimeter at 25 degrees Celsius	Saturated Soil Test Method in USDA Circular No. 982
Nutrients	Nitrogen = 25 parts per million Phosphorous = 5 parts per million Potassium = 20 parts per million	Check with Soil Lab
Permeability	Appropriate permeability ranges depend on desired use. High permeability is generally required for green infrastructure systems, very low permeability will negatively impact plant health	Permeability Test (See DEP Geotechnical Investigation Procedure)
Bulk Density	Bulk density greater than 1.4 grams per cubic centimeter will restrict root growth and negatively impact plant health	ASTM D7263

Many urban soils, including fill soils, possess mortar and concrete fragments that alter soil pH for extended periods. Applications of sulfur or other acidic amendments may only temporarily mitigate the situation. As such, this is a critical factor for plant selection and soil management throughout New York City.



*Quality soil is necessary to ensure that healthy plants thrive: Beach 60th Street and Rockaway Beach Boulevard, Queens*

Where possible, preserve existing soils that have supported or are capable of supporting plant growth. Care should be taken to manage existing weed seeds that are typically present in the top layer of urban soils; tarp stockpiled soil on site if it is to be reused later or if new soil is to sit idle for an extended time before being used. If time permits, techniques like solarization or steam sterilization can be employed to kill weeds. Do not work the soil if it is frozen or sodden. Use pneumatic excavation, or similar methods, under the supervision of a consulting arborist, to preserve tree roots. New soil should be installed in lifts so as to not unduly compact or negatively impact the soil

Soil amendments may be appropriate in certain circumstances, but should always be carefully considered. Organic matter degrades over time resulting in decreased benefits to plant health; additions of sand to improve drainage may result in poor or unusable soil, and most fertilizers only provide a temporary increase of nutrients. In general, make sure to select plants that are well-suited to the basic soil structure, ensure the soil is properly de-compacted after construction and keep heavy equipment off of newly placed soil.

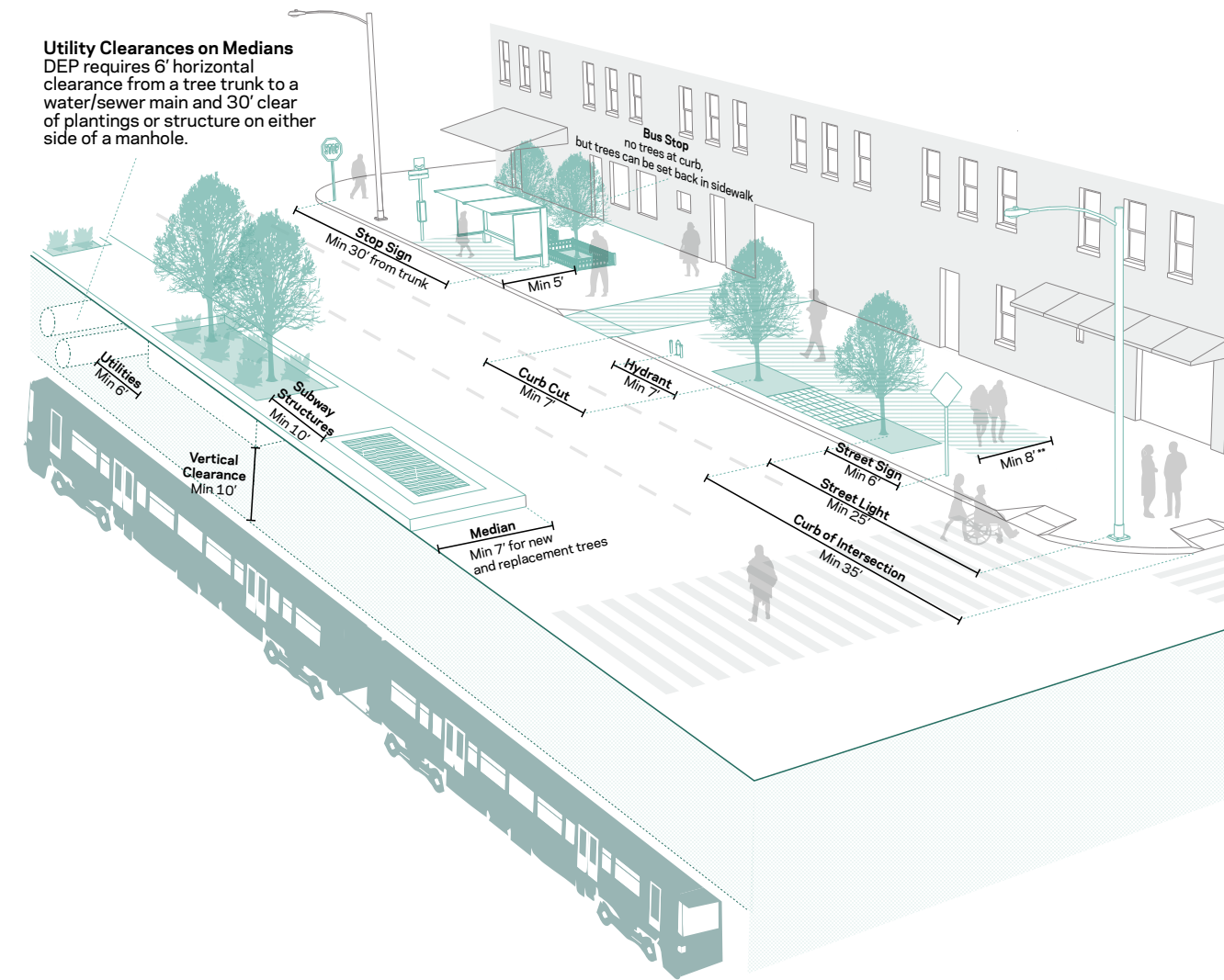
properties. For new soil, it is important that appropriate sampling and testing is conducted prior to delivery as well as prior to installation to ensure quality soil is being provided; soil tests should not be older than 6 months from the date of proposed delivery to the project site. Ultimately, soils are the foundation for a successful landscape and must be given special attention to ensure success.

#### Microclimate

According to the 2012 USDA Hardiness Zone map, most of New York City falls within Zone 7B, with portions of the Bronx and Staten Island falling within Zone 7A. However, the site-specific environmental conditions such as sun exposure, wind patterns, and precipitation will ultimately create a unique growing environment for plants. This microclimate must be understood in order to select the most appropriate plants.

Recent trends of more extreme temperature and weather due to climate change will also impact plant selection. These trends will have a varied effect depending on the particular microclimate. For example, coastal areas have experienced temperatures consistent with Zone 6 over the last several winters, which may require hardier plants be specified.

Clearance Diagram



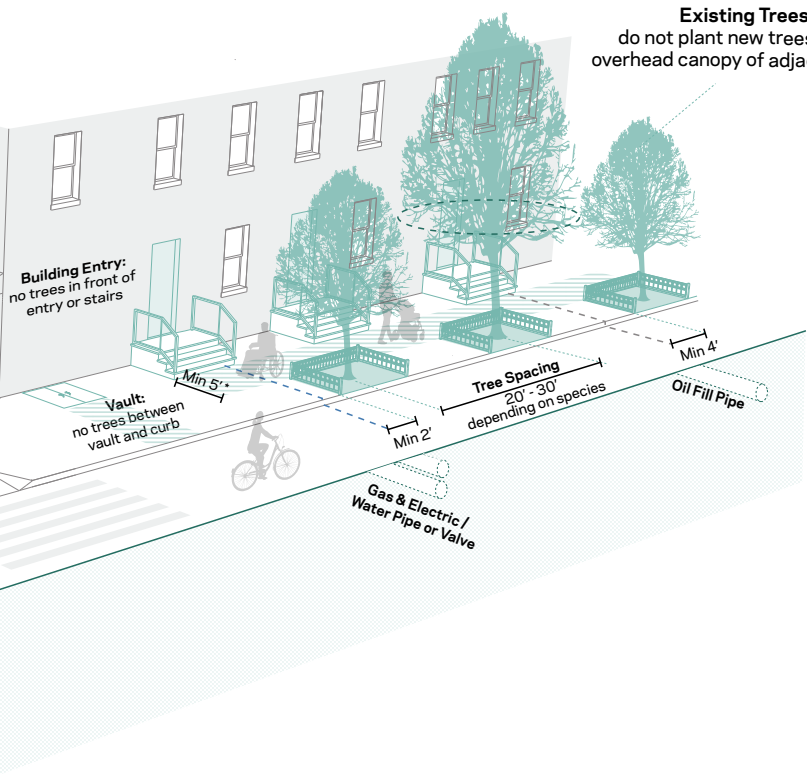
Spacing/Siting Requirements

In the setting of streets, parkways, and expressways, the placement of trees and other plants has a direct bearing on safety and the cost of maintenance. Plants, excluding tree canopies, in the public ROW should not infringe upon the roadway or sidewalk beyond the planting bed. Ultimately, all plantings must follow MUTCD, AASHTO, NYSDOT, DEP, DCP, Parks, and DOT design standards and guidelines. (See Clearance Diagram above.)

Careful consideration must be given to above- and below-ground constraints; utilities, vaults, and other obstructions may limit the ability to plant. In particular, avoid planting trees directly over DEP water and sewer mains and near steam lines.

Trees and other plantings must not block sight lines at intersections for drivers, cyclists, and pedestrians. At all intersections, trees and any plants that may impact sight lines must be placed no closer than 35 feet from the curb of the intersecting street and in a manner that does not block the signal or stop sign. Trees on medians must be set back 35 feet from the curb at the end of the median.

DOT, Parks and DEP may approve exceptions to their respective requirements on a case-by-case basis and reserve the right to require stricter clearances if needed.



Clear Path

A minimum 8' must be maintained in areas with high pedestrian traffic and a minimum 5' in areas with low pedestrian traffic. DOT may require up to 1.5' in locations with particularly high pedestrian volumes. Exceptions may be approved by DOT and Parks on a case-by-case basis. In all cases, a tree bed should not take up more than 50% of the total sidewalk width or reduce the sidewalk width to less than 4'.

Distance*	Parallel clearance from:
40'	Traffic Signals
35'	Curb of Intersection
30'	Stop/Yield/Do Not Enter Signs Manhole on Median
25'	Street Lights Utility Poles
20'-30'	Tree Spacing (depending on species)
10'†	Subway Structures

\* Distance is measured from tree trunk, unless noted.

† 10' of vertical clearance from subway structures is also required for tree plantings (or as low as 5' with an acceptable root barrier).

‡ Distance measured from edge of tree bed

Distance*	Parallel clearance from:
7'	Driveways Curb Cuts
6'	Street Sign Water/Sewer Main
5'	Hydrant From curb (tree bed behind Bus Stop)
4'‡	Oil Fill Pipe
2'‡	Gas & Electric/Water Pipe or Valve



Tree Preservation and Protection

Mature trees must be preserved during construction wherever feasible because they provide significantly more benefits compared to newly planted replacement trees. Such preservation can be complicated and should therefore be guided by a certified arborist (CA) throughout the project. The following provides general information on how best to approach design with the preservation of existing trees in mind.

Under Section 18-107 of the Administrative Code of the City of New York and Chapter 5 of Title 56 of the Rules and Regulations of the City of New York, all construction work impacting trees within the public ROW must be approved and permitted by Parks. In addition, construction work must follow NYC Parks Tree Preservation Protocols and NYC Parks Forestry Protocol for Planned and Emergency Utility Work. Ultimately, if the removal of a healthy tree is necessary, it must be approved and permitted by Parks, and tree replacement will be required based on a valuation of the trees impacted. This typically involves planting new trees within the project area and/or paying a fee to cover the cost of Parks planting the necessary replacement trees.



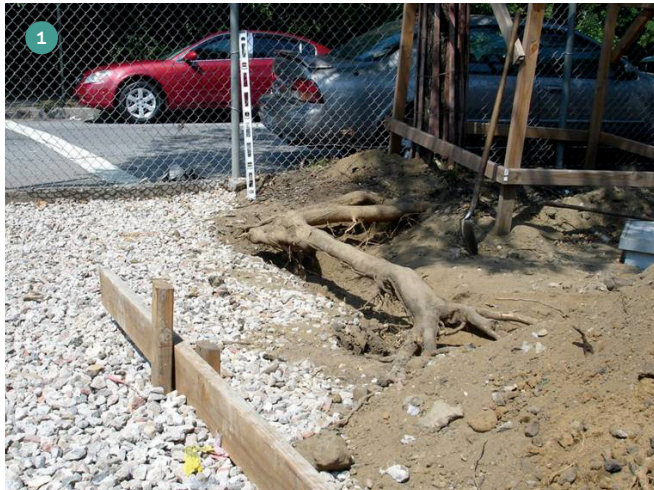
Parks is expanding existing tree beds throughout the city to promote tree health and reduce potential trip hazards created by heaving: Devoe Street, Brooklyn (Credit: Parks)



Reconfiguration of a sidewalk to promote tree health (before and after): Aberdeen Road, Queens (Credit: Parks)

1. Scope	2. Inventory and Assess Existing Tree Resources	3. Design with the Tree in Mind	4. Develop Tree Protection Plan	5. Enforce Tree Protection Plan in Construction
Include Parks' Borough Forestry Office in the Scope review to consider potential impacts to trees in siting project scope	Certified Arborist (CA) to inventory and assess all trees within and immediately adjacent to project limit lines	CA to identify potential tree impacts and necessary tree removals  All tree removals must be approved by Parks' Borough Forestry Office	CA to advise and review designs for potential tree impacts  CA to advise and develop tree protection plan  50% and 90% construction documents reviewed by Parks' Borough Forestry Office	Tree protection implemented and enforced by Parks' Borough Forestry Office and/or CA  CA to perform initial inspection and approval of installed tree protection measures  CA to supervise all work within and immediately adjacent to Tree Protection Areas





Photos 1, 2, and 3 above illustrate the process of root pinning, which saves trees and prevents sidewalk heaving: Black Locust Triangle, 123rd Street and N Conduit Avenue, Brooklyn (Credit: Parks)

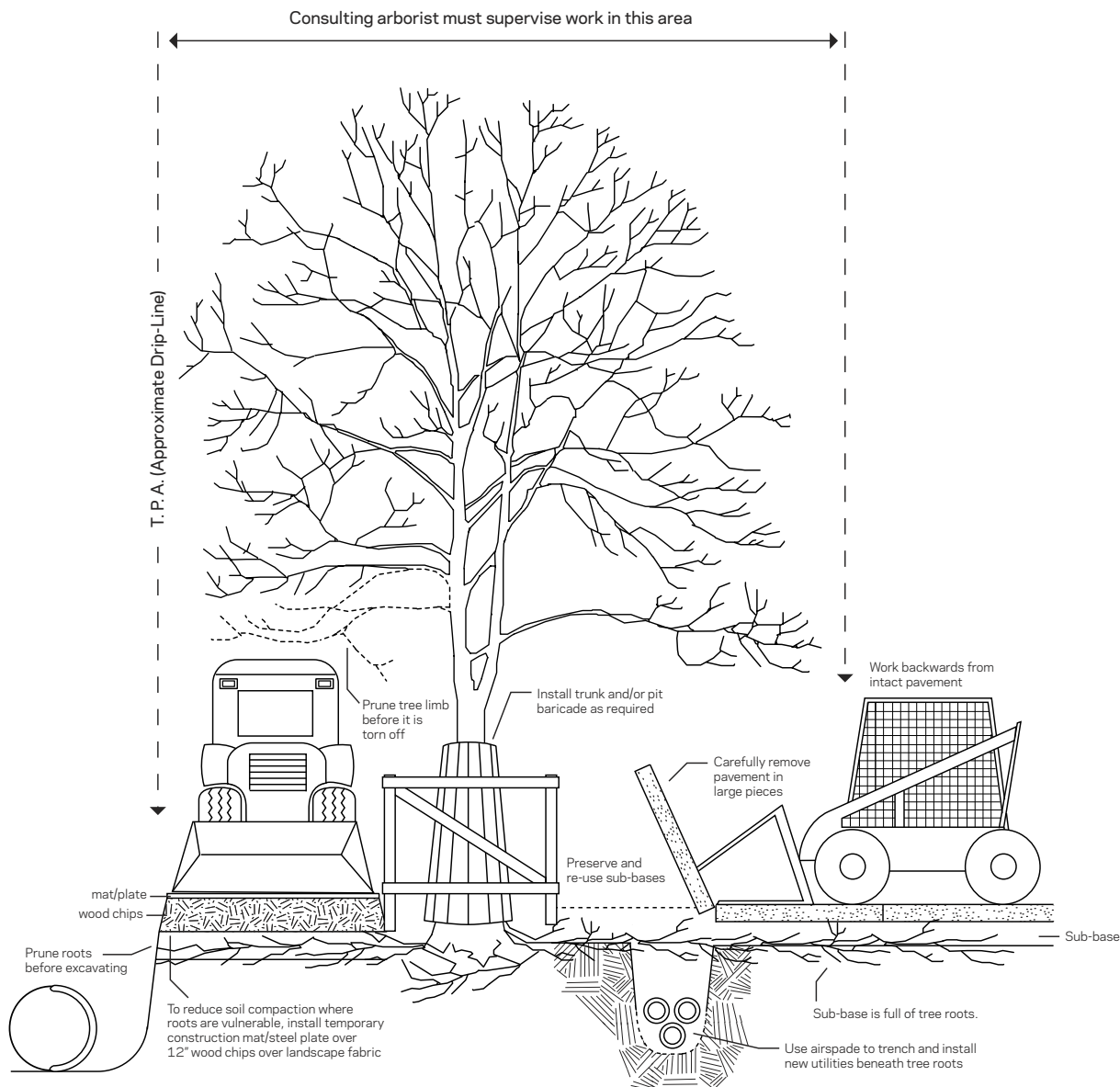


Removing soil from around a tree's roots through pneumatic excavation allows for work to be done without damaging the tree: **ABOVE** - Fort Totten Park, Queens (Credit: Parks); **BELOW** - 235th Street and 119th Avenue, Queens (Credit: Lisa Montana)

In order to preserve existing trees, their roots must be protected. Tree roots extend well beyond the visible canopy and are generally within the top three feet of soil. The minimum area of roots a tree needs to survive is called the critical root zone (CRZ) and will be determined by the CA using the International Society of Arboriculture's *Best Management Practices for Managing Trees During Construction* (F. Kite, T. Smiley, 2008). The individual CRZ radii should be incorporated into all phases of design and reflected on a CRZ map. The goal is to preserve as many roots as possible beyond the CRZ through sensitive design and the use of best practices during construction.

The tree protection area (TPA) is the most important tool used in the preservation of existing trees. Generally, the TPA is developed in coordination with the CA during design and is defined by the canopy drip line of the tree. The TPA will always encompass the CRZ. (See Tree Protection Area Diagram and Critical Root Zone Diagram below.) During construction, the TPA is typically established with a fence or barrier, with installation of thick sawdust, plywood sheets or metal panels beyond the barrier, if necessary, to further protect spreading roots. In circumstances where a majority of roots are growing beneath pavement, special methods should be utilized. The contractor will be

### Tree Protection Area Diagram



These diagrams provide guidance on tree protection during construction projects in an urban setting.





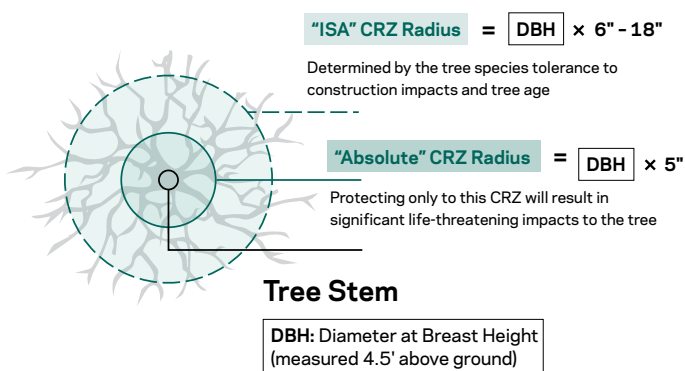
Tree protection measures during reconstruction of the Allen Street Malls, Manhattan (Credit: Parks)



Typical tree protection area (TPA) in a landscape setting; specialized treatments should be used in urban settings: Conduit Avenue, Queens

responsible for the care of protected trees during construction. No activity, including non-construction-related activities, may occur within the TPA without approval from Parks and supervision by the CA. If construction work must occur within the TPA, the contractor must work with the CA to employ techniques, such as pneumatic excavation (air spading) to expose and preserve the roots in good condition. All work within the TPA must be completed by hand.

### Critical Root Zone Diagram



### Diseases and Pests

Diseases and pests can pose significant risks to plant health and survival. Plants should be selected that are resistant to common ailments, such as anthracnose (leaf spot), or that can withstand outbreaks.

Several pests affect trees in New York City. ALB (*Anoplophora glabripennis*) is an invasive beetle known to attack several species of trees. After 20 years of efforts to eradicate the beetle, New York City was declared ALB-free by the United States Department of Agriculture (USDA) in October 2019. For more information, visit the USDA's Animal and Plant Health Inspection Service webpage or the USDA's APHIS publication regarding ALB in New York.

EAB (*Agrilus planipennis*) is an invasive beetle that is destroying ash populations across the Northeast and Midwest. As such, the planting of ash tree species is no longer permitted within the city.

NYSDEC and Cornell University both offer plant disease diagnostic services that may assist in the treatment of affected plants. For the latest information on diseases and pests please visit the USDA's APHIS webpage on Plant Pest and Disease Programs or the US Forest Services webpage on Invasive Species, Pests, and Disease.

Application of pesticides (including herbicides, insecticides, and fungicides) is regulated by the federal EPA as well as by NYSDEC. Pesticides may only be applied by a NYSDEC Certified Commercial Pesticide Applicator or under the direct supervision of same. Additionally, pesticides applied to property owned or leased by the city must comply with Chapter 12 of Title 17 of the Administrative Code of the City of New York (Local Law 37 of 2005). Note that this law does not apply to private property. For more information on this law, visit the DOHMH webpage or call 311.



*DOT and Rockaway Waterfront Alliance coordinated a volunteer planting event to activate a lot adjacent to the elevated A line: Beach 60th Street and Rockaway Beach Boulevard, Queens*

### Plant Installation

All plants must be installed per DOT and/or Parks standards. See Parks' Planting Specification Checklist. In addition, contact DigNet or call 811 prior to installation to identify utilities and have them field-verified by proper authorities. The appropriate planting time for trees, shrubs, and perennials is during the spring and fall, with some trees restricted to spring planting only. In New York City, this corresponds generally to March 1–May 31, and October 1–December 31, weather permitting. No plants should be installed in the summer or once the ground has frozen.

### Period of Establishment

Newly installed plants require consistent maintenance throughout the growing season in order to become established and thrive. As per DOT/DDC standard specifications, the contractor will need to perform establishment period tasks, including but not limited to, watering, pruning, mulching, and weeding, throughout the first 18 months for understory plantings and 24 months for trees. Watering is the most essential task to perform during the establishment period (see **WATERING** section in **LANDSCAPE: GENERAL GUIDELINES**). Payment for the performance of these tasks is on a progress payment schedule whereby the contractor will only be paid when they perform the required tasks. Parks planting permits also require the contractor to water, perform regular care, and replace trees that die for the first two years. A maintenance plan should be submitted and approved prior to final acceptance of plant installation, after which the Period of Establishment will commence.



*Workers remove waste from raised median to maintain median plantings: Grand Concourse, Bronx*

Consideration should be given to phased or multi-staged planting and establishment protocols whereby a design would establish intermediate, transitional plantings to out-compete invasive plants while giving way in succeeding plantings to those species intended as the final condition. This approach is highly effective for meadow establishment – using bulk seed or a combination of seed followed by a wider range of plant types – and could be equally effective for non-meadow plantings.



### Maintenance

Site design and species selection should correspond to the anticipated level of maintenance a planting will receive following installation. Planting areas should be designed to provide sufficient space for personnel to maintain them. Such design considerations may include, among other things, paths within or surrounding the planting areas. The frequency of available maintenance and skill levels of those providing maintenance are important considerations that must be addressed during design.

Maintenance should include an appropriate level of watering, weeding, pruning, cultivating, and waste removal. Repair of minor washouts, mulching, soil replacement, plant replacement and other horticultural operations may also be necessary. Stormwater management practices will have additional unique maintenance tasks necessary to maintain their function. See LANDSCAPE: STORMWATER MANAGEMENT PRACTICES. Any existing invasive plants that cannot be removed or outbreaks of new invasive species will have to be managed through ongoing maintenance. Selecting plants that are drought tolerant, are disease resistant, compete well, and have the appropriate form at maturity will reduce maintenance needs.



DOT's Adopt-a-Highway program provides opportunities for enhanced plantings and maintenance along limited-access arterials: Belt Parkway, Brooklyn

### Watering

Watering is critical for plant survival, both during the establishment period and throughout the lifespan of the plant. Ideally, water should be applied early in the morning or late at night to avoid loss due to evaporation. The soil should be thoroughly soaked with minimal water applied to the leaves of plants as this may encourage fungus or disease. Do not overwater. In New York City, it is recommended plants receive approximately 1 inch of water per week in total, species and weather dependent. Tree watering bags provide an effective tool during establishment and should be refilled to ensure trees receive approximately 20 gallons of water per week. Watering must be carefully scheduled and adjusted based on anticipated and actual weather.

Irrigation systems are encouraged where appropriate maintenance of the system can be provided. The system, when properly maintained, can reduce the need for maintenance by ensuring the most frequently required task is automated. Newer systems also provide remote monitoring and scheduling, automatic weather adjustment, and maintenance notifications if the system needs repair. Design of the system is paramount; systems should not spray water onto the roadway or walking areas. Drip irrigation is most efficient, but prone to damage and breaks. Pop-up/spray heads may be preferred as long as they can be directed appropriately. In many cases, even if a full irrigation system cannot be accommodated, simply bringing a water source via a hose-bib connection will significantly reduce maintenance costs. All irrigation systems require yearly winterization and start-up maintenance. They also require appropriate backflow prevention, typically a reduced pressure zone or "RPZ" backflow device, and a water meter, which must be approved by DEP. The RPZ and meter will need to be carefully sited within the project area to minimize visual impact as they are large and obtrusive. Providing an irrigation system or water source will impact plant selection allowing a wider range of plants to be used, but only if maintenance for the irrigation system is also in place.



# Tree Beds

The city strives to build, permit, and manage as diverse an urban ecosystem as possible. A diverse ecosystem is ultimately more resilient and reduces the risks associated with urban forest management and maintenance. Visit the NYC Parks Website, the NYC Parks Interactive Tree Map and [www.milliontreesnyc.org](http://www.milliontreesnyc.org) for more information.

## Tree Bed

Street trees exist within tree beds all over the city and new trees should be installed wherever feasible if conditions allow. Tree beds are currently the only required design, however connected tree beds should be used wherever possible to provide improved tree health; stormwater management practices—those that take water from the roadway—should be considered wherever DEP Priority Areas are affected. See [LANDSCAPE: CONNECTED TREE BED](#) and [LANDSCAPE: STORMWATER MANAGEMENT PRACTICES](#).



State Street, Manhattan



Park Avenue, Manhattan

### Benefits

See [LANDSCAPE: BENEFITS OF PLANTINGS IN THE ROW](#)

For further information on the benefits of trees, see the United States Department of Agriculture's *NYC Municipal Forest Resource Analysis*

### Considerations

Tree beds are standard treatments that Parks installs and maintains. Other entities are also encouraged to pursue this treatment but require a permit from Parks and DOT

DOT and Parks permits are required to install trees. The permit holder must maintain and guarantee the tree and bed for two years

Parks contractors will maintain tree beds (individual or connected) planted by Parks for two years after planting, after which each individual property owner is responsible for maintaining the tree bed(s), while Parks retains responsibility for and jurisdiction over the tree itself; see Parks' webpage on tree-bed care

### Application

The New York City Zoning Resolution requires that one tree be provided for every 25 feet of curb frontage for new developments and major alterations; all other spacing requirements per Parks Tree Planting Standards still apply

Install in all areas with full sidewalks, raised medians, pedestrian safety islands, pedestrian malls, triangles, and plazas. See [LANDSCAPE: FULL SIDEWALK](#), [LANDSCAPE: RAISED MEDIAN](#), [GEOMETRY: PEDESTRIAN SAFETY ISLAND](#), [LANDSCAPE: PEDESTRIAN MALL](#), [LANDSCAPE: TRIANGLE](#), and [LANDSCAPE: PLAZA PLANTINGS](#)

Use connected tree beds rather than tree beds wherever possible to increase root space and stormwater detention capacity. See [LANDSCAPE: CONNECTED TREE BED](#)

Consider stormwater management practices in DEP Priority Areas where conditions are appropriate. See [LANDSCAPE: STORMWATER MANAGEMENT PRACTICES](#)

### Design

Meet or exceed minimum size and design requirements of Parks Tree Planting Standards contingent upon accommodation of pedestrian capacity and sub-surface constraints

A minimum 8-foot clear path must be maintained in areas with high pedestrian traffic and a 5-foot minimum clear path in areas with low pedestrian traffic. DOT may require a greater clear path, up to 15 feet, in locations with particularly high pedestrian volumes. Exceptions may be approved by DOT and Parks on a case-by-case basis. In all cases, a tree bed should not take up more than 50% of the total sidewalk width or reduce the sidewalk width to less than 4 feet

Diversify street tree species along a block to avoid species blight and plant the largest-canopy species that site conditions allow, in coordination with Parks

Minimum center-to-center distance between trees is 25 feet, depending on tree species and local conditions, and can be as much as 40 feet if the canopy of an existing, neighboring tree is large. Slightly closer spacing may be appropriate if planting in continuous beds or using narrow growing species

Do not remove or add topsoil around the rooting area of established trees; mulch is preferred, but should follow DOT and/or Parks specifications

Maximize exposed soil to allow more water and air to get to the roots of the tree; if necessary due to high pedestrian traffic or constrained sidewalk widths, use Parks-approved permeable surface treatments over the tree bed; consider a suspended pavement system adjacent to the tree bed to extend available rooting area

Tree-bed grates that are flush with the sidewalk and vertical tree guards that enclose the tree trunk are not permitted

Do not install any plants within the area of the root ball of a new tree or within 3 feet of the trunk of an established tree

When planting beneath the canopies (within the driplines) of established trees, choose plants in containers no larger than 1 gallon each to minimize damage to trees

Tree-bed sizes may vary depending on site conditions and should be designed to be as large as possible; Parks typically requires a 5-foot by 10-foot opening with soil only

Tree-bed guards are recommended; one of Parks' standard tree-bed guards should be used; a permit is required



Park Avenue, Manhattan



W 53rd Street, Manhattan

A tree-bed guard should be a minimum of 18 inches high, with the lowest horizontal member no more than one inch above the sidewalk, and without any features extending outward beyond the tree bed border

In curbside tree beds, only three-sided guards are permitted, with the open side at the curb, 18 inches from the curb face

Tree beds without tree-bed guards must have a flat surface without any tripping hazard and be no more than one quarter (1/4) inch above or below the adjacent sidewalk surface

### Plants

See Plant Database at [www.nycstreetdesign.info/search-plant](http://www.nycstreetdesign.info/search-plant)



## Connected Tree Bed

A series of tree beds connected with a continuous trench in order to provide increased rooting area and stormwater detention. This is a standard treatment that will be installed and maintained by the city.

### Benefits

See benefits of LANDSCAPE: TREE BED

Provides greater space for tree roots than tree beds, improving tree health and longevity

In areas where a ribbon sidewalk is inappropriate, connected tree beds provide many of the same benefits. See LANDSCAPE: RIBBON SIDEWALK

Additional soil provides more stormwater detention capacity than tree beds

### Considerations

See considerations for LANDSCAPE: TREE BED

Installation of a tree-bed guard requires a permit from Parks

### Application

See application guidance for LANDSCAPE: TREE BED

Whenever possible in lieu of tree beds

Consider ribbon sidewalk as an alternative in areas of low-to-moderate land use density per its application guidance and zoning requirements. See LANDSCAPE: RIBBON SIDEWALK

Consider stormwater management practices in DEP Priority Areas where conditions are appropriate. See LANDSCAPE: STORMWATER MANAGEMENT PRACTICES



Hudson Street, Manhattan

### Design

See design guidance for LANDSCAPE: TREE BED

The trench of connected tree beds should be left uncovered (and, optionally, landscaped) to improve tree root health

Where pedestrian access is necessary (areas of high foot traffic, limited sidewalk space, or frequent curbside access), pavement can be bridged over the tree-bed trench using a suspended pavement system to increase soil volume

### Plants

See Plant Database at [www.nycstreetdesign.info/search-plant](http://www.nycstreetdesign.info/search-plant)

# Roadway Plantings

Roadway plantings are trees, shrubs, groundcovers, perennials, and other vegetation located within the roadbed of a street. Generally, plantings are installed within raised medians or triangles that separate or channelize traffic.

Roadway plantings must endure various stresses: salt, wind, drought, pollution and physical damage from vehicles, and limited growing space. These all impact plant health and should guide design and plant selection.

## Raised Median (Curb Height)

A median that is raised 6–7 inches above the roadbed and provides adequate width to allow for plantings. Raised medians (curb height) are utilized throughout the city. Medians allow for various types of plantings due to their different sizes and lengths. Trees are typical; however, careful consideration must be given to the sight lines of drivers, cyclists, and pedestrians. Parks maintains many existing median plantings, pursuant to the Greenstreets agreement between Parks and DOT.



*Planted median. Low plantings are located near the intersection to allow better visibility. Contrasting colors and texture add interest: Adams Street, Brooklyn (Credit: Parks)*

### Benefits

See LANDSCAPE: BENEFITS OF PLANTINGS IN THE ROW

Planted medians increase the traffic calming effect afforded by medians. See GEOMETRY: RAISED MEDIAN

### Considerations

See LANDSCAPE: GENERAL GUIDELINES

Allow adequate room for trucks and buses to make necessary turns without damaging plant material

Consider environmental and physical stresses plants must withstand, including drought/inundation, sun/shade, heat/cold, wind, pollution, road salt, garbage, vehicular damage, and compaction

A 12-24-inch raised median is preferred in higher traffic areas in order to prevent vehicular incursion into planted areas; see LANDSCAPE: RAISED MEDIAN (12-24 INCHES)

Consider the lifespan and longevity of species, as plant replacement will be difficult and costly

Typically, plantings are watered via a water truck; consider how maintenance workers will access the plantings to perform other regular maintenance activities; this may require a lane closure permit from DOT and should utilize appropriate safety equipment

Consider underground utility constraints as excavation beneath the roadbed will be necessary to provide adequate soil volume and positive drainage; a 12-24-inch raised median may allow for plantings where there are conflicts. See LANDSCAPE: RAISED MEDIAN (12-24 INCHES)

Existing medians that are at least 12 feet in width, with curbs present, may be designed for stormwater capture if sufficient drainage can be diverted to the median and other general criteria are met; See LANDSCAPE: STORMWATER MANAGEMENT PRACTICES

Excluding trees, plantings in medians not covered under the Parks-DOT Greenstreets agreement or maintained by DOT require a maintenance agreement





Vanderbilt Avenue, Brooklyn

### Design

See **GEOMETRY: RAISED MEDIAN** for geometric design guidance; all medians must include a paved area, free of vegetation or obstructions, for pedestrians to safely cross at the intersection

See DOT's Planted Raised Median Design Guidelines for further information

Where planting trees, see design guidance for **LANDSCAPE: TREE BEDS**

Planted medians should be a minimum of 7-feet wide to allow for 6 feet of planting space with a 6-inch-wide curb on either side. Exceptions may be approved by DOT and Parks on a case-by-case basis. Where conditions allow, a buffer around the perimeter of the planting bed is preferred to allow for maintenance access

Provide a minimum 24 inches depth of high-quality, well-draining soil; 30–36 inches is optimal – see **LANDSCAPE: GENERAL GUIDELINES: SOILS**

Positive drainage below the planting soil is essential. Any impermeable layers of concrete or asphalt must be removed or appropriately designed weep holes must be included

Where conditions allow, medians should be planted with large-growing canopy trees

Tree spacing should be based on the appropriate mature width of the species chosen and must be approved by Parks

Consider the use of a suspended pavement system and connected tree beds. See **LANDSCAPE: CONNECTED TREE BED**

Minimum distance from the curb at the end of the median to the center of the tree trunk is 35 feet

Where truck and bus traffic is heavy, consider using columnar species to reduce damage to plants

Consider planting fewer understory species to provide continuity and reduce overall maintenance needs; select plants that will provide year-round ornamental interest

Space shrubs and other plants so as to encourage dense, full growth, and deter weeds, however, do not overcrowd, which can lead to poor air circulation and encourage the spread of pest and disease problems

Use drought-tolerant, salt-tolerant species that require little to no pruning or deadheading to maintain their shape, size, vitality, and ornamental interest

### Plants

See Plant Database at [www.nycstreetdesign.info/search-plant](http://www.nycstreetdesign.info/search-plant)

## Raised Median (12-24 Inches)

A median, typically constructed of concrete or stone, 12–24 inches above the roadbed that provides above-ground soil volume for plantings. Generally employed where underground constraints prevent planting at grade and/or along higher-speed roadways.



Grand Concourse, Bronx



Adams Street and Boerum Place, Brooklyn

### Benefits

See benefits of LANDSCAPE: RAISED MEDIAN (CURB HEIGHT)

### Considerations

See LANDSCAPE: GENERAL GUIDELINES

See considerations of LANDSCAPE: RAISED MEDIAN (CURB HEIGHT)

Design the median to the minimum height necessary to accommodate appropriate soil depth

Consider visibility in relation to the overall height of mature plantings and the raised median (12–24 inches)

Allow adequate room for trucks and buses to make necessary turns without damaging plant material

Consider environmental and physical stresses plants must withstand, including drought/inundation, sun/shade, heat/cold, wind, pollution, road salt, garbage, vehicular damage, and compaction

Consider the lifespan and longevity of species, as plant replacement will be difficult and costly

Existing trees at potential raised median sites should be preserved if possible; consider installing the median around the trees to prevent excavation and change of soil grade

Typically, plantings are watered via a water truck; consider how maintenance workers will access the plantings to perform other regular maintenance activities; this may require a lane closure permit from DOT and should utilize appropriate safety equipment

Excluding trees, plantings in medians not covered under the Parks-DOT Greenstreets agreement or maintained by DOT require a maintenance agreement

### Design

See GEOMETRY: RAISED MEDIAN for geometric design guidance; all medians must include a paved area, free of vegetation or obstructions, for pedestrians to safely cross at the intersection

See DOT's Planted Raised Median Design Guidelines for further information

Where planting trees, see design guidance for LANDSCAPE: TREE BEDS

Planted medians should be a minimum of 7-feet wide to allow for 6 feet of planting space with a 6-inch-wide curb on either side. Exceptions may be approved by DOT and Parks on a case-by-case basis. Where conditions allow, a buffer around the perimeter of the planting bed is preferred for maintenance access





Grand Concourse, Bronx

Planting beds should be sufficiently wide and deep to provide adequate soil volume for plants: 6 feet minimum soil width (wall to wall) and 24 inches minimum soil depth is preferred; exceptions may be approved on a case-by-case basis

Provide a minimum 24 inches depth of high-quality, well-draining soil; 30–36 inches is optimal – see **LANDSCAPE: GENERAL GUIDELINES: SOILS**

Positive drainage below the planting soil is essential. Any impermeable layers of concrete or asphalt must be removed or appropriately designed weep holes must be included

Where conditions allow, medians should be planted with large-growing canopy trees

Tree spacing should be based on the appropriate mature width of the species chosen and must be approved by Parks

Minimum distance from the curb at the end of the median to the center of the tree trunk is 35 feet

Where truck and bus traffic is heavy, consider using columnar species to reduce damage to plants

Consider planting fewer species (excluding trees) to provide continuity and reduce overall maintenance needs; select plants that will provide year-round ornamental interest

Space shrubs and other plants so as to encourage dense, full growth, and deter weeds, however, do not overcrowd, which can lead to poor air circulation and encourage the spread of pest and disease problems

Use drought-tolerant, salt-tolerant species that require little to no pruning or deadheading to maintain their shape, size, vitality, and ornamental interest

In medians with trees, consider understory species that will tolerate varying light conditions as tree species mature and provide more shade

The roots of plants will be primarily within the top 12 inches of the surface, and are thus more sensitive to freeze-thaw cycles in the winter. Carefully select species which are cold hardy to at least Zone 6A. For added insulation, provide adequate mulch (2–3 inches) at the time of planting and replenish as necessary

For perimeter plantings, choose plants that will not protrude beyond the edge of the raised wall; plants that cascade over the edge of the wall may be acceptable

### Plants

See Plant Database at [www.nycstreetdesign.info/search-plant](http://www.nycstreetdesign.info/search-plant)



## Pedestrian Mall

A wide median that allows for pedestrian use and circulation in addition to plantings. Pedestrian malls, like the Allen Street Malls or the Park Avenue Mall at East 97th Street in Manhattan, provide a safe area for pedestrian use within the roadway. Typically, these malls are Parks property and are maintained by Parks or by neighborhood groups through a maintenance agreement.



In the fall, this pedestrian mall features colorful foliage: Park Avenue and 97th Street, Manhattan (Credit: Lynden B. Miller)



Evergreens provide color in the winter: Park Avenue and 97th Street, Manhattan (Credit: Lynden B. Miller)

### Benefits

See benefits of LANDSCAPE: RAISED MEDIAN (CURB HEIGHT)

### Considerations

Allow adequate room for trucks and buses to make necessary turns without damaging plant material

Consider environmental and physical stresses plants must withstand, including drought/inundation, sun/shade, heat/cold, wind, pollution, road salt, garbage, vehicular damage, and compaction

Consider the lifespan and longevity of species, as plant replacement may be difficult and costly

Consider how maintenance workers will access the plantings to perform regular maintenance activities, especially watering

Consider pedestrian and bicycle circulation within the mall

Consider how the planting design will function with other elements, such as seating, bike racks, wayfinding, lighting, and artwork

Consider the collection of stormwater. See LANDSCAPE: STORMWATER MANAGEMENT PRACTICES

In cases where the pedestrian mall is not Parks property or is not being maintained by the city, plantings, excluding trees, require a maintenance agreement

### Design

See LANDSCAPE: GENERAL GUIDELINES

See GEOMETRY: RAISED MEDIAN for geometric design guidance; all medians must include a paved area, free of vegetation or obstructions, for pedestrians to safely cross at the intersection

Where planting trees, see design guidance for LANDSCAPE: TREE BEDS

Adequate access should be provided throughout the mall; planting areas should be designed to accommodate necessary circulation. A minimum of 8 feet must be provided for a pedestrian-only path, 8 feet for a two-way bicycle path, and 12–14 feet, depending on the volume of users, for a shared-use path

Provide a minimum 24 inches depth of high-quality, well-draining soil; 30–36 inches is optimal – see LANDSCAPE: GENERAL GUIDELINES: SOILS

Positive drainage below the planting soil is essential. Any impermeable layers of concrete or asphalt must be removed or appropriately designed weep holes included

Where conditions allow, medians should be planted with large-growing canopy trees

Tree spacing should be based on the appropriate mature width of the species chosen and must be approved by Parks

Minimum distance from the curb at the end of the median to the center of the tree trunk is 35 feet

Where truck and bus traffic is heavy, consider using columnar species to reduce damage to plants

Consider planting fewer understory species to provide continuity and reduce overall maintenance needs; select plants that will provide year-round ornamental interest

Use drought-tolerant, salt-tolerant species that require little to no pruning or deadheading to maintain their shape, size, vitality, and ornamental interest

Plant densely to discourage weed growth and pedestrian access through the plantings, however, do not overcrowd, which can lead to poor air circulation and encourage the spread of pest and disease problems

Consider the use of tree-bed guards around planting areas to discourage trampling of plant material

### Plants

See Plant Database at [www.nycstreetdesign.info/search-plant](http://www.nycstreetdesign.info/search-plant)



*Strategic tree and plant selection allows for year-round interest. Early flowering trees and bulbs add color in the spring: Park Avenue and 97th Street, Manhattan (Credit: Lynden B. Miller)*



*The same pedestrian mall in the summer, with plantings that provide shade while maintaining visual interest: Park Avenue and 97th Street, Manhattan (Credit: Lynden B. Miller)*



## Triangle

A planted area of any size and shape, not just a triangle, within the public ROW that generally separates and/or channelizes traffic. Typically, existing planted triangles are maintained by Parks (through the Greenstreets agreement between DOT and Parks) or another entity, such as a neighborhood group through a maintenance agreement.



Planted triangle. Clear paths are provided for pedestrian circulation: Grand Army Plaza, Brooklyn



Planted triangle. Shorter plants are located near the edge to maintain sightlines: Macombs Road and Grand Avenue, Bronx (Credit: Parks)

### Benefits

See LANDSCAPE: BENEFITS OF PLANTINGS IN THE ROW

Can incorporate pedestrian amenities such as seating or other furnishings to encourage social and recreational activities, depending on its size and capacity of the maintenance partner

### Considerations

See LANDSCAPE: GENERAL GUIDELINES

May impact street drainage or require catch-basin relocation

Safe access to plantings for maintenance workers must be provided; this may require a lane closure permit from DOT and should utilize appropriate safety equipment

Excluding trees, plantings in triangles not covered under the Parks-DOT Greenstreets agreement require a maintenance agreement

Stormwater management practices not covered under the agreement between Parks, DEP, and DOT require a maintenance agreement. See LANDSCAPE: STORMWATER MANAGEMENT PRACTICES

### Design

See LANDSCAPE: GENERAL GUIDELINES and LANDSCAPE: TREE BEDS

Design details should be determined on a site-specific basis with Parks, DOT, and, if applicable, DEP

Consider pedestrian access and circulation; paths should be uninterrupted through triangles

Consider height and width of shrubs, grasses, and perennials at maturity, and, if necessary, keep taller plants towards the interior and use shorter plants along the exterior of triangle plantings. Choose dwarf species where visibility is a concern

Plants must not protrude into the roadway; plant densely within the bed to discourage weed growth and trampling

Consider the use of tree-bed guards around planting areas to discourage trampling of plant material

Use salt-tolerant, drought-tolerant species

Consider designing the area to capture stormwater runoff. See LANDSCAPE: STORMWATER MANAGEMENT PRACTICES

### Plants

See Plant Database at [www.nycstreetdesign.info/search-plant](http://www.nycstreetdesign.info/search-plant)



## Street End

The public space at the end of a street abutting a boardwalk or body of water. Pedestrian access to the water, boardwalk, or waterfront promenade must be maintained. In some cases, street ends are adjacent to waterfront public access areas where the city has required private development to build and maintain a waterfront promenade. These public access areas are generally created through the zoning resolution that regulate how the space is designed and maintained. PDC review is typically required for changes within the Street End and should be conducted in concert with DCP's review of a waterfront public access area, if applicable.



*Planted area in a street end. These hardy grasses are appropriate for the context; they can tolerate salt and a wide range of soil conditions and provide year-round interest: 73rd Avenue, Queens*



*Street closures can create opportunities for plantings: 73rd Avenue, Queens*

### Benefits

See LANDSCAPE: BENEFITS OF PLANTINGS IN THE ROW

Provides an opportunity to actively collect and manage stormwater

### Considerations

See LANDSCAPE: GENERAL GUIDELINES

See considerations for LANDSCAPE: TRIANGLE

Consider maintaining clear view corridors to visual resources (i.e. bodies of water) from upland sidewalks

Physical and environmental stresses should be understood prior to plant selection; especially if near the coast or another body of water

Plantings not maintained by the city require a maintenance agreement with DOT

Certain Street Ends are subject to the DOT-Parks Street Ends MOU; these are typically built as part of a Waterfront Access Plan

### Design

See LANDSCAPE: GENERAL GUIDELINES

Consult DCP for Waterfront Public Access requirements for adjacent parcels and to allow for coordination with existing or future public access areas and continuous access along the shoreline where appropriate

A minimum 5-foot path for pedestrian access should be provided through a planted area if there is an accessible area beyond the plantings; a larger clear path, up to 15 feet, may be required if there are high pedestrian volumes

Consider the use of pedestrian amenities, such as street furniture, in conjunction with plantings. Non-standard elements will require a maintenance agreement

Consider the capture of stormwater runoff. See LANDSCAPE: STORMWATER MANAGEMENT PRACTICES

Consider the use of a barrier, such as a W-section guide rail or martello bollard, to prevent vehicular access and damage to plantings; all barriers must be reviewed and approved by DOT and any non-standard barriers will require a maintenance agreement

### Plants

See Plant Database at [www.nycstreetdesign.info/search-plant](http://www.nycstreetdesign.info/search-plant)

# Sidewalk Plantings

Sidewalk plantings are trees, shrubs, groundcovers, perennials, and other vegetation located on the sidewalk. Generally, plantings are located within the sidewalk furnishing zone – the area where most furnishings are installed and typically abutting the curb. Sidewalk plantings must endure limited growing space, compaction, salt, and damage from people, animals, and vehicles; these factors should guide plant selection.

## Full Sidewalk

Any planting within the furnishing zone of a full sidewalk; may include street trees, ornamental plantings, stormwater plantings, or other types of vegetation. Street trees should be planted wherever possible. While Parks is responsible for the maintenance of the city's street trees, other ornamental plantings, such as tree bed plantings, are encouraged but will require a maintenance agreement. Stormwater management practices are generally installed on sidewalks in DEP Priority Areas to capture stormwater runoff from the roadway where conditions are appropriate. See **GEOMETRY: FULL SIDEWALK** and **LANDSCAPE: STORMWATER MANAGEMENT PRACTICES**.



A mix of understory plantings, an allée of trees, and a bioswale knit together the urban fabric of this Upper West Side neighborhood. Plantings maintained by the Columbus Avenue BID: Columbus Avenue, Manhattan



Planted area in front of P.S. 234. Planted areas adjacent to schools can provide educational opportunities: Greenwich Street at Chambers Street, Manhattan (Credit: Lynden B. Miller)

### Benefits

See **LANDSCAPE: BENEFITS OF PLANTINGS IN THE ROW**

### Considerations

See **LANDSCAPE: GENERAL GUIDELINES**

See considerations for **LANDSCAPE: TREE BEDS**

Adequate access from the street and to building entrances must be maintained

Consider environmental and physical stresses plants must withstand, including drought/inundation, sun/shade, heat/cold, wind, compaction, garbage, and animal damage

Excluding trees, sidewalk plantings not covered under the Parks-DOT Greenstreets agreement require a maintenance agreement

Stormwater management practices not covered under the agreement between Parks, DEP, and DOT require a maintenance agreement. See **LANDSCAPE: STORMWATER MANAGEMENT PRACTICES**

### Design

See design guidance for **LANDSCAPE: TREE BEDS** and **GEOMETRY: FULL SIDEWALK**

Meet minimum size and design requirements of Parks Tree Planting Standards

A minimum 8-foot clear path must be maintained in areas with high pedestrian traffic and a 5-foot minimum clear path in areas with low pedestrian traffic. DOT may require a greater clear path, up to 15 feet, in locations with particularly high pedestrian volumes. Exceptions may be approved by DOT on a case-by-case basis.

The New York City Zoning Resolution requires that one tree be provided for every 25 feet of curb frontage for new developments and major alterations

Maximize available soil volume and select plants with appropriate shape, form, and ultimate size to allow proper sight lines for pedestrian, bicycle, and vehicular traffic

Consider the installation of stormwater management practices. See **LANDSCAPE: STORMWATER MANAGEMENT PRACTICES**

### Plants

See Plant Database at [www.nycstreetdesign.info/search-plant](http://www.nycstreetdesign.info/search-plant)



## Ribbon Sidewalk

Ribbon sidewalks allow for planting along the curb. They typically occur in more residential areas with low-volume pedestrian traffic. The planting strip generally consists of trees and turf grass, but can also provide an opportunity for enhanced ornamental plantings.



Ribbon sidewalk with turf grass and trees. Trees can be very large due to expanded rooting area afforded by adjacent lawns: Bancroft Avenue, Staten Island (Credit: Parks)



Ribbon sidewalk with lawn planting strip and trees. This configuration is common in lower-density residential areas and generally supports larger trees: Ocean Parkway, Brooklyn

### Benefits

See LANDSCAPE: BENEFITS OF PLANTINGS IN THE ROW

### Considerations

See LANDSCAPE: GENERAL GUIDELINES

May impact underground or overhead utilities

Consider environmental and physical stresses plants must withstand, including drought/inundation, sun/shade, heat/cold, wind, compaction, garbage, and animal damage

Planting strips adjacent to ribbon sidewalks must be planted with groundcover vegetation for erosion control if a stormwater management practice is not used. See LANDSCAPE: STORMWATER MANAGEMENT PRACTICES

The adjacent property owner or other maintenance partner is responsible for maintenance of any plantings, including lawn, other than trees

### Design

See design guidance for LANDSCAPE: TREE BEDS

Groundcover other than turf grass is encouraged as long as adequate access every 20 feet via walkable vegetation or another accessible surface is provided from the roadway

Consider the capture of stormwater runoff. See LANDSCAPE: STORMWATER MANAGEMENT PRACTICES

Select low-growing plants that will have year-round ornamental interest

### Plants

See Plant Database at [www.nycstreetdesign.info/search-plant](http://www.nycstreetdesign.info/search-plant)

## Curb Extension

A curb extension that is planted rather than paved. See **GEOMETRY: CURB EXTENSION**.



*Christopher Street and Greenwich Street, Manhattan*



*W 11th Street and Seventh Avenue S, Manhattan*

### Benefits

See **LANDSCAPE: BENEFITS OF PLANTINGS IN THE ROW**

### Considerations

See **LANDSCAPE: GENERAL GUIDELINES**

May impact street drainage and require new catch basins

Excluding trees, plantings in curb extensions not covered under the Parks-DOT Greenstreets agreement require a maintenance agreement

Stormwater management practices not covered under the agreement between Parks, DEP, and DOT require a maintenance agreement. See **LANDSCAPE: STORMWATER MANAGEMENT PRACTICES**

### Design

See design guidance for **LANDSCAPE: RAISED MEDIAN (CURB HEIGHT)**

If located at a corner, maintain clear access to the crosswalk and the pedestrian ramp

Where possible, pitch sidewalks to direct water into the planting beds. Additionally, consider the capture of stormwater from the roadway. See **LANDSCAPE: STORMWATER MANAGEMENT PRACTICES**

Select low-growing plants that will have year-round ornamental interest and not block sight lines. Consider the use of tree-bed guards around planted areas

### Plants

See Plant Database at [www.nycstreetdesign.info/search-plant](http://www.nycstreetdesign.info/search-plant)



## Permanent Planter

Planters are decorative containers, of a variety of sizes and shapes, which support small trees and understory plantings including shrubs, grasses, perennials and bulbs. Planters are only permitted where in-ground trees or plantings cannot be achieved. When sited appropriately and properly maintained, planters provide many of the same benefits as in-ground plantings. Any planter installed on public ROW needs to be reviewed and approved by DOT and will require a maintenance agreement.



168th Street, Manhattan



Greenwich Street, Manhattan

### Benefits

See LANDSCAPE: BENEFITS OF PLANTINGS IN THE ROW

Planters allow for vegetation where in-ground planting is not possible

### Considerations

See LANDSCAPE: GENERAL GUIDELINES

Site planters so as to not displace legally operating street vendors

Planters should be contextually appropriate, and special care must be taken when sited near artwork. PDC review is required for planters sited within 75 feet of an artwork

Maintain pedestrian circulation and desire lines

Consider the impact of planter dimensions on the visual corridor and avoid contributing to visual clutter or blocking sight lines of major thoroughfares.

Consider integrating planters with adjacent privately-owned publicly-accessible space and look for opportunities to group planters together where spacing allows

Consider the environmental and physical stresses plants must endure. Litter/debris, vandalism, and theft are all common; plants will have to accommodate wider swings in temperature as the soil is exposed

Frequent watering is required to maintain healthy plants; ensure planters have proper drainage

Planters may only be installed if a maintenance plan has been submitted and approved by DOT and an agreement is in place

### Application

Located only on sidewalks that cannot support standard street trees or in-ground planting; appropriate supporting documentation (utility plans, underground constraints, documentation from Parks, etc.) must be submitted to DOT with any application for planters

### Design

Refer to DOT's Permanent Planter Design Guidelines for more information; planters that follow these guidelines do not require PDC approval

See FURNITURE: PLANTER for further guidance on the design of the container



Must be capable of providing suitable soil volume and drainage to allow small trees to thrive; planters should provide a minimum 54 cubic feet of soil volume and may vary in dimension, with a 3-foot height preferred and a maximum 4-foot height

8 feet or 50%, whichever is greater, of the sidewalk width must remain clear for 15 feet on either side of the planter

When feasible, planters shall occupy no more than 25% of the sidewalk width

Ensure a reveal on the bottom of the planter and design the planter to be moveable

Planters should allow for uneven or sloped sidewalks while remaining level

Provide positive drainage via appropriately designed weep holes or a similar method to prevent the accumulation of standing water

Permanent planters must include a small-canopy tree; exceptions may be made in certain circumstances

Ensure plants provide year-round interest or are rotated out each season so the planters are consistently filled; at no time should a planter be empty

Plants should be drought-tolerant and one to two USDA zones hardier to increase winter survival potential as soil is less insulated. Plants should also be tolerant of limited soil volume and selected so as to not obstruct sight lines

### Plants

See Plant Database at [www.nycstreetdesign.info/search-plant](http://www.nycstreetdesign.info/search-plant)



168th Street, Manhattan



Greenwich Street, Manhattan

# Plaza Plantings

Although plazas tend to consist mostly of hardscape to facilitate pedestrian circulation, seating, and programming, plantings make them more inviting and can help define spaces within them. Plazas allow for larger plants and a greater diversity of species than is possible in more constrained areas such as raised medians or tree beds.

See GEOMETRY: PEDESTRIAN PLAZA for more information on general plaza design.

## In-Ground Planting Area

Planting areas within plazas that are level with the surrounding grade. The size and shape of the area may vary, and it is typically employed where there are few underground constraints.

### Benefits

See LANDSCAPE: BENEFITS OF PLANTINGS IN THE ROW

Plants add character to a plaza and provide secondary environmental benefits

Plazas provide more room for planting and allow for a greater diversity of plants

### Considerations

See LANDSCAPE: GENERAL GUIDELINES

Account for existing and proposed pedestrian circulation, especially major desire lines to crosswalks, building entrances, and pedestrian generators such as transit connections

Plazas should maintain a feeling of openness; plantings should not block critical sight lines

Proximity to vehicular traffic and pedestrian circulation will impact the size and shape of the planting areas

Positive drainage must be established in all planting areas

Consider worker access to the plantings for regular maintenance activities; access to a water source for irrigation should be provided

Any plantings not maintained by DOT, DEP, or Parks will require a maintenance agreement

### Design

Plantings must be considered in context of the overall plaza design. See GEOMETRY: PEDESTRIAN PLAZA for design guidance

Maintain a clear path for any major pedestrian desire lines or defined circulation paths; if the plaza is located in front of a building, provide an additional clear path adjacent to the building

Provide adequate soil volume/rooting area for plantings; see SOILS in the LANDSCAPE: GENERAL GUIDELINES



Corona Plaza, National Street and Roosevelt Avenue, Queens

Design plantings in relation to seating areas or other areas of interest to create or define edges, to add visual interest, to provide shade, and/or to provide other protection for plaza users

Select plants that provide year-round interest; utilize combinations of plants that have contrasting textures, colors, and forms

Plant densely to discourage littering, trampling and other improper uses

Direct stormwater runoff into plantings wherever possible. See LANDSCAPE: STORMWATER MANAGEMENT PRACTICES

In heavily trafficked areas, consider the use of suspended paving systems to maximize circulation while preventing soil compaction. Consider the use of a tree-bed guard where feasible

### Plants

See Plant Database at [www.nycstreetdesign.info/search-plant](http://www.nycstreetdesign.info/search-plant)



## Raised Planting Area

Any planting area within a plaza that is raised above grade. The size and shape of the area may vary from site to site and is typically employed where there are underground constraints. The majority of the soil volume is contained within the above-ground structure.

### Benefits

See LANDSCAPE: BENEFITS OF PLANTINGS IN THE ROW and LANDSCAPE: IN-GROUND PLANTING AREA

Above-ground planting structures allow the integration of other design elements such as seating and lighting

Raising planters creates opportunities for planting where there are underground constraints

Raised planters create more substantial barriers from vehicles

Raised planters provide protection from winter salt spray

### Considerations

See LANDSCAPE: GENERAL GUIDELINES

See considerations for LANDSCAPE: IN-GROUND PLANTING AREA

Plant selection should be sensitive to the limited amount of soil available for root growth in a raised planter. Due to the limited soil volume, plants should be more drought-tolerant and will need to be watered more often

Soil is less insulated in raised planting beds; freeze/thaw cycles will be more extreme in winter; select plants that are one to two USDA zones harder to survive these conditions

Any plantings not maintained by DOT, DEP, or Parks will require a maintenance agreement

### Design

See design guidance for LANDSCAPE: IN-GROUND PLANTING AREA

Consider the type of soil that will be used. Specify a soil with good water and nutrient holding capacity. See LANDSCAPE: GENERAL GUIDELINES: SOILS

Positive drainage below the planting soil is essential. Any impermeable layers of concrete or asphalt must be removed or appropriately designed weep holes must be included



Myrtle Avenue Plaza, Myrtle Avenue between Hall Street and Emerson Place, Brooklyn

Raised structures allow for greater variation in topography and a larger variety of seating options

Planting beds, as a general rule, should be limited in height and maintain visual and physical openness

Additional seating can be provided by utilizing the raised structure as a seat wall; avoid creating long walls that impede pedestrian circulation and take into consideration potential maintenance issues such as skateboard use

Raised planting areas can be designed to creatively accommodate or incorporate required security measures; consider impacts of security infrastructure (foundations, spacing requirements, etc.) on species selection

### Plants

See Plant Database at [www.nycstreetdesign.info/search-plant](http://www.nycstreetdesign.info/search-plant)

# Limited-Access Arterial Plantings

Landscapes along limited-access arterial highways feature shade and evergreen trees, understory plantings, and turf grass to provide a green buffer for adjacent communities and enhance the natural environment. These areas are typically much larger and allow for a greater diversity of plants than is possible elsewhere. However, irrigation is rarely provided, and plants must tolerate other urban stresses such as wind and salt.

## Limited-Access Arterial Plantings

Limited-access arterial highways are high-speed roadways, such as expressways or parkways, with access ramps, no intersections with traffic control, and generally large areas for plantings. The most commonly used ground cover for limited-access arterial highways is turf grass. Arterial lawns are mowed about four times during the growing season. No fertilizers or pesticides are used, and there is never supplemental irrigation after establishment.



Plantings along an access ramp and bridge structure: Belt Parkway, Queens



New planting featuring various tree species: Brooklyn Queens Expressway, Brooklyn

### Benefits

See LANDSCAPE: BENEFITS OF PLANTINGS IN THE ROW

Limited-access arterial ROWs often contain large contiguous areas suitable for re-forestation, providing some of the benefits of natural woodland, including corridors for wildlife

Opportunities for greater diversity in trees and other species and preservation of native species where existing conditions are not unduly disturbed

Summer cooling, wind reduction, buffering of negative traffic perceptions, glare reduction, and enhanced aesthetics provide a more pleasant experience for motorists

May provide moderate stormwater capture

### Considerations

See LANDSCAPE: GENERAL GUIDELINES

Plantings must comply with DOT design standards and guidelines and NYSDOT guidelines if located within NYSDOT jurisdiction

Limited-access arterial highway landscapes typically receive limited maintenance; there is no weeding or invasive-species removal; maintenance typically consists of litter removal, lawn mowing, tree pruning for safety, and limited herbicide use along landscape edges

Trees should not be planted closer than 20 feet apart to allow for mowing. Space should be provided for maintenance vehicles and crews

Plantings should not create hidden areas that facilitate illegal activities such as dumping or vandalism

Soil can be highly variable in texture, pH, and depth; compaction is typical and can greatly suppress root growth as well as cause drainage problems

Plants must be able to tolerate various stresses such as reflected heat, salt, drought, wind, and competition from invasive plants

Plants known to be susceptible to insect or disease problems should not be used

The Port Authority of New York and New Jersey prohibits plants with fruit that attracts birds near the airports

Consider use of a native plant seed mix combining grasses and forbs, particularly on slopes exceeding 3:1 where mowing may be difficult





Various tree species: Hutchinson River Parkway, Bronx

Any plantings not maintained by DOT or Parks will require a maintenance agreement

Consider DOT's Adopt-a-Highway program for enhanced maintenance

### Design

Limited-access arterial highways without curbside safety barriers must maintain 30-foot clear zones (an area clear of fixed objects, such as trees, hazardous to vehicles involuntarily leaving the roadway at high speed) on either side. Access ramps must have clear zones measuring at least 15 feet on either side. All clear zones must be approved by DOT

A minimum of 10 feet behind any safety barrier should be clear of trees and other fixed objects

Arterial landscapes are usually viewed by highway users at fast speeds; plant large swathes of fewer types of species

Large-growing shade trees should be spaced to promote maximum growth, typical form, and sturdy structure; interplant large trees with smaller understory trees and/or shrubs to increase the density of plantings

A good highway plant palette includes hardy species known to thrive and other plants for diversity and interest

Use low-mow fescues or similar turf grass species to reduce mowing frequency where practical

Ensure turf species are well-suited to the site so as to be as vigorous and dense as possible for good erosion control and quick repair of physical damage

Asphalt mow strips, or similar treatments, are required around and under objects that mowers cannot pass over

Incorporate stormwater management practices where appropriate. Generally, restrictions on space do not apply, so such infrastructure can be much larger. See LANDSCAPE: STORMWATER MANAGEMENT PRACTICES

Mulch around trees, without covering the root flare or trunk, to reduce damage from tractor mowers and greatly improve tree health; a 3-foot minimum diameter mulch bed is required around new trees and a minimum 5-foot diameter is required around existing trees

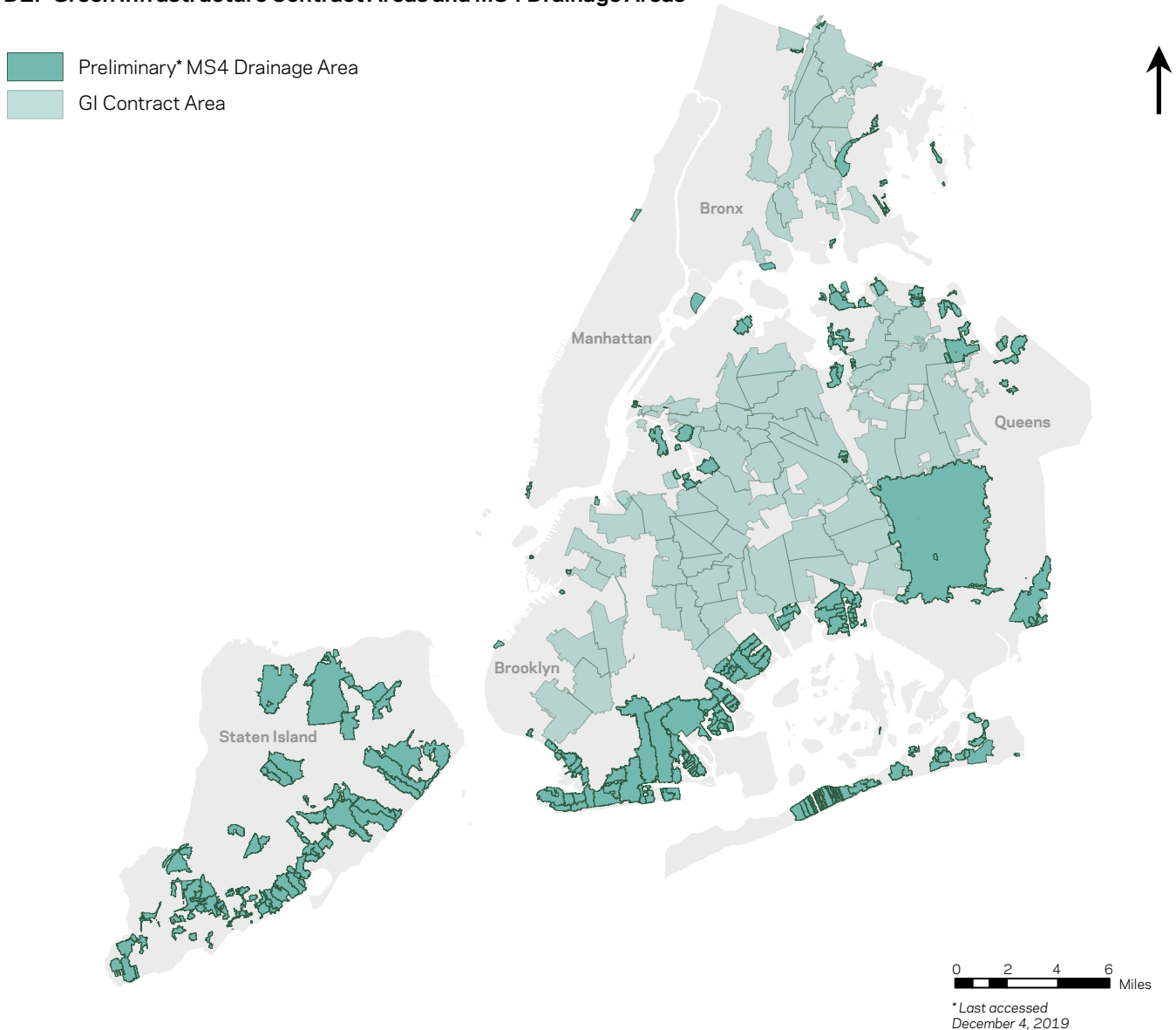
### Plants

See Plant Database at [www.nycstreetdesign.info/search-plant](http://www.nycstreetdesign.info/search-plant)

# Stormwater Management Practices

Stormwater management is necessary to reduce combined sewer overflow (CSO) in combined sewer areas of the city and reduce pollution in waterways in the municipal separate storm sewer system (MS4) areas of the city. New York City manages stormwater through “gray” infrastructure including tanks and pipes or “green” infrastructure (GI) practices which mimic the way the natural environment handles stormwater. GI practices typically manage stormwater via infiltration through soil and evaporation through vegetation. GI practices can also provide co-benefits such as reduced flooding, improved air quality, attractive streetscapes, traffic calming, and more.

## DEP Green Infrastructure Contract Areas and MS4 Drainage Areas



Maps showing preliminary MS4 Drainage and GI Contract Areas are provided through the DEP website at [www1.nyc.gov/site/dep/water/municipal-separate-storm-sewer-system.page](http://www1.nyc.gov/site/dep/water/municipal-separate-storm-sewer-system.page) (MS4) and [www.nyc.gov/dep/gimap](http://www.nyc.gov/dep/gimap) (GI Contract). (Credit: DEP)

Using natural components, such as plants, stones, and soils, to mitigate the impacts of stormwater runoff is an ecologically responsible and economical technique to employ within the public ROW. DEP, together with DOT, Parks, and DDC, developed standardized designs and protocols to site GI practices within the public ROW. These standards along with other helpful guidance can be found on DEP's website at [www.nyc.gov/dep/greeninfrastructure](http://www.nyc.gov/dep/greeninfrastructure).

The following sections describe specific city-led strategies for managing stormwater in targeted areas that have the greatest need. These practices will be built and maintained by the city within priority areas of combined- (CSO) and separately-sewered (MS4) areas.

The city will site the appropriate standard treatment based on visible site conditions (grading, location of catch basins, tributary drainage area, pedestrian volumes, built fabric context) as well as subsurface conditions (permeability, site contamination, water table, etc.).

Private entities or community groups are also encouraged to build green infrastructure, but those installations will require a maintenance agreement. Private entities may choose to build standard stormwater management practices or to pursue unique installations. Treatments other than city standards will require more intensive review, but are still encouraged.



## Sidewalk Stormwater Management Practices

The most common type of Stormwater Management Practice is typically a planted area located along the curb of a sidewalk, graded to capture stormwater, and planted with an understory of shrubs and herbaceous material, and sometimes trees. Inlet structures such as curb cuts and grates allow for stormwater from the adjacent roadway to enter the planted area and overflow to exit. Consisting of ROW Rain Gardens, Bioswales, Greenstrips, and Infiltration Basins, the city will build and maintain these practices within DEP Priority Areas; see DEP Green Infrastructure Contract Areas and MS4 Drainage Areas map.



Dean Street, Brooklyn



Lafayette Avenue, Bronx

### Benefits

See LANDSCAPE: BENEFITS OF PLANTINGS IN THE ROW

Reduced stormwater entering sewers during storms

Can help to improve water quality in local waterways

Healthier plants and greater survival rates when appropriate plants are used

Can improve street drainage and may reduce ponding on streets and/or sidewalks

### Considerations

See LANDSCAPE: GENERAL GUIDELINES

Designers should perform environmental due diligence to ensure green infrastructure installations will not exacerbate preexisting subsurface contamination, including, but not limited to, researching current and past uses of the site, and reviewing publicly available local, state, and federal databases; additional environmental analysis, and potentially site remediation, may be necessary

Refer to DEP's latest Procedure Governing Limited Geotechnical Investigation for Green Infrastructure Practices, available at [www.nyc.gov/html/dep/pdf/green\\_infrastructure/ogi-geotech-procedure.pdf](http://www.nyc.gov/html/dep/pdf/green_infrastructure/ogi-geotech-procedure.pdf). Coordinate with DEP on geotechnical results to ensure that stormwater control practices are appropriate for the proposed location

Retrofitting existing plantings may be feasible if there is limited grade change and in situ soils are appropriate; special care must be given to tree roots; existing species must be able to tolerate higher levels of water

Plants should tolerate salts, sediment, contamination, and highly variable levels of water availability

Due to existing grading and/or the crown of the road, stormwater installations along the gutter are ideal for stormwater capture, while installations in the center of the road will not capture significant volumes of water unless the road can be regraded

Avoid in areas adjacent to retaining structures, structural foundations, critical infrastructure, or on roadways elevated atop a retaining wall structure; cannot be sited within 25 feet of above or below-ground MTA structures

Leaves, litter, and other material may clog inlets/outlets and could impact overall performance and aesthetics of the installation. Locations with heavy sediment or trash/debris loading will require frequent cleaning and should be avoided

Stormwater management practices funded and approved by DEP will be maintained by DEP, all other installations are encouraged, but will require a maintenance agreement

### Application

Install in all areas with tree beds, roadway plantings, sidewalk plantings, plaza plantings, and limited-access arterial plantings. See LANDSCAPE: TREE BEDS, LANDSCAPE: ROADWAY PLANTINGS, LANDSCAPE: SIDEWALK PLANTINGS, LANDSCAPE: PLAZA PLANTINGS, and LANDSCAPE: LIMITED ACCESS ARTERIAL PLANTINGS

ROW Bioswales are the most frequently used and generally mimic the siting criteria used for tree beds. See LANDSCAPE: TREE BEDS

ROW Rain Gardens are typically used where there is shallow bedrock or groundwater and have the same siting criteria as Bioswales

ROW Greenstrips may be used where sidewalks are narrow, but are generally not preferred

ROW Infiltration Basins are used in areas with narrower sidewalks and/or higher pedestrian volumes where plants are not feasible or an existing grass strip should be maintained; they are not recommended for areas where vehicles frequently mount the sidewalk

Installations can be pursued in partnership with DEP, Parks, or another maintenance partner

### Design

DEP Standards for the ROW Bioswale, Rain Garden, and Greenstrip are available on the DEP website at [www.nyc.gov/dep/greeninfrastructure](http://www.nyc.gov/dep/greeninfrastructure)

Use canopy trees, low shrubs, and groundcover to maintain visibility

Surface treatment may be plantings, lawn, or concrete depending on context and community feedback

A minimum 8-foot clear path must be maintained in areas with high pedestrian traffic and a 5-foot minimum clear path in areas with low pedestrian traffic. DOT may require a greater clear path, up to 15 feet, in locations with particularly high pedestrian volumes. Exceptions may be approved by DOT on a case-by-case basis

Installations should be sited at locations that receive adequate flow

Locate treatments at least 7 feet from any below-ground vaults or basements to prevent water damage to these structures

Avoid locations in proximity to existing above-ground or subsurface utilities

Stormwater management areas should be sized in relation to the tributary drainage area to handle the volume of water entering into them; consult DEP's latest Green Infrastructure Standards

Select soils that allow more rapid infiltration than typical horticultural soils and resist compaction while still supporting plant material

Direct runoff into planted areas via porous pavement, curb inlets, stormwater inlets with sub-surface pipes, or other methods approved by DEP

Utilize a pre-treatment system such as grates, a vegetative filter, or weirs to filter and collect sediment and floatables into a concentrated area; this system should be easy to clean out and will reduce the frequency of maintenance visits

Water entering the planted area should be detained and allowed to infiltrate into the soil; grade soil as a swale or depress the soil level below the inlet/outlet structures

Overflow must be allowed to flow to an existing catch basin; consider the use of graded outlet structures or overflow drains to direct excess water from larger storms into the sewer system

Consider permeable pavement wherever safe and feasible. See MATERIALS: PERMEABLE INTERLOCKING CONCRETE PAVER (PICP) and MATERIALS: PERVIOUS CONCRETE in the SIDEWALKS section

### Plants

See Plant Database at [www.nycstreetdesign.info/search-plant](http://www.nycstreetdesign.info/search-plant)

## Stormwater Greenstreet

Another common Stormwater Management Practice, a Stormwater Greenstreet, is a planted area within the sidewalk or roadway, which extends beyond the standard street geometry, and collects and treats stormwater runoff. Stormwater Greenstreets are typically larger stormwater management practices installed and maintained by DEP, Parks, or another committed maintenance partner. They can be located anywhere in the city as conditions allow. It should be noted that these are not typical Greenstreets as defined in the Greenstreets agreement between DOT and Parks. For examples, visit DEP's webpage on Green Infrastructure.



NYC Parks has installed treatments of various sizes and shapes throughout the city: Westbourne Avenue and Bay 25th Street, Queens (Credit: Parks)



Water can be collected in a forebay, such as the triangular area shown above. This allows sediment and debris to settle before the water continues to the planting area: Westbourne Avenue and Bay 25th Street, Queens (Credit: Parks)

### Benefits

See benefits for LANDSCAPE: SIDEWALK STORMWATER MANAGEMENT PRACTICES

Permit greater water capture than what is typical for a sidewalk stormwater management practice due to generally larger installations

Non-standard geometry (i.e., curb extension) enables the greenstreet to capture water and reduce runoff bypass by allowing water to enter directly while also providing the safety benefits typical of a curb extension. See GEOMETRY: CURB EXTENSION

### Considerations

See considerations for LANDSCAPE: SIDEWALK STORMWATER MANAGEMENT PRACTICES

Avoid in areas of high foot traffic or curbside activity, including pedestrian desire lines that may be impacted

Within DEP priority areas, the city will construct and maintain Stormwater Greenstreets. Outside of these areas the practice is encouraged, but a maintenance agreement is required

### Application

See application guidance for LANDSCAPE: SIDEWALK STORMWATER MANAGEMENT PRACTICES

Unused or underutilized roadway areas that can be re-purposed to collect stormwater

### Design

See design guidance for LANDSCAPE: SIDEWALK STORMWATER MANAGEMENT PRACTICES

DEP Guidelines for the Stormwater Greenstreets are available on the DEP website at [www.nyc.gov/dep/greeninfrastructure](http://www.nyc.gov/dep/greeninfrastructure)

Overall dimension will be determined based on the catchment area, and geometries must be approved by DOT; generally, installations follow striped roadbed area or underused roadway width

Catch basins should be located on the downstream side of the overflow or outlet

### Plants

See Plant Database at [www.nycstreetdesign.info/search-plant](http://www.nycstreetdesign.info/search-plant)



## Median Stormwater Management Practices

Similar to DEP Rain Gardens and Stormwater Greenstreets, Median Stormwater Practices are installed within a median of a street.



Fieldston Road at Riverdale Avenue and W 236th Street, Bronx



Justice Avenue, Queens

### Benefits

See benefits of LANDSCAPE: SIDEWALK STORMWATER MANAGEMENT PRACTICES

### Considerations

See considerations for LANDSCAPE: SIDEWALK STORMWATER MANAGEMENT PRACTICES

Raised medians, whether paved or planted, are more suitable for stormwater management than other types of medians such as barrier medians and painted medians

Median stormwater management practices should be a minimum of 12 feet in width and consideration should be given for maintenance vehicle access

Avoid in areas of with high sediment loads or other types of trash and debris

### Application

In areas where sufficient drainage can be directed to the median

### Design

See design guidance for LANDSCAPE: SIDEWALK STORMWATER MANAGEMENT PRACTICES

See design guidance for LANDSCAPE: RAISED MEDIAN (CURB HEIGHT) and LANDSCAPE: RAISED MEDIAN (12-24 INCHES)

Similar to stormwater greenstreets, median stormwater management practices require site-specific design and review. See LANDSCAPE: STORMWATER GREENSTREET

In locations where the roadway is pitched towards the median, curb cuts may be used to divert stormwater to the median stormwater management practice

For roadways that pitch away from the median, stormwater can be diverted to the median stormwater management practice through the installation of new or modified catch basins and subsurface piping, with DEP approval. Designers should consider the size of the impervious area that will be diverted to the practice as part of the cost analysis for this type of treatment

Large median stormwater management practices may be split into sections and hydraulically connected using underground pipes to avoid impacting surface programming or landscaping

For vegetated practices, a minimum ponding depth of 3 inches at the center of the median, with a maximum 3:1 side slope around the edges, is recommended

Consider permeable pavement wherever safe and feasible. See MATERIALS: PERMEABLE INTERLOCKING CONCRETE PAVER (PICP) and MATERIALS: PERVIOUS CONCRETE in the SIDEWALKS section

### Plants

See Plant Database at [www.nycstreetdesign.info/search-plant](http://www.nycstreetdesign.info/search-plant)

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# Programming







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# Programming

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# Introduction



*Car Free Earth Day 2019 Herald Square Rest Stop, Manhattan*

## About this Chapter

This chapter provides general guidelines for public programming in the public right-of-way, and outlines existing programs and permit processes sanctioned by DOT and SAPO.

Programming activates roadways, sidewalks, and pedestrian plazas, and is essential to the ongoing success of any public space. Markets, public art, performances, and other events support a vital public realm, increasing pedestrian activity; supporting local businesses; connecting residents with resources; celebrating community, culture, and diversity; and encouraging local ownership of the public spaces in which they occur.

From a block party, which opens a single block to community activities for a day, to Summer Streets, which dedicates over 7 miles of streets to pedestrians, runners, and cyclists, programming reminds New Yorkers that streets are public space, and should support active, healthy, and sustainable lifestyles.

Nonprofit organizations (e.g., business improvement districts, community-based organizations, block associations, and arts institutions) are encouraged to contribute to the vitality of New York City by applying to participate in one of the programs described in this chapter or to host one of the events. Funding through several DOT programs is available to assist organizations interested in certain programming or event types. Permits are provided as needed by DOT and SAPO, and, at times, by other city agencies such as FDNY, NYPD, or DOB.

## Guidance Sources

Guidance and application materials related to event programming can be found on the SAPO website ([www.nyc.gov/sapo](http://www.nyc.gov/sapo)), as well as on DOT's program websites ([www.nyc.gov/weekendwalks](http://www.nyc.gov/weekendwalks); [www.nyc.gov/plazas](http://www.nyc.gov/plazas); [www.nyc.gov/dotart](http://www.nyc.gov/dotart); [www.nyc.gov/summerstreets](http://www.nyc.gov/summerstreets)). In addition, interested parties should consult the *Comprehensive Event Permitting Guide for The City of New York* (CECM, 2018), the *NYC Plaza Program Application Guidelines* (DOT), and the DOT Art Program's *Site Selection Guide*.

## Programming Categorization

### Community Initiated & Funded

Events initiated by a community-based organization and hosted on city property, specifically plazas, sidewalks, or roadways. Applications are reviewed and approved by SAPO, DOT, and other relevant city agencies.

### Community Initiated & DOT Funded

Programming that is initiated by a community-based organization in response to an open call from DOT to activate the public realm. Organizations apply to an agency program, which provides funding to support the organization's efforts. Applications are reviewed and approved by SAPO, DOT, and other relevant city agencies.

### DOT Initiated & Funded

Large-scale, annual car-free events initiated by the city. DOT issues an open call to community-based organizations, artists, and performers to enhance the specific event routes with activities, public art installations, and music, dance, and theater performances. Funding is available to support the programming partners' efforts. Applications are reviewed and approved by SAPO, DOT, and other relevant city agencies.

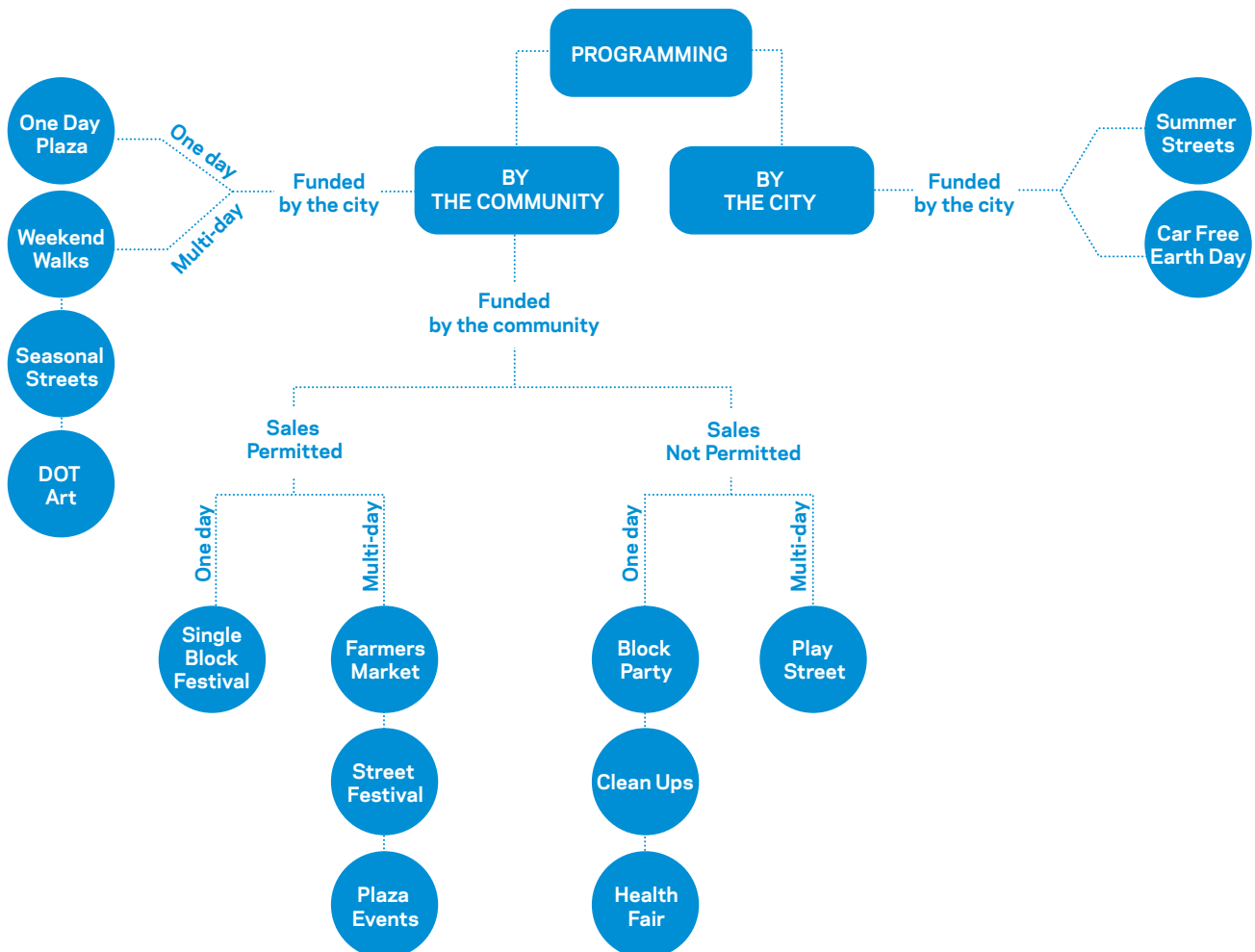




TABLE 7A: PROGRAMMING REFERENCE GUIDE

Typology	Description	Duration	Hour Limitations	Location Type	Submission Deadline	Applicant Type	Site Fees	CGL Insurance Requirements
<b>Community Initiated &amp; Funded</b>								
Block Party	community-friendly family event	one day	9	one block	60 days	block associations	no	not required
Clean Ups	neighborhood improvement	one day	4	one block	60 days	nonprofit or individual	no	\$1M
Health Fair	free health goods and services	one day	12	one block or plaza	30 days	nonprofit	no	\$1M
Farmers Market	vending of food, goods, and services	multi-day	NA	sidewalks	60 days	nonprofit	yes	\$1M
Plaza Event (Civic)	civic programming	multi-day	NA	plaza	14 days	nonprofit	yes	\$1M
Single Block Festival	vending of food, goods, and services	one day	12	one block	90 days	nonprofit	yes	\$1M
Street Festival	vending of food, goods, and services	multi-day	12	multi-block	12/31 of the preceding year	nonprofit	yes	\$1M
Rally/ Demonstration	public gathering to express opinion	one day	NA	plaza	10 days	nonprofit or individual	no	not required
Play Street	car-free recreational play space	multi-day	9 (8am - 5pm)	one block	summer: 5/1 school: 6/1 (fall) or 11/1 (spring)	community group or school	no	varies
<b>Community Initiated &amp; DOT Funded</b>								
Seasonal Streets	car-free public space	multi-day	varies from project to project	multi-block	annual	nonprofit	no	\$1M*
DOT Art Program	beautification of public realm with art installations	max 11 months	NA	sidewalk, plaza, streets	various in fall/spring	organizations and/or artists	no	\$1M \$3M
One Day Plaza	temporary plaza event	one day	24	plazas & proposed plaza sites	varies from project to project	nonprofit	no	\$1M \$3M
Weekend Walks	car-free event	multi-day	NA	multi-block	annual	nonprofit	no	\$1M \$3M
<b>DOT Initiated &amp; Funded</b>								
Large-Scale Annual Car-Free Events								
Summer Streets	car-free event focused on recreation and healthy living	1st three Saturdays in August	6 (7am - 1pm)	multi-block	May	nonprofits, artists and performers	no	not required
Car Free Earth Day	car-free event focused on environmentalism and sustainability	Saturday before or after 4/22	6 (9am - 3pm)	multi-block	January	nonprofits, artists and performers	no	not required

\* If not already covered in an existing agreement, partner is required to provide commercial general liability insurance in the amount of \$1 million per occurrence naming the City of New York as an additional insured.

## General Guidelines

All interested applicants should visit the relevant program website to review specific guidelines.

### SAPO Applications

General guidelines for applying to SAPO for an event permit include:

- o SAPO applications must be completed and submitted online at [nyc.eventpermits.nyc.gov/cems](https://nyc.eventpermits.nyc.gov/cems).
- o Processing fees apply to all permit requests (\$25: Block Party, Clean Ups, Health Fair, Plaza Event (Civic), and Rally/Demonstration; for other permits with vendor participation, different fee schedules apply).
- o Amplified sound will require a permit from NYPD; a generator will require a permit from FDNY and DEP; prepared food and/or drink giveaways or sampling will require a permit from DOHMH, use of a hydrant will require a permit from DEP, any structure over 10 feet in height will require a permit from DOB; and a petting zoo will require a permit from DOHMH.
- o All events except for block parties and rallies/demonstrations are required to have liability insurance in the amount of \$1 million per occurrence naming the City of New York as an additional insured.
- o The relevant Community Board must review all proposals for street events, block parties, farmers markets, clean-ups, and plaza events.
- o All block parties and street fairs are required to recycle.
- o Applications for rain dates are not accepted.
- o Street fair applicants and community sponsors are limited to one event per application and two events per calendar year.
- o All events must maintain 5 feet on each side of a fire hydrant, 5 feet of non-event pedestrian flow on sidewalks, an 8 foot bicycle lane (if bicycle lane exists in permitted area), and a 15 foot emergency vehicle lane (full street closure and pedestrian plaza events).



Summer Streets 2019 Astor Place Rest Stop, Manhattan

### DOT Applications

General guidelines for applying to DOT for participation in an agency program include:

- o Review the program website and Request for Proposals closely prior to submitting an application.
- o No application fees are associated with the various DOT programs.
- o Additional permits may be required from SAPO and the DOT Office of Construction Mitigation and Coordination (OCMC). All SAPO permits and other agency permits required as part of Summer Streets or Car Free Earth Day are handled by DOT.
- o Funding is available through the various programs but not guaranteed with selection.
- o The relevant Community Board and police precinct must be notified of all proposals in conjunction with the DOT Borough Offices.
- o All partners must sign a legal agreement with DOT to participate in the various programs, and may be required to provide commercial general liability insurance in the amount of at least \$1 million per occurrence and \$3 million aggregate limit naming the City of New York as an additional insured.

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# Community Initiated & Funded



## Block Party

Block parties are community-organized car-free events that open a street to the community by restricting vehicle access and offering free, family-friendly activities to neighborhood residents.

Submit an application using E-Apply on the SAPO website at [www1.nyc.gov/site/cecm/e-apply/e-apply.page](http://www1.nyc.gov/site/cecm/e-apply/e-apply.page)



*Sinclair Avenue, Staten Island*

### Benefits

Temporarily opens neighborhood streets to community activities

Encourages pedestrian activity

Fosters community-building among neighbors

### Scope and Eligibility

Closes a single block for up to nine hours

Must be open to all neighbors on the block; block parties are not permitted for private events

No alcohol, fundraising, sponsorship, or sale of goods or services permitted; if event includes any vendors or sponsors, see PROGRAMMING: STREET FAIR for description of a single block festival

Applicant must be a member of a block association and have signatures of the majority of block residents in support of the event

### Process

Application due to SAPO 60 days prior to event

A \$25 application fee is required

Requires block or tenant association approvals prior to applying

Additional permits or insurance may be required (e.g., rides and inflatables require a permit and additional insurance from DCWP; petting zoos or other non-domesticated animals require a permit from DOHMH)

Rain dates are not permitted

### Recommendations and Best Practices

Coordinate with the corresponding Community Boards for comment and approval as SAPO considers these comments when approving permits

Make contact early with the relevant NYPD Precinct and obtain their approval of the proposed street closures

Retrieve 'No Parking' signage from your local precinct and post them on the permitted blocks in advance of event date

## Clean Ups

A clean-up temporarily restricts vehicle access and parking on a block to allow a group of volunteers or a nonprofit to safely remove litter and debris from the roadway and sidewalks. A clean-up can be scheduled in advance of other SAPO-permitted events to prepare the space for community activities.

Submit an application using E-Apply on the SAPO website at [www1.nyc.gov/site/cecm/e-apply/e-apply.page](http://www1.nyc.gov/site/cecm/e-apply/e-apply.page)



LEFT and RIGHT: Greenpoint, Brooklyn

### Benefits

- Cleans and maintains the public realm
- Encourages pedestrian activity and comfort
- Supports local public realm stewardship

### Scope and Eligibility

- Closes a single block for up to four hours
- No alcohol, fundraising, sponsorship, or sale of goods or services is permitted
- Must be organized by a documented nonprofit, or an individual with a local relationship to the proposed location

### Process

- Application due to SAPO 60 days prior to event
- A \$25 application fee is required
- Requires block or tenant association approvals prior to applying
- Applicant must provide commercial general liability insurance in the amount of \$1 million per occurrence naming the City of New York as an additional insured

Additional permits or insurance may be required (e.g., amplified sound requires a permit from NYPD; generators require a certificate from FDNY and, when over 40kW, also require a certification from DEP)

Rain dates are not permitted

### Recommendations and Best Practices

- Coordinate with the corresponding Community Boards for comment and approval as SAPO considers these comments when approving permits
- Make contact early with the relevant NYPD Precinct and obtain their approval of the proposed street closures
- Retrieve 'No Parking' signage from your local precinct and post them on the permitted blocks in advance of event date



## Health Fair

Health fairs support the well-being of local residents by allowing health vendors to promote and provide health services and goods within a pedestrian plaza or along a single block. For residents who are less mobile, health fairs make available information and resources that otherwise might be difficult to access. Health fairs are free and open to the public.

Submit an application using E-Apply on the SAPO website at [www1.nyc.gov/site/cecm/e-apply/e-apply.page](http://www1.nyc.gov/site/cecm/e-apply/e-apply.page)



LEFT and RIGHT: Brooklyn Plaza Medical Center, Brooklyn

### Benefits

See PROGRAMMING: BLOCK PARTY

Provides access to health services to the community

Promotes healthy lifestyles

### Scope and Eligibility

Closes a single block for up to 12 hours

Vendors cannot be charged a fee to participate

No alcohol, fundraising, sponsorship, or sale of goods or services is permitted

If event includes any vendors or sponsors, see PROGRAMMING: STREET FAIR for description of a single block festival

Must be organized by a documented local nonprofit in good standing with the community; event must be held on the block where the nonprofit is located, or nearby

### Process

Application due to SAPO 30 days prior to event

A \$25 application fee is required

Applicant must provide commercial general liability insurance in the amount of \$1 million per occurrence naming the City of New York as an additional insured

Additional permits or insurance may be required (e.g., food giveaways require a permit from DOHMH; structures over 10 feet require a permit from DOB)

Rain dates are not permitted

### Recommendations and Best Practices

Coordinate with the corresponding Community Boards for comment and approval of events as SAPO considers these comments when approving permits; Community Boards may also mandate signatures from residents as part of the application

Make contact early with the relevant NYPD Precinct and obtain their approval of the proposed streets closures



# Farmers Market

Farmers markets are open-air markets where products grown, raised, caught, or baked by local farmers and fishers are available for sale to the general public. Farmers markets provide the public with fresh and nutritious food and offer alternative venues to farmers for sales aside from wholesalers and other large-scale sellers. This page addresses farmers markets held on public sidewalks permitted by SAPO; for information on holding a farmers market within or adjacent to city parkland, see Parks' Farmers Market Permits resources.

Submit an application using E-Apply on the SAPO website at [www1.nyc.gov/site/cecm/e-apply/e-apply.page](http://www1.nyc.gov/site/cecm/e-apply/e-apply.page)



Coenties Slip, Manhattan

Benefits
Provides access to fresh and nutritious food
Promotes healthy lifestyles
Supports regional agriculture
Encourages pedestrian activity

Scope and Eligibility
For farmers markets permitted by SAPO, only sidewalks may be used; streets cannot be closed
Parks issues permits for farmers markets held adjacent to city parks
There is no minimum or maximum duration
Must be organized by members or staff of a documented nonprofit
All farmers should be licensed by the New York State Department of Agriculture

### Process

Application due to SAPO 60 days prior to event

A \$15 fee is charged per day

Applicants, even existing markets, must re-apply each calendar year

Applicant must provide commercial general liability insurance in the amount of \$1 million per occurrence naming the City of New York as an additional insured

Additional permits or insurance may be required (e.g., food giveaways require a permit from DOHMH)

### Recommendations and Best Practices

Establish a steering committee comprised of members of the community to carry out initial research, cultivate objectives, and oversee market formation; include farmers, local business owners, consumers, and local city officials

Survey local consumer interest in a farmers market with questions on desired products, past purchases at farmers markets, suggested locations of markets, and potential days of service; provide similar surveys for local farmers on potential products, level of interest in participating, space requirements, desired rent schedules, and potential days and seasons of service

Garner support from local businesses and present the farmers market as a potential economic benefit rather than a competitor in the sale of goods or services

Select a site that provides space for future expansion, and that is in close proximity to parking for participating farmers, lighting, electricity, public restrooms, and other amenities; ensure accessibility and adequate mobility

Evaluate the farmers market's seasonal supply of goods, consumer or seller concerns, and consistency of customer presence to improve and develop the market

The farmers markets and vendors must abide by all DOHMH food handling requirements and regulations



ABOVE and BELOW: Roosevelt Avenue and 103rd Street, Queens



## Plaza Event (Civic)

Plaza events sponsored by a nonprofit organization, including but not limited to artistic or cultural performances or educational gatherings that further the mission of the sponsoring organization, are considered civic events and require a SAPO permit. Fees for civic events are discounted from the standard plaza event rates, which are based on plaza tier and event size.

Organizations interested in applying for an event on a pedestrian plaza should coordinate with the plaza's partner organization. A list of Plaza Partners is available for download at [www.nyc.gov/plazas](http://www.nyc.gov/plazas).

To learn more about Plaza Events (Civic), visit [www.nyc.gov/plazas](http://www.nyc.gov/plazas)



Putnam Plaza, Brooklyn

### Benefits

Activates pedestrian plaza

Creates a safer and more inviting place for the public to gather

Provides access to a variety of cultural, educational, and physical offerings

Fosters community-building among neighbors

### Scope and Eligibility

Commercial events presented by corporate entities are not permitted as part of a civic event and will be charged fees based on the event size, plaza level and location; for more information on Plaza Fees, visit [www.nyc.gov/sapo](http://www.nyc.gov/sapo)

Signs or banners displaying sponsors or supporter logos that exceed ten percent (10%) of the face of the sign or banner are not permitted

Must be organized by a documented nonprofit



## Process

Applications are due to SAPO 14-45 days prior to the event depending on the plaza level; see [www1.nyc.gov/site/cecm/permitting/permit-deadlines.page](http://www1.nyc.gov/site/cecm/permitting/permit-deadlines.page) for more information

A \$25 application fee is required

Applicant should coordinate with the Plaza Partner organization, and, in some cases, event fees may be waived if the Plaza Partner applies for the permit

Applicant must provide a site plan and run of show in addition to other licenses and permits depending on the event's content

Applicant must provide commercial general liability insurance in the amount of \$1 million per occurrence naming the City of New York as an additional insured

Additional permits or insurance may be required (e.g., amplified sound and 'No Parking' signs require permits from NYPD; structures over 10 feet tall require a permit from DOB)

All event permits must be approved by the local precinct and Community Board as part of the SAPO permitting process

An event fee may apply for civic events that are charitable in nature and have a fundraising component; for more information, visit [www.nyc.gov/sapo](http://www.nyc.gov/sapo)

Events in some pedestrian plazas are prohibited between mid-November and early January due to the DOT Holiday Construction Embargo; for more details, consult [www1.nyc.gov/html/dot/html/infrastructure/construction-embargoes.shtml](http://www1.nyc.gov/html/dot/html/infrastructure/construction-embargoes.shtml)

## Recommendations and Best Practices

Start planning early; getting community buy-in from programming and promotional partners at the beginning is critical to a successful event

Provide a wide range of programming options that are accessible to all ages, genders, and abilities



Community Board 3 meeting at Diversity Plaza: 37th Road, Queens



Mini weekly food market at Myrtle-Wyckoff Plaza: Wyckoff Avenue and Myrtle Avenue, Queens

Connect programming at the event to local businesses or neighborhood institutions (e.g., pop-up library that promotes the local library; blood pressure screenings outside a local pharmacy)

Coordinate your event planning with the Plaza Partner organization

Requested locations should be assessed prior to application submission as SAPO does not provide recommendations for locations

## Street Fair

Street fairs (single block festivals and street festivals) enliven city streets by hosting vendors of foods and other goods and services. The events are community-sponsored and can be used to support neighborhood institutions with fundraising or promotion. Street fairs are free and open to the public.

Submit an application using E-Apply on the SAPO website at [www1.nyc.gov/site/cecm/e-apply/e-apply.page](http://www1.nyc.gov/site/cecm/e-apply/e-apply.page)



LEFT and RIGHT: Castle Hill Avenue, Bronx

### Benefits

See PROGRAMMING: BLOCK PARTY

Access to unique foods and other goods and services

### Scope and Eligibility

**Single Block Festival:** Closes a single block for one day for a maximum of 12 consecutive hours

**Street Festival:** Closes multiple blocks for one day or more for a maximum of 12 hours a day

Street fair vendors pay a fee to participate

Must be organized by a documented local nonprofit in good standing with the community; event must be held on the block where the nonprofit is located, or nearby

### Process

**Single Block Festival:** Applications due to SAPO 90 days prior to event; a \$25 application fee is required, and additional fees may be required

**Street Festival:** Only events that took place the year prior are eligible to apply in the current calendar year to SAPO, and applications may be submitted November 1 – December 31 of the preceding year

The event fee is twenty percent (20%) of the total fees paid by vendors to participate

Applicant must provide commercial general liability insurance in the amount of \$1 million per occurrence naming the City of New York as an additional insured

Additional permits or insurance may be required (e.g., rides and inflatables require a permit and additional insurance from DCWP; petting zoos or other non-domesticated animals require a permit from DOHMH)

Rain dates are not permitted

### Recommendations and Best Practices

Coordinate with the corresponding Community Boards for comment and approval of events as SAPO considers these comments when approving permits; Community Boards may also mandate signatures from residents as part of the application

Make contact early with the relevant NYPD Precinct and obtain their approval of the proposed streets closures



## Rally/Stationary Demonstration

Rallies and stationary demonstrations are high-visibility methods of expressing sentiments about a public issue. New Yorkers have the right to participate in peaceful demonstrations in public spaces in the city, with appropriate permitting. A permit is required when these public gatherings use either more than 50% of a pedestrian plaza, or parts of multiple plazas for one day.

Submit an application using E-Apply on the SAPO website at [www1.nyc.gov/site/cecm/e-apply/e-apply.page](http://www1.nyc.gov/site/cecm/e-apply/e-apply.page)



NYC Mayor, officials, and families call for expansion of the speed camera program: City Hall, Manhattan

### Benefits

Increases public awareness of an issue

Provides a venue for the expression of public opinion in order to galvanize civic action

### Scope and Eligibility

No alcohol, fundraising, sponsorship, or sale of goods or services is permitted

Permits are only required for demonstrations in pedestrian plazas

### Process

Application due to SAPO 10 days prior to event with exceptions made if the need for the event is unforeseen

A \$25 application fee is required

Organizers must coordinate with their local police precinct

Additional permits or insurance may be required (e.g., amplified sound and 'No Parking' signs require permits from NYPD; structures over 10 feet tall require a permit from DOB)

Rain dates are not permitted

### Recommendations and Best Practices

Coordinate with the corresponding Community Boards and Plaza Partner for comment and approval of events as SAPO considers these comments when approving permits

Permits are not required for rallies or demonstrations in front of City Hall, but the event must be scheduled with NYPD; to schedule an event, call the NYPD Precinct 5 Community Affairs Division at (212) 341-5063

Ensure that event participants leave sidewalks and building entrances clear at all times



## Play Street

Play streets are car-free streets that provide space for active play, recreation, and social and physical activity for children who do not have access to park space nearby. Community groups coordinate play streets during the summer months to create needed recreational space, and schools can host play streets during the school year when there is construction, playground renovation, or insufficient space for recess.

### Benefits

Activates public space

Promotes healthy lifestyles

Creates free recreational opportunities for children

### Scope and Eligibility

**Summer Play Street:** Permitted July 1 – August 31 for up to six weeks, Monday – Friday, 8 AM – 5 PM; applicants must be community groups

**School Play Street:** Permitted during the school year; applicant must be affiliated with adjacent school

Appropriate for dead-end streets, short blocks, stretches fewer than four blocks in length, and T-intersections

Cannot have two-way traffic, high traffic volumes, commercial establishments, scaffolding, construction, tripping hazards, or other safety concerns; or be on a bus route or truck route, adjacent to a hospital, or near a park or playground that could accommodate recreational activities

Organizers must program continuous activities such as games, sports, crafts, and performances

Adults must be present for supervision at all times

No fundraising, promotion, or sale of goods or services is permitted

### Process

**Summer Play Street:** Applications due to SAPO via email by May 1, including an on-site inspection of the block and petition of signatures from block residents

**School Play Street:** Interested applicants must contact the local DOT Borough Commissioner's Office by June 1 (fall term) or November 1 (spring term) for assistance in applying and securing required Community Board and NYPD approvals

**Summer Play Street:** Application and block petition available by request from Community Boards or on the SAPO website at [www1.nyc.gov/site/cecm/permitting/summer-play-streets.page](http://www1.nyc.gov/site/cecm/permitting/summer-play-streets.page)

**School Play Street:** Application available via DOT at [www.nyc.gov/schoolplaystreets](http://www.nyc.gov/schoolplaystreets)



78th Street, Queens

DOT Borough Engineers review proposed play streets and may be involved in implementation

### Recommendations and Best Practices

Make contact early with the relevant Community Board and NYPD Precinct to obtain their approval of the proposed street closure

Applications are processed on a rolling basis by SAPO, if summer play streets, or DOT Borough Commissioners, if school play streets; submit early as there may be a limit on play street approvals in each Community Board district

Organizers should develop a safety plan that includes proper barricades and vehicles parked on the block

Plan ahead and work with community partners to ensure sufficient programming is provided for the duration of the play street

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# Community Initiated & DOT Funded

## Seasonal Streets

Seasonal Streets are transformations of streets into pedestrian priority spaces that deliver public space at more precise times to address pedestrian peaks. DOT works with community partners to design and manage the street for multiple uses, from programming and events for pedestrians to managed access and deliveries for businesses. The car-free public space of Seasonal Streets allows for placement of movable furniture and installation of public art. Seasonal Streets can be used as an outreach tool that works towards a permanent change or as a recurring street management tool to prioritize the needs of pedestrians at critical times of the day or year.

### Benefits

Demonstrates and promotes the use of streets as public space

On-demand street management to enhance safety, security, and mobility on a short, fluid timeline

Creates additional public space when communities are most likely to use it

Offers flexible interventions that can meet varied demands

### Scope and Eligibility

Along commercial and transit corridors with high pedestrian volumes where business participation opportunities exist

Areas with significant pedestrian activity, especially at peak times

Partners must have strong ties to the community where the Seasonal Street is located and demonstrate past experience programming public events

### Process

Planned and executed on a year-round basis; partners must start planning their event at least three months in advance, though a longer planning timeline is highly recommended

DOT may provide a limited amount of furniture and signage or commission a public art installation on the street or light poles

To learn more about Seasonal Streets, visit [www.nyc.gov/seasonalstreets](http://www.nyc.gov/seasonalstreets)



Doyers Street, Manhattan

Funding may also be provided on a limited basis and is determined by multiple criteria including event size and duration

Community partners must work closely with DOT, NYPD, and the Community Board to secure necessary approvals in addition to engaging local businesses and organizations

Seasonal Streets require a permit from SAPO

### Recommendations and Best Practices

Start planning early; community and business buy-in are critical

Provide a wide range of programming options that are accessible to all ages, genders, and abilities

Seasonal Streets are a flexible public space tool; develop a project that works best for the corridor and community



## DOT Art Program

DOT Art partners with community-based, nonprofit organizations and professional artists to present temporary public art on DOT property for up to 11 months. Artists transform streets with colorful murals, dynamic projections, and eye-catching sculptures. Sidewalks, fences, triangles, medians, bridges, Jersey barriers, step streets, and public plazas serve as canvases and foundations for art.

To learn more about the DOT Art Program, visit [www.nyc.gov/dotart](http://www.nyc.gov/dotart)



*"Vivid Chroma Locomotion" by Queen Andrea in partnership with Projectivity Group: Richmond Avenue and Drumgoole Road, Staten Island*



*"For Closure" by Gabriela Salazar in partnership with the Bronx River Art Center: E Tremont Avenue and Boston Road, Bronx*

### Benefits

Creates more inviting public spaces for walking, resting, and gathering

Activates public spaces with functional and participatory artwork that encourages physical activity and healthier lifestyles

Builds and strengthens community partnerships through public engagement

Generates unique and distinctive public spaces that build neighborhood character

Provides broader access to the arts citywide by targeting art installations in historically underserved communities

Provides opportunities for artists to showcase their creativity and unique abilities

Organizations must have experience planning exhibitions, public art projects, or public programming, a connection to the proposed site, and the ability to monitor and maintain the artwork

Funding is available for some initiatives but is not guaranteed

Organizations and artists are only eligible to receive one commission per fiscal year

All sculptures must be reviewed by a NY-State licensed engineer

For information regarding permanent art commissions, visit DCLA's website ([www.nyc.gov/percent](http://www.nyc.gov/percent))

### Process

See Table 7b for information on application cycles; visit [www.nyc.gov/dotart](http://www.nyc.gov/dotart) for upcoming opportunities

Sites must be owned and maintained by DOT, located in close proximity to public transportation, adjacent to a mixed-use corridor, accessible to a diverse audience, and large enough to accommodate artwork











### Scope and Eligibility






Organizations and professional artists regardless of residence may apply in response to open calls released throughout the year

Artists must demonstrate proficiency in the proposed medium, have exhibited in the public or private realm, and have participated in community-based projects



TABLE 7B: DOT ART TRACKS

	Description				
Community Commissions	Community-driven, site-responsive art with a preselected partner organization				
		<i>"I am Here" by Harumi Ori in partnership with Staten Island MakerSpace: Bay Street and Victory Boulevard, Staten Island</i>	<i>"The Night Life, Baby" by Patrick Griffin (VIZIE) in partnership with Hudson Yards/Hell's Kitchen Alliance: 36th Street and 10th Avenue, Manhattan</i>		
Barrier Beautification	Artist-designed mural painted with support from volunteers				
		<i>"Shadowbox" by Gavin Snider in partnership with New York Cares and JP Morgan Chase &amp; Co.: Delancey Street and Allen Street, Manhattan</i>	<i>"Bounce" by Brittany Baldwin in partnership with New York Cares: Queens Boulevard between Woodhaven Boulevard and 59th Avenue, Queens</i>		
Arterventions	Short-term artistic interventions funded by partner organization or artist				
		<i>"Unparallel Way" by Emily Weiskopf in partnership with Old Stone House: 4th Avenue between 3rd Street and 4th Street, Brooklyn</i>	<i>"Bird" by Will Ryman in partnership with the Flatiron/23rd Street Partnership: Broadway between 23rd Street and 24th Street, Manhattan</i>		
Asphalt Art Activations	Large-scale murals painted on pedestrianized asphalt street spaces				
		<i>"The World is Our Oyster" by Carla Torres in partnership with DOT Pedestrian Projects Group (PPG): Thieriot and Soundview Avenues, Bronx</i>	<i>"Big City of Dreams" by Andrea von Bujdoss (Queen Andrea) in partnership with DOT Bike Share Program: Roebling Street and N 4th Street, Brooklyn</i>		
Art Display Cases	Rotating art exhibits printed and installed by DOT on standard cases				
		<i>"The Supper Club" by Elia Alba in partnership with the Lower Manhattan Cultural Council: Water Street and Pine Street, Manhattan</i>	<i>"Visual Impact: On Art, AIDS and Activism" by the New York City AIDS Memorial: Greenwich Avenue between 11th Street and 12th Street, Manhattan</i>		

	Applicant	Deadline	Display	DOT Funding
	Artist only	Annual	Up to 11 months	Up to \$20,000
<i>"Exquisite Corpse" by Fanny Allié in partnership with A.I.R. Gallery and the Fulton Area Business Alliance: Fulton Street and Grand Avenue, Brooklyn</i>				
	Artist only	Annual	Up to 11 months	Up to \$3,000
<i>"Razzle Dazzle" by Ann Tarantino in partnership with New York Cares and JP Morgan Chase &amp; Co.: Park Row and Frankfort Street, Manhattan</i>				
	Organization & Artist	Ongoing (no deadlines)	Up to 6 months	No funding
<i>"Cross-Street Stitches" by Laura Alvarez in partnership with DOHMH and Art Bridge: W 176th Street and Undercliff Avenue, Bronx</i>				
	Artist only	Annual	Up to 11 months	Up to \$12,000
<i>"Cast Into the Deep" by Annabelle Popa in partnership with DOT School Safety: Columbia Street and Dwight Street, Brooklyn</i>				
	Organization & Artist or Artist only	Ongoing (no deadlines)	Up to 6 months	No funding / DOT prints and installs art and display cases at no cost
<i>"Stop Telling Women to Smile" by Tatyana Fazlalizadeh in partnership with the NYC Commission on Human Rights: Lenox Avenue and 124th Street, Manhattan</i>				



Priority sites are identified for art by elected officials, community stakeholders, and DOT Borough Commissioners' Offices and Operating Units

#### Application Deadline

- o Read the Request for Proposals/Qualifications carefully and complete the full application by the listed deadline or, if a rolling deadline, a minimum of 90 days in advance of the proposed installation date
- o Organizations or fellow city agencies interested in presenting multiple art installations as part of a festival or event should email [arts@dot.nyc.gov](mailto:arts@dot.nyc.gov) to ensure the project deadline is attainable

Applications are reviewed by DOT's Art Advisory Committee, comprised of outside arts professionals representing different boroughs and areas of expertise; see [www.nyc.gov/dotart](http://www.nyc.gov/dotart) for a current list of committee members

Applications are evaluated based on public safety, artistic merit, organizational capacity, site suitability, and artwork durability

Applicants are notified of selection within a maximum of two months from submission

Projects are implemented within a maximum of four months after approval of an application for murals and within 12 months for sculptures

Artists receive copyright of the final design and artwork, but must extend the right to use any depiction of the artwork for non-commercial purposes to the city

Organizations and artists must sign a legal agreement, and organizations must hold commercial general liability insurance in the amount of \$1 million per occurrence and \$3 million aggregate limit naming the City of New York as an additional insured

DOT provides the necessary permits to install artwork on city-owned property

Organizations and/or artists are responsible for obtaining any additional permits required by the DOT Office of Construction Mitigation and Coordination (OCMC)

All questions should be directed to [arts@dot.nyc.gov](mailto:arts@dot.nyc.gov)

### Recommendations and Best Practices

Review the list of priority sites closely or the *Site Selection Guide* when suggesting a site, and visit the proposed site in advance of applying



"Street Cathedral" by Claudia Ravashiere and Michael Moss in partnership with the Hudson Square Business Improvement District: Varick Street and Downing Street, Manhattan



"Ascension" by Jordan Baker-Caldwell in partnership with the Hudson Yards/Hell's Kitchen Alliance: W 36th Street and Ninth Avenue, Manhattan

Review past public art installations on the DOT Flickr page at [www.flickr.com/photos/nycstreets](http://www.flickr.com/photos/nycstreets)

Organizations and artists should email [arts@dot.nyc.gov](mailto:arts@dot.nyc.gov) to confirm ownership of the proposed site in advance of applying

Proposed artwork should be well-developed, demonstrating artistic excellence; should be appropriate for the public realm; should consider the social, historical, architectural, geographical, and/or cultural context of the site; should suit the site based on size, scale, and form; should not introduce any public safety hazards; should be fabricated out of durable materials to withstand outdoor weather conditions; and should be carefully planned ensuring sound fabrication and installation

All proposals must be unique and original and not infringe on any copyright



## One Day Plaza

One Day Plazas are part of the outreach and planning process for a proposed pedestrian plaza. DOT works with community-based partners, who have applied to the NYC Plaza Program or who are considering applying, to create an event that showcases a potential pedestrian plaza. The events introduce the idea of a pedestrian plaza to the neighborhood, give DOT the opportunity to gather feedback on a proposal, and test both the site and the partner.

To learn more about One Day Plazas, visit [www.nyc.gov/plazas](http://www.nyc.gov/plazas)



Hillel Place, Brooklyn

### Benefits

Producing a One Day Plaza or a series of events educates potential partner organizations about the demands of programming a pedestrian plaza

Allows DOT to gauge a partner's capacity to manage a pedestrian plaza and determine what assistance, if any, may be needed in the future

Provides an opportunity to survey the community, gathering feedback on a proposal from the people who would be using the plaza on a regular basis

Demonstrates community benefits of proposed pedestrian plaza to neighbors and local businesses

### Scope and Eligibility

Sites and proposing partners must adhere to NYC Plaza Program Guidelines. See GEOMETRY: PEDESTRIAN PLAZA

Community-based organizations that are considering applying to the NYC Plaza Program may work with DOT to host one-day plaza events prior to submitting an application

In some cases, DOT may provide a limited amount of funding to subsidize costs associated with producing an event

Vending is strictly prohibited

### Process

Partners interested in applying to the NYC Plaza Program should contact DOT directly about holding a One Day Plaza

Interested organizations may email [plazas@dot.nyc.gov](mailto:plazas@dot.nyc.gov) with any questions regarding eligibility

Partners must start planning their event at least three months in advance, though a longer planning timeline is highly recommended

A permit is required from SAPO in order to hold a One Day Plaza; DOT will assist partner organizations in coordinating with SAPO, NYPD, and the Community Board for necessary approvals

Applicant must provide commercial general liability insurance in the amount of \$1 million per occurrence and \$3 million aggregate limit naming the City of New York as an additional insured

DOT will provide tables and chairs, banners, and barricade covers

DOT reviews and must approve all programming, site plans, and advertising materials in coordination with the partner organization

### Recommendations and Best Practices

Partners should reach out to all local stakeholders, including but not limited to elected officials, Community Boards, and the local police precinct to offer the opportunity to help program the event

Programming should reflect neighborhood assets and amenities

Provide a wide range of programming options that are accessible to all ages, genders, and abilities

Local businesses often see the event as an opportunity to give out free samples or to provide demonstrations relevant to their mission



Hillel Place, Brooklyn



Hillel Plaza public outreach: Hillel Place, Brooklyn



## Weekend Walks

Weekend Walks are car-free events that promote the use of streets as public space. Community-based organizations apply to close commercial streets and provide programming that highlights local businesses and New York City's unique neighborhoods.

To learn more about Weekend Walks, visit [www.nyc.gov/weekendwalks](http://www.nyc.gov/weekendwalks)



Van Brunt Street, Brooklyn



Chinatown, Manhattan

### Benefits

Supports local businesses and community-based organizations

Promotes the use of streets as public space

Positively enhances a community by adding more space for walking and pedestrian-friendly activities

Promotes healthy lifestyles

Fosters community-building among neighbors

### Scope and Eligibility

Must be located on a commercial corridor

Must be a minimum of two blocks in length, and must occur at least two times

No exchange of money is permitted at Weekend Walks; however, businesses may display their wares on the street, and restaurants may place seating out on the sidewalk

Nonprofit and for-profit organizations must have strong ties to the community and demonstrate past experience programming public events within the community

### Process

Weekend Walks applications are due during the winter; approved events are generally held between early spring and late fall

DOT may provide a limited amount of furniture and other amenities to support events

Funding may also be provided on a limited basis and is determined by the size of the event

Partners that host events must work closely with DOT, NYPD, and the Community Board to secure necessary approvals in addition to engaging local businesses and organizations in the community

Applicant must provide commercial general liability insurance in the amount of \$1 million per occurrence and \$3 million aggregate limit naming the City of New York as an additional insured

All events require a permit from SAPO

### Recommendations and Best Practices

Start planning early; getting community buy-in from local businesses, organizations, and programming partners is critical to a successful event

Provide a wide range of programming options that are accessible to all ages, genders, and abilities

Connect programming at the event to businesses on the route (e.g., pop-up library that promotes the local library; blood pressure screenings outside a local pharmacy)



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# DOT Initiated & Funded

## Large-Scale Annual Car-Free Events

DOT hosts large-scale, annual car-free events to reimagine the streets of New York City as more inviting public spaces for walking, cycling, playing and much more without the noise and congestion of cars. Major arteries in central Manhattan are open annually, on prescribed dates and times, for the public to enjoy active outdoor recreation, lively performances, immersive art installations, educational workshops, and all forms of free programming related to event-specific themes. These annual car-free events require interagency coordination among SAPO, NYPD, FDNY, DEP, DOB, Parks, and DOHMH to encourage New Yorkers and visitors alike to rediscover the built environment and imagine a myriad of possibilities for its use.

To learn more about Summer Streets, visit [www.nyc.gov/summerstreets](http://www.nyc.gov/summerstreets)

To learn more about Car Free Earth Day, visit [www.nyc.gov/carfreenyc](http://www.nyc.gov/carfreenyc)



*Summer Streets 2019: Park Avenue, Manhattan*

### **Summer Streets:**

Summer Streets is a multi-day, annual car-free event held the first three Saturdays in August. Nearly seven miles of NYC's streets are open for people to play, run, walk, and bike along Park Avenue and its connecting streets from the Brooklyn Bridge to Central Park in Manhattan. Programming is presented at five rest stops along the route by city agencies, nonprofit organizations, performers, and visual artists to promote fitness and outdoor recreation.

### **Car Free Earth Day:**

Car Free Earth Day (CFED) is a single day, annual car-free event held the Saturday before or after Earth Day, April 22. The event opens thirty blocks of Broadway from Times Square to Union Square for people to explore on foot. Environmentally-themed programming is presented at five rest stops within pedestrian plazas by city agencies, nonprofit organizations, performers, and visual artists to promote activism and education supporting climate change awareness and sustainability.



"Future Streets for Car Free Earth Day" by American Institute of Architects with ASLA and APA. Car Free Earth Day 2019: Broadway, Manhattan



"Broadway Bouquet" by Terrain Work. Car Free Earth Day 2018: Broadway, Manhattan

### Benefits

Reclaims and transforms streets into active and attractive public spaces

Encourages people to use carbon-free modes of transportation

Reduces traffic congestion, air pollution, and greenhouse gas emissions for a day

Provides participants with a new perspective on the built environment

Showcases the rich and varied resources of New York City

#### Summer Streets:

- Promotes active and healthy lifestyles
- Provides safe recreational cycling and walking route in the heart of New York City

#### Car Free Earth Day:

- Educates and ignites dialogue about climate change, environmental sustainability, and current transportation issues
- Temporarily exhibits the potential of a permanent closure along Broadway, including the possibilities for unique and engaging programming in pedestrian plazas

### Scope and Eligibility

All nonprofits and visual and performance artists regardless of residence may apply

Programming is offered at five rest stops; see [www.nyc.gov/summerstreets](http://www.nyc.gov/summerstreets) for Summer Streets event map and [www.nyc.gov/carfreenyc](http://www.nyc.gov/carfreenyc) for CFED event map

#### Nonprofit Programming

- Nonprofits may host activities, demonstrations, workshops, classes, or tours
- Funding is available based on the complexity of the activity
- Equipment is provided at no cost
- Applicants must have experience planning and leading public programs
- Applicants must share the values and mission of the event
- Nonprofits must staff the event and bring materials to host the activity

#### Performances

- Performers may present dance, music, theater, comedy, or spoken word
- Funding is available based on the duration and number of performances
- Equipment is provided at no cost
- Applicants must have experience performing in front of large audiences
- Performances must be family-friendly and twenty to forty-five minutes in length

#### Public Art Installations

- Professional artists may submit proposals to produce interactive public art installations
- Proposals must respond to the event theme announced in the open call
- Temporary installations are only permitted at the rest stops
- All sculptures must be reviewed by a NY-State licensed engineer
- Funding is available to cover expenses to produce the artwork
- Artists must be available three months in advance of the event date to collaborate with DOT





Summer Streets 2018 Midtown Rest Stop, Manhattan



Summer Streets 2018 Foley Square Rest Stop, Manhattan

Corporate entities are invited to submit ideas for event sponsorship at varying levels and may host relevant programming that relates to their brand. For more information on sponsorship opportunities, email [sponsorship@dot.nyc.gov](mailto:sponsorship@dot.nyc.gov)

#### Summer Streets:

- o Applicants must be available to provide services on one of the event dates between the hours of 7 AM and 1 PM
- o Setup is required before 6:30 AM and breakdown after 1 PM as vehicles are not permitted on the route during event hours

#### Car Free Earth Day:

- o Applicants must be available on the prescribed event date between the hours of 9 AM and 3 PM
- o Setup is required before 8:30 AM and breakdown after 3 PM as vehicles are not permitted on the route during event hours

### Process

Request for Proposals (RFP) are released in early winter to solicit proposals for programming

Applicants are required to submit a new proposal annually for consideration

Applications are evaluated based on public safety, organizational and artist capacity, proposal and artistic merit, and event suitability

Proposals are reviewed by a project-specific committee and the event consultant

Nonprofits, performers, and artists must sign a legal agreement with DOT and, if necessary, hold commercial general liability insurance naming the City of New York and its event consultant as additional insureds

Artists must complete a final design, fabricate or prepare the artwork, and install or present the artwork on event dates

### Recommendations and Best Practices

Read the RFP carefully and submit a complete application as soon as possible since applications are reviewed on a rolling basis with only a set number of slots available each year

Review past programming examples on the DOT Flickr page at [www.flickr.com/photos/nycstreets](http://www.flickr.com/photos/nycstreets)

A strong nonprofit proposal engages people of all ages and abilities in a free, fun, and dynamic activity that relates to the mission and theme of the event

A strong performance partner proposes a high-quality, family-friendly performance that accommodates all of the stage and event requirements

A strong public art proposal considers the site conditions and typical uses of a given site; responds to the goals of the event; is interactive and participatory in nature; is moveable and/or easily installed and removed each event date; and does not introduce any safety hazards for pedestrians and cyclists along the route

All proposals must be unique and original and not infringe on any copyright



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# Glossary & Appendices







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# Glossary

# A

## AASHTO

### (American Association of State Highway Transportation Officials)

A nonprofit, nonpartisan association representing highway and transportation departments in the fifty states, the District of Columbia, and Puerto Rico, representing all five transportation modes—air, highways, public transportation, rail, and water. AASHTO publishes numerous design guidance publications, including *A Policy on Geometric Design of Highways and Streets* (“Green Book”). [www.transportation.org](http://www.transportation.org)

## Accessibility

The design of facilities and public right-of-way that are easy, safe, and intuitive to use for people with disabilities. Accessible environments provide for a person's ability to independently navigate the space.

## ADA

### (Americans with Disabilities Act)

The act that gives civil rights protections to individuals with disabilities, similar to those rights provided to individuals on the basis of race, color, sex, national origin, age, and religion. It guarantees equal opportunity for individuals with disabilities in public accommodations, employment, transportation, state and local government services, and telecommunications. [www.ada.gov](http://www.ada.gov)

## ADT (Average Daily Traffic)

The average number of vehicles to pass a certain point or use a certain roadway per day. Sometimes referred to as VPD (Vehicles Per Day), this is the calculation of the total traffic volume during a given time (in whole days) divided by the number of days in that period. (AASHTO: *A Policy on Geometric Design of Highways and Streets*)

## APS (Accessible Pedestrian Signal)

A device that communicates information about pedestrian signal timing in non-visual formats such as audible tones, speech messages, and/or vibrating surfaces. Installation of APS in New York City is governed by the Accessible Pedestrian Signals Policy enacted October 21, 2019.

## Arterial Street

The part of the roadway system serving as the principal network of through-traffic flow. The routes connect areas of principal traffic generation and important rural highways entering the cities. (ITE: *Traffic Engineering Handbook*)

# B

## Base Flood Elevation

The elevation of surface water resulting from a flood that has a 1% or higher annual chance of occurring in any given year.

## Bicycle

Every two- or three-wheeled device upon which a person or persons may ride, propelled by human power through a belt, a chain, or gears, with such wheels in a tandem or tricycle, except that it shall not include such a device having solid tires and intended for use only on a sidewalk by pre-teenage children. (New York State Vehicle and Traffic Law, Title 1, Article 1, Section 102; Rules of the City of New York, Title 34, Chapter 4, Section 4-01(b))

## Bicycle Buffer

A designated space marked with crosshatch markings or chevron markings separating a bicycle facility from traffic and/or parking.

## Bicycle Facilities

A general term denoting improvements and provisions made by public agencies to accommodate or encourage bicycling, including parking and storage facilities and shared roadways not specifically designated for bicycle use. (AASHTO: *Guide for the Development of Bicycle Facilities*)

## Bicycle Lane/Bike Lane

A dedicated on-street or grade-separated lane for bikes that is typically delineated with markings, a curb or parking lane within the roadway, or is physically separated from the roadway for most of its length.



**Bicycle Route/Bike Route**

A bikeway designated by the jurisdiction having authority with appropriate directional and informational route markers, with or without specific bicycle route numbers. Bike routes should establish a continuous routing, but may be a combination of any and all types of bikeways (AASHTO: *Guide for the Development of Bicycle Facilities*). In New York City, five types of bike routes are set forth in the *Street Design Manual*: Shared Lanes, Conventional Bike Lanes, One-Way Protected Bike Lanes, Two-Way Protected Bike Lanes, and Grade-Separated Bike Lanes.

**BID****(Business Improvement District)**

A not-for-profit corporation made up of property owners and commercial tenants who are dedicated to promoting business development and improving an area's quality of life. BIDs deliver supplemental services such as sanitation and maintenance, public safety and visitor services, marketing and promotional programs, capital improvements, and beautification for the area—all funded by a special assessment paid by property owners within the district. [www1.nyc.gov/site/sbs/neighborhoods/bids.page](http://www1.nyc.gov/site/sbs/neighborhoods/bids.page)

**Bikeway**

A generic term for any road, street, path, or way which in some manner is specifically designated for bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes. (AASHTO: *Guide for the Development of Bicycle Facilities*)

**Bioswale**

A planted area, generally in the sidewalk, that is designed to collect and manage stormwater, or rainwater, that runs off streets.

**Bollard**

A short vertical post or similar structure that can define areas in the streetscape. Bollards are often used to separate pedestrians or streetscape elements from vehicles. When placed in a line, bollards are used to prevent motor vehicles from encroaching on pedestrian space such as sidewalks or plazas. [www.sfbetterstreets.org](http://www.sfbetterstreets.org)

**BRT (Bus Rapid Transit)**

A flexible, high-performance rapid transit mode that combines a variety of physical, operating, and system elements into a permanently integrated system with a quality image and unique identity. A BRT route is designed to improve the speed, reliability, and overall attractiveness of bus service. See SBS (Select Bus Service) for a NYC application of BRT.

**BUG (Backlight, Uplight, Glare) Rating**

A rating system that describes the types of stray light escaping from an outdoor lighting luminaire. The BUG system was developed by the Illuminating Engineering Society (IES) to make comparing and evaluating outdoor luminaires fast, easy, and more complete than older systems. [www.ies.org/wp-content/uploads/2017/03/TM-15-11BUGRatingsAddendum.pdf](http://www.ies.org/wp-content/uploads/2017/03/TM-15-11BUGRatingsAddendum.pdf)

**Bulkhead**

A vertical partition that prevents earth and fill from slipping into adjacent bodies of water.

**Bus**

Every motor vehicle having a seating capacity of more than fifteen adults, in addition to the operator, and used for the transportation of persons, and every charter bus, interstate bus, intrastate bus, school bus, and sight-seeing bus, regardless of seating capacity. (Rules of the City of New York, Title 34, Chapter 4, Section 4-01(b))

**Bus Route**

A street that carries one or more regularly scheduled local, commuter, or intercity bus lines running on a published schedule.

# C

## Capital Project

- A.** A project that provides for the construction, reconstruction, acquisition, or installation of a physical public betterment or improvement that would be classified as a capital asset under generally accepted accounting principles for municipalities, or any preliminary studies and surveys relative thereto, or any underwriting or other costs incurred in connection with the financing thereof;
- B.** The acquisition of property of a permanent nature, including wharf property;
- C.** The acquisition of any furnishings, machinery, apparatus, or equipment for any public betterment or improvement when such betterment or improvement is first constructed or acquired;
- D.** Any public betterment involving either a physical improvement or the acquisition of real property for a physical improvement consisting in, including, or affecting (1) streets and parks, (2) bridges and tunnels, (3) receiving basins, inlets, and sewers, including intercepting sewers, plants or structures for the treatment, disposal or filtration of sewage, including grit chambers, sewer tunnels, and all necessary accessories thereof, or (4) the fencing of vacant lots and the filling of sunken lots;
- E.** Any other project allowed to be financed by the local finance law, with the approval of the mayor and the comptroller;
- F.** Any combination of the above. (New York City Charter Section 210.1)

## Cast-in-Place

A term describing a paving material, such as concrete, that is poured into place on site and set to harden.

## CEQR

### (City Environmental Quality Review)

A process by which agencies of the City of New York review proposed discretionary actions to identify the effects those actions may have on the environment. CEQR is New York City's process for implementing SEQRA (New York State Environmental Quality Review Act), which requires that state and local governmental agencies assess environmental effects of discretionary actions before undertaking, funding, or approving such actions, unless they fall within certain statutory or regulatory exemptions from the requirements for review. [www.nyc.gov/oec](http://www.nyc.gov/oec)

## Channelization

The separation or regulation of conflicting traffic movements into definite paths of travel by traffic islands or pavement marking to facilitate the orderly movements of both vehicles and pedestrians. (AASHTO: *A Policy on Geometric Design of Highways and Streets*)

## Clear Path

A straight unobstructed path for pedestrian circulation on the sidewalk. (Rules of the City of New York, Title 34, Chapter 7, Section 7-06(c)(3)). (See also definition of clear path in DCWP's rules and in the ADA.)

## Climate Risk Assessment

A detailed, project-specific analysis that includes a vulnerability and risk assessment, often followed by cost-benefit analysis, to assess and select investments in climate risk mitigation. Risk is assessed as a function of the likelihood and consequence of a given climate change hazard.

## Coefficient of Friction

A value between 0 and 1 representing the ratio of the force of resistance between the horizontal motion of a body or object and a surface to the force pushing the body or object down on that surface. Surfaces with lower values, such as ice, are more slippery, while surfaces with higher values, such as concrete, are less slippery.

## Collector Street

A part of the street system that provides both land access and traffic circulation within residential, commercial, and industrial areas. It differs from the arterial system in that facilities on the collector system may penetrate residential neighborhoods, distributing trips from the arterials through the area to the ultimate destination. Conversely, the collector street also collects traffic from local streets in residential neighborhoods and channels it into the arterial system. In the central business district, and in other areas of like development and traffic density, the collector system may include the street grid, which forms a logical entity for traffic circulation. (FHWA: *Functional Classification Guidelines*)

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**Commercial District**

A zoning district, designated by the letter C (C1-2, C3, C4-7, for example), in which commercial uses are allowed and residential uses may also be permitted, as described in the Zoning Resolution of the City of New York.

[www1.nyc.gov/site/planning/zoning/about-zoning.page](http://www1.nyc.gov/site/planning/zoning/about-zoning.page)

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**Community Facilities**

Used in this Manual to mean elements of the streetscape that serve useful functions to street users beyond infrastructure and vehicular operations. Examples include street furniture (e.g., bike racks and newsstands), public and café seating, public art, and plantings. Their use is generally authorized through permits, revocable consents, and/or maintenance agreements.

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**Concession**

A grant made by an agency for the private use of city-owned property for which the city receives compensation other than in the form of a fee to cover administrative costs, except that concessions shall not include franchises, revocable consents, and leases. (NYC Charter, Section 362(a); Rules of the City of New York, Title 12)

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**Corner**

The area created by extending the building line to the curb.  
(Mayor's Executive Order No. 22 dated April 13, 1995)

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**Corner Quadrant**

The corner plus 10 additional feet extending away from the intersection along each intersecting roadway.

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**Crash**

A collision, as between two automobiles.

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**Crosswalk**

**A.** That part of a roadway at an intersection included within the connections of the lateral lines of the sidewalks on opposite sides of the highway between the curbs or, in the absence of curbs, between the edges of the traversable roadway;  
**B.** Any portion of a roadway at an intersection or elsewhere distinctly indicated for pedestrian crossing by lines or other markings on the surface. (New York State Vehicle and Traffic Law, Title 1, Article 1, Section 110)

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**CSO (Combined Sewer Overflow)**

A discharge of excess wastewater from a combined sewer system (sewers that are designed to collect rainwater runoff, domestic sewage, and industrial wastewater in the same pipe) directly into nearby streams, rivers, or other water bodies during periods of heavy rainfall or snowmelt when the wastewater volume exceeds the capacity of the sewer system or treatment plant.  
[www.epa.gov/npdes/combined-sewer-overflows-csos](http://www.epa.gov/npdes/combined-sewer-overflows-csos)

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**Cut-Through Traffic**

Traffic using minor roadways, usually residential streets, as shortcuts to avoid congestion on major streets. (APA: *U.S. Traffic Calming Manual, 1st Edition*)

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**Curb**

A vertical or sloping member along the edge of a roadway clearly defining the pavement edge. (New York State Vehicle and Traffic Law, Title 1, Article 1, Section 111)



# D

## Design Life

The life expectancy of an asset or product as determined during design.

## Design Speed

A selected speed used to determine the various geometric design features of the roadway. The assumed design speed should be a logical one with respect to the topography, anticipated operating speed, the adjacent land use, and the functional classification of highway. (AASHTO: *A Policy on Geometric Design of Highways and Streets*)

## Design Vehicle

A selected vehicle, with representative weight, dimensions, and operating characteristics, which is used to establish highway design controls for accommodating vehicles of designated classes. (AASHTO: *A Policy on Geometric Design of Highways and Streets*)

## Driver

Every person who operates or drives or is in actual physical control of a vehicle. (New York State Vehicle and Traffic Law, Title 1, Article 1, Section 113)

## Driveway

Every entrance or exit authorized pursuant to applicable law and used by vehicular traffic to or from lands or buildings abutting a highway. (Rules of the City of New York, Title 34, Chapter 4, Section 4-01(b))

# E

## Engineered Soil

A soil designed to achieve specific infiltration standards in a stormwater-capture installation.

# F

## Flag (sidewalk)

A flat slab of stone used as a paving material.

## Flood Wall

A fixed vertical structure designed to prevent inundation by waters from an adjacent river or waterway.

## Franchise

A grant by an agency of a right to occupy or use the inalienable property of the city (usually, streets or sidewalks) to provide a public service. (NYC Charter, Section 362(b))

## Friction Coefficient

See Coefficient of Friction

## Furnishing Zone

The section of the sidewalk between the curb and the through zone in which street furniture and amenities, such as lighting, benches, wayfinding signs, utility poles, tree pits, and bicycle parking are provided. The furnishing zone may also include green infrastructure elements, such as rain gardens or flow-through planters. In this Manual, the street furniture/curb zone is considered to be the same as the furnishing zone. (NACTO: *Urban Street Design Guide*, 2013)

# G

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## Gateway

A combination of traffic calming and visual measures used at the entrance to a low speed street to slow entering vehicles and discourage through-traffic.

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## Green Book

See *A Policy on Geometric Design of Highways and Streets*

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## Green Infrastructure

An adaptable term used to describe an array of products, technologies, and practices that use natural systems—or engineered systems that mimic natural processes—to enhance overall environmental quality and provide utility services. As a general principle, green infrastructure techniques use soils and vegetation to infiltrate, evapotranspire, and/or detain stormwater runoff. In addition to effectively retaining and infiltrating rainfall, these technologies can simultaneously help filter air pollutants, reduce energy demands, mitigate urban heat islands, and sequester carbon while also providing communities with aesthetic and natural resource benefits. [www.epa.gov/green-infrastructure](http://www.epa.gov/green-infrastructure)

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## Greenstreet

A vegetated area and its pathways within the right-of-way that are under DOT jurisdiction and maintained by Parks pursuant to an agreement between the two agencies.

Greenstreets do not include Stormwater Greenstreets. [www.nycgovparks.org/greening/green-infrastructure](http://www.nycgovparks.org/greening/green-infrastructure)

# H

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## Hardening

Making infrastructure less susceptible to damage from external security, safety, and climate threats, such as extreme wind, flooding, or flying debris.

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## Highway

The entire width between the boundary lines of every way publicly maintained when any part thereof is open to the use of the public for purposes of vehicular travel. (New York State Vehicle and Traffic Law, Title 1, Article 1, Section 118)

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## High Water Table

The highest level of the groundwater in a given area, taking into account seasonal and periodic storm event fluctuations. This level can vary throughout the boroughs, and needs to be taken into consideration when designing stormwater management practices/green infrastructure.

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## Historic District (NYC)

Any area which (1) contains improvements that have a special character or special historical or aesthetic interest or value; and represent one or more periods or styles of architecture typical of one or more eras in the history of the city; and cause such area, by reason of such factors, to constitute a distinct section of the city; and (2) has been designated as a historic district pursuant to Title 25 of the Administration Code of the City of New York. (Administrative Code of the City of New York, Title 25, Chapter 3, Section 25-302(h))

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## Horizontal Deflection

The horizontal (sideways) movement of moving vehicles compelled through physical and/or visual changes to the roadway alignment, for example a bend in the road.

# I

## **IESNA (Illuminating Engineering Society of North America)**

A professional organization of lighting engineers. The organization has established recommended guidelines regarding levels of illumination for street and pedestrian lighting.

## **Inclusive Design**

The process of creating convenient, safe, and accessible spaces for everyone. Accessibility is a critical component of universal design. In this Manual, the term "inclusive design" is used instead of "universal design."

## **Intersection**

The area contained within the grid created by extending the curblines of two or more streets at the point at which they cross each other. (Rules of the City of New York, Title 34, Chapter 2, Section 2-01)

# L

## **LED (Light-Emitting Diode)**

A light source that converts electricity to light through the movement of electrons. It does not have a filament and is more efficient than incandescent bulbs. It consumes less energy, is more compact, and lasts longer than traditional light sources.

## **Limited Use Street**

A legally mapped street to be temporarily closed to motor vehicles by the Department of Transportation, in accordance with lawfully authorized signs or other traffic control devices. (Rules of the City of New York, Title 34, Chapter 4, Section 4-12(r)(4))

## **Local Street**

A part of the street system that comprises all facilities not on one of the higher systems (collector or arterial). The local street system serves primarily to provide direct access to abutting land and access to the higher order systems. Service to through-traffic movement is usually discouraged. (FHWA: *Functional Classification Guidelines*)

## **Local Traffic**

Vehicular traffic whose trip origin and/or destination are in the immediate area of a given street.

## **LOS (Level of Service)**

A methodology for measuring traffic flow based on traveler delay and congestion, defined in the *Highway Capacity Manual* (HCM). Grades from A to F are used, from free flow to traffic jam conditions. Historically used primarily for motor vehicle traffic, LOS methodologies have also been devised for pedestrian, bicyclist, and transit operations.

# M

## **Motor Vehicle**

Every vehicle operated or driven upon a public highway which is propelled by any power other than muscular power, except as otherwise provided in Section 125 of the Vehicle and Traffic Law. (Rules of the City of New York, Title 34, Chapter 4, Section 4-01(b))

## **MUTCD (Manual on Uniform Traffic Control Devices)**

A document incorporated by reference in 23 Code of Federal Regulations (CFR), Part 655, Subpart F that is recognized as the national standard for all traffic control devices installed on any street, highway, bikeway, walkway, parking facility, or private road open to public travel. Traffic control devices include signs, signals, markings, and other devices used to regulate, warn, or guide traffic.

[mutcd.fhwa.dot.gov](http://mutcd.fhwa.dot.gov)



# N

## NACTO

### (National Association of City Transportation Officials)

A 501(c)(3) nonprofit association that represents large cities on transportation issues of local, regional, and national significance, and facilitates the exchange of ideas, data, and best practices. NACTO publishes numerous design guidance publications, including the *Urban Street Design Guide*. [nacto.org/about](https://nacto.org/about)

# O

## Operating Speed

The speed at which drivers are observed operating their vehicles during free-flow conditions. The 85th percentile of the distribution of observed speeds is the most frequently used measure of the operating speed associated with a particular location or geometric feature. (AASHTO: *A Policy on Geometric Design of Highways and Streets*)

# P

## Park

### Parking

The standing of a vehicle, whether occupied or not, otherwise than temporarily for the purpose of and while actually engaged in loading or unloading property or passengers. (Rules of the City of New York, Title 34, Chapter 4, Section 4-01(b))

### Peak Hour(s)

The hour or hours of greatest vehicular traffic volumes on a given street or intersection, usually defined for weekday AM, MD (mid-day) and PM, and Saturday MD peak periods. The peak hours, rather than an entire day, are typically analyzed in a traffic analysis.

### Pedal-Assist Bicycle

A bicycle equipped with fully operable pedals and an electric motor of less than seven hundred fifty watts (one horsepower) whereby such electric motor engages only when the operator is pedaling and the rate of speed of the bicycle is less than 20 miles per hour, and disengages or ceases to function when (i) the operator applies the brakes, (ii) the operator stops pedaling, or (iii) the bicycle achieves a speed of twenty miles per hour. A pedal-assist bicycle shall not be equipped with any throttle capacity or have any additional motorized equipment affixed to it. (Rules of the City of New York, Title 34, Chapter 4, Section 4-01(b))

### Pedestrian

Any person afoot or in a wheelchair. (New York State Vehicle and Traffic Law, Title 1, Article 1, Section 130)

## Pedestrian Plaza

An area designated by DOT for pedestrian circulation, use, and enjoyment on property under DOT's jurisdiction including but not limited to property mapped as public place or property within the bed of a roadway, and which may contain amenities such as tables, seating, trees, plants, lighting, bike racks, or public art. (Administrative Code of the City of New York, Section 19-157)

## A Policy on Geometric Design of Highways and Streets

A document published by AASHTO, often referred to as the "Green Book," that contains "design practices in universal use as the standard for highway geometric design." [store.transportation.org/item/collectiondetail/180](https://store.transportation.org/item/collectiondetail/180)

## Public Highway

Any highway, road, street, avenue, alley, public place, public driveway, or any other public way. (New York State Vehicle and Traffic Law, Title 1, Article 1, Section 134)

# R

## Rain Garden

A planted depression that captures and absorbs rainwater that would otherwise flow into a storm drain. Infiltration and evapotranspiration are the primary means for water management in these systems.

## Resiliency

The ability of people, the places where they live, and infrastructure systems—such as transportation and energy—to withstand a stress or shock event, to recover, and to emerge even stronger. In this Manual, resiliency is used in the context of climate-related threats including sea-level rise, coastal storms, and extreme precipitation and heat. (NYC: *One New York: The Plan for a Strong and Just City*, 2015)

## Restricted Use Street

A legally mapped street to be permanently closed to motor vehicles by the Department of Transportation, and open to use by pedestrians. (Rules of the City of New York, Title 34, Chapter 4, Section 4-12(r)(4))

## Revocable Consent

A grant by the city of a right, revocable at will...to an owner of real property or, with the consent of the owner, to a tenant of real property to use adjacent inalienable property (usually, streets or sidewalks) for such purposes as may be permitted by rules of DOT or DoITT. (For full definition, see NYC Charter, Section 362(c)(2); Rules of the City of New York, Title 34, Chapter 7, Section 7-01.)

## Right-of-Way

A general term denoting land, property, or interest therein, usually in a strip, acquired for or devoted to transportation purposes. (AASHTO: *Guide for the Development of Bicycle Facilities*)

## Road

An open way for the passage of vehicles, persons, or animals on land. (FHWA)

## Roadbed

The graded portion of a highway within top and side slopes, prepared as a foundation for the pavement structure and shoulder. (FHWA)

## Roadway

That portion of a street designed, improved, or ordinarily used for vehicular travel, exclusive of the shoulder and slope. (Rules of the City of New York, Title 34, Chapter 2, Section 2-01)

# S

## SBS (Select Bus Service)

New York City's application of BRT, providing a complementary service to the subway system by connecting those neighborhoods with limited transit options to subway stations and major destinations. To improve reliability and service along these high ridership corridors, a combination of tools are implemented. This includes off-board fare payment, bus lanes, Transit Signal Priority, and longer spacing between stops. [www1.nyc.gov/html/brt/html/home/home.shtml](http://www1.nyc.gov/html/brt/html/home/home.shtml)

## Scoring (concrete)

Marking the surface of concrete for visual or textural effect. "Tooled joint" scoring refers to concrete sidewalk flag joints finished with a hand-trowelled border. "Simulated saw-cut joint" scoring refers to concrete sidewalk flag joints finished using a spacer to simulate the appearance of joints cut with a masonry saw.

## Shared-Use Path

A bikeway physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right-of-way or within an independent right-of-way. Shared-use paths may also be used by pedestrians, skaters, wheelchair users, joggers, and other non-motorized users. (AASHTO: *Guide for the Development of Bicycle Facilities*)

**Sidewalk**

That portion of a street, whether paved or unpaved, between the curb lines or the lateral lines of a roadway and the adjacent property lines intended for the use of pedestrians. Where it is not clear which section is intended for the use of pedestrians, the sidewalk will be deemed to be that portion of the street between the building line and the curb. (Rules of the City of New York, Title 34, Chapter 4, Section 4-01(b))

**Simulated Saw-Cut Joint**

See Scoring (concrete)

**Source Control**

An action to prevent pollution where it originates.

**Source Reduction**

The technique of stopping and/or reducing pollutants at their point of generation so that they do not come into contact with stormwater.

**Stand  
Standing**

The stopping of a vehicle, whether occupied or not, otherwise than temporarily for the purpose of and while actually engaged in receiving or discharging passengers. (New York State Vehicle and Traffic Law, Title 1, Article 1, Section 145; Rules of the City of New York, Title 34, Chapter 4, Section 4-01(b))

**Stop****Stopping**

Any halting even momentarily of a vehicle, whether occupied or not. (Rules of the City of New York, Title 34, Chapter 4, Section 4-01(b))

**Storm Surge**

The abnormal rise of water generated by a storm, over and above the predicted astronomical tides.

**Street**

A street, avenue, road, alley, lane, highway, boulevard, concourse, parkway, driveway, culvert, sidewalk, crosswalk, boardwalk, and viaduct, and every class of public road, square and place, except marginal streets. (New York City Charter Section 210.7)

**Street Tree**

A tree growing in the public right-of-way. These trees provide a range of benefits, from increased property values to stormwater capture and urban heat island mitigation. [www.nycgovparks.org/sub\\_your\\_park/trees\\_greenstreets/faq.html](http://www.nycgovparks.org/sub_your_park/trees_greenstreets/faq.html)

**Supplementary Cementitious  
Materials (SCM)**

Industrial by-products that would otherwise have to be disposed of in landfills, providing cost savings to concrete manufacturers and reducing environmental impact by averting disposal. (DDC: *High Performance Infrastructure Guidelines*, 2005)

**Swale**

See Bioswale

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**T****Target Speed**

The speed at which vehicles should operate on a thoroughfare in a specific context, consistent with the level of multimodal activity generated by adjacent land uses, to provide both mobility for motor vehicles and a safe environment for pedestrians and bicyclists. The target speed is usually the posted speed limit. (ITE: *Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities*)

**Temporary Flood Protection  
Measure**

A network of devices that can be deployed on surfaces to support reduction of flood impacts to buildings, roadways, and other assets.

**Through Traffic**

Vehicular traffic whose trip origin and destination are not in the immediate area of a given street.

**Traffic**

Pedestrians, ridden or herded animals, vehicles, bicycles, and other conveyances either singly or together while using any highway for purposes of travel. (New York State Vehicle and Traffic Law, Title 1, Article 1, Section 152)

**Tooled Joint**

See Scoring (concrete)



## U

### Traffic Calming

A speed management practice whose primary purpose is to support the livability and vitality of residential and commercial areas through improvements in non-motorist safety, mobility, and comfort. These objectives are typically achieved by reducing vehicle speeds or volumes on a single street or a street network. Traffic calming measures consist of horizontal, vertical, lane narrowing, and roadside interventions as well as other features that use self-enforcing physical or psycho-perception means to produce desired effects. (ITE and FHWA: Traffic Calming ePrimer; [safety.fhwa.dot.gov/speedmgt/traffic\\_calm.cfm](https://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm))

### Traffic Control Devices

All signs, signals, markings, and devices placed or erected by authority of a public body or official having jurisdiction for the purpose of regulating, warning, or guiding traffic. (New York State Vehicle and Traffic Law, Title 1, Article 1, Section 153)

### Truck

Except as otherwise specified in the Rules of the City of New York, Title 34, Chapter 4, Section 4-01(b), any vehicle or combination of vehicles designed for the transportation of property, which has either of the following characteristics: two axles, and six tires; or three or more axles. (Rules of the City of New York, Title 34, Chapter 4, Section 4-13(a))

### Unit Paver

A paving material that is precast, such as a hexagonal asphalt paver, or individually hewn, such as a granite block, such that each paver is a single unit that can be removed or replaced.

### Universal Design

See Inclusive Design

### Urban Heat Island Effect

The phenomenon wherein many urban and suburban areas experience elevated temperatures compared to their outlying rural surroundings; this difference in temperature is what constitutes an urban heat island. The annual mean air temperature of a city with one million or more people can be 1.8 to 5.4 degrees F (1 to 3 degrees C) warmer than its surroundings, and on a clear, calm night, this temperature difference can be as much as 22 degrees F (12 degrees C). (US EPA: *Reducing Urban Heat Islands: Compendium of Strategies*)

### Useful Life

The period over which an asset or component is expected to be available for use by an entity, assuming regular and adequate maintenance.

## V

### Vehicle

Every device in, upon, or by which any person or property is or may be transported or drawn upon a highway, except devices moved by human power or used exclusively upon stationary rails or tracks. (New York State Vehicle and Traffic Law, Title 1, Article 1, Section 159; Rules of the City of New York, Title 34, Chapter 4, Section 4-01(b))

### Vertical Deflection

The vertical (upward) displacement of moving vehicles by way of a raising of the roadbed surface, for example with a hump, table, or other raised element.

### Vision Zero

New York City's action plan to improve street safety in every neighborhood and in every borough – with expanded enforcement against dangerous moving violations like speeding and failing to yield to pedestrians, new street designs and configurations to improve safety, broad public outreach and communications, and a sweeping legislative agenda to increase penalties for dangerous drivers and give New York City control over the safety of our own streets. [www1.nyc.gov/site/visionzero/index.page](https://www1.nyc.gov/site/visionzero/index.page)

## #

### 100-Year Floodplain

The area with a 1% or higher chance of flooding in any given year.

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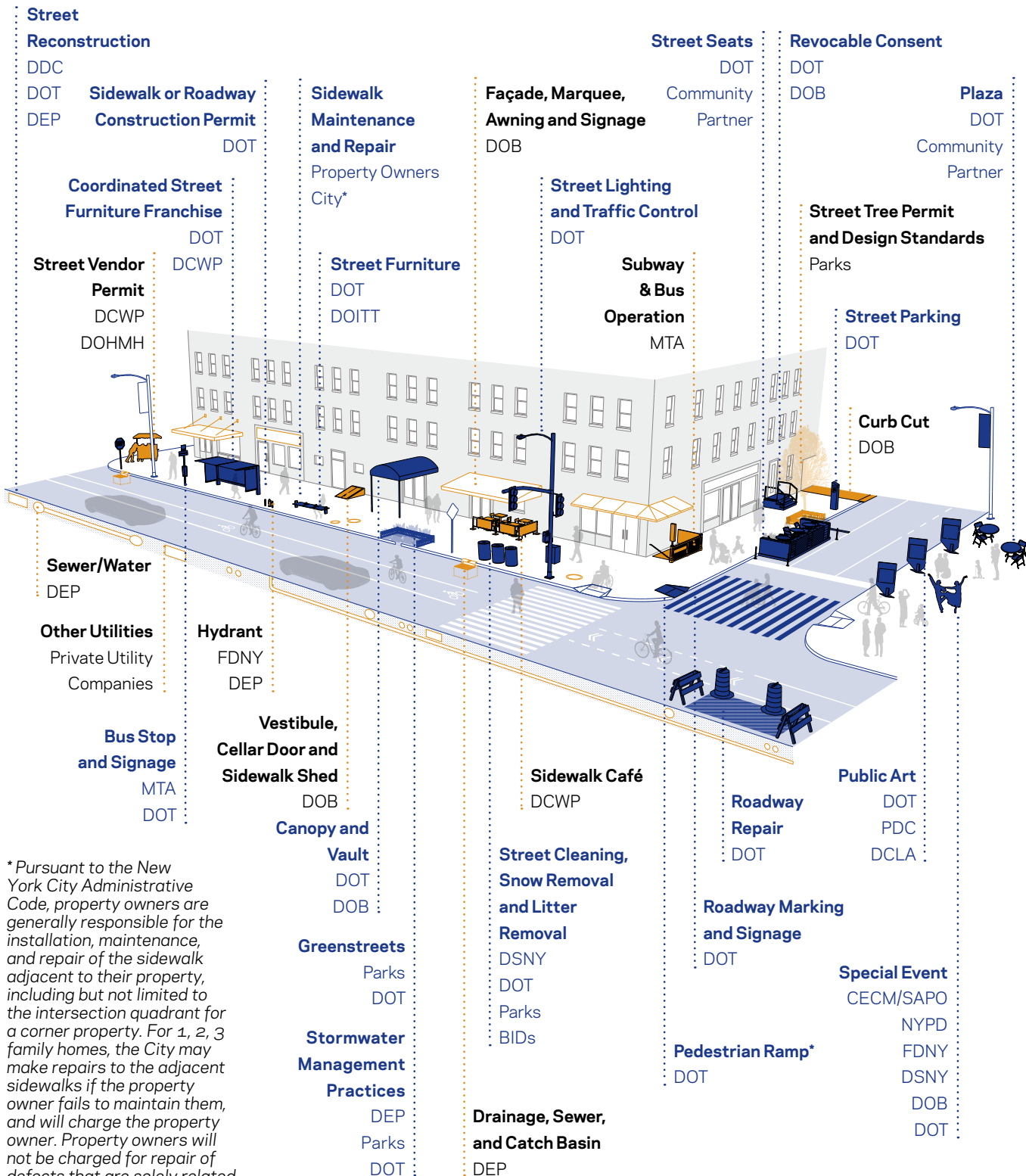
# Appendices

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# Agency Roles on the City's Streets

This diagram summarizes the roles and responsibilities of city agencies and other entities related to the most visible aspects of the city's streets. It does not include all agencies with street-related roles and is not intended to be a literal representation of appropriate street furniture locations.

An expanded listing follows.





The following are agencies, authorities, and other organizations that are frequently involved in the design of streets in New York City. This list is provided as a reference tool, for informational purposes only, and is not an exhaustive list.

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### **Street Planning, Design & Construction**

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#### **Street Capital Projects**

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DOT  
(initiation, scoping, conceptual design)  
[www.nyc.gov/dot](http://www.nyc.gov/dot)

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DEP  
(initiation, scoping)  
[www.nyc.gov/dep](http://www.nyc.gov/dep)

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EDC  
(initiation, scoping, conceptual design, final design, agency alignment & construction)  
[www.nycedc.com](http://www.nycedc.com)

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DDC  
(conceptual design, final design, agency alignment & construction)  
[www.nyc.gov/ddc](http://www.nyc.gov/ddc)

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Parks  
(parks, greenstreets)  
[www.nycgovparks.org](http://www.nycgovparks.org)

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NYSDOT  
(state highways within New York City)  
[dot.ny.gov](http://dot.ny.gov)

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Other city, state, and federal agencies and authorities for individual, typically site-specific projects

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#### **Comprehensive Street Planning**

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DOT  
(for most public streets)  
[www.nyc.gov/dot](http://www.nyc.gov/dot)

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DCP  
(zoning, private streets, transportation studies)  
[www.nyc.gov/planning](http://www.nyc.gov/planning)

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NYSDOT  
(for state and federal routes)  
[dot.ny.gov](http://dot.ny.gov)

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#### **Design of Stormwater Best Management Practices/ Source Controls**

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DDC [www.nyc.gov/ddc](http://www.nyc.gov/ddc)

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DEP [www.nyc.gov/dep](http://www.nyc.gov/dep)

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Parks [www.nycgovparks.org](http://www.nycgovparks.org)

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DOT [www.nyc.gov/dot](http://www.nyc.gov/dot)

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#### **Greenstreets**

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Parks [www.nycgovparks.org](http://www.nycgovparks.org)

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DOT [www.nyc.gov/dot](http://www.nyc.gov/dot)

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#### **Land Acquisition**

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DCAS [www.nyc.gov/dcas](http://www.nyc.gov/dcas)

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DDC [www.nyc.gov/ddc](http://www.nyc.gov/ddc)

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SBS [www.nyc.gov/sbs](http://www.nyc.gov/sbs)

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Law Department  
[www.nyc.gov/law](http://www.nyc.gov/law)

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DCP (ULURP) [www.nyc.gov/planning](http://www.nyc.gov/planning)

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#### **Non-Capital Street Projects**

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DOT (design and implementation)  
[www.nyc.gov/dot](http://www.nyc.gov/dot)

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#### **Universal Design**

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MOPD (Mayor's Office for People with Disabilities) [www.nyc.gov/mopd](http://www.nyc.gov/mopd)

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#### **Street Tree & Tree-Bed Design Standards**

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Parks [www.nycgovparks.org](http://www.nycgovparks.org)

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**Reviews, Approvals & Permits****Coastal Erosion Permits**

NYSDEC [www.dec.ny.gov](http://www.dec.ny.gov)

**Construction on Sidewalk or in Roadway, Permits**

DOT [www.nyc.gov/dot](http://www.nyc.gov/dot)

**Curb Cut, Existing Cellar Door, Marquee & Awning Permits**

DOB [www.nyc.gov/dob](http://www.nyc.gov/dob)

**Environmental Review (CEQR/SEQR/NEPA)**

Lead agency and involved agencies vary by project

**Emergency Vehicle Access Review**

FDNY [www.nyc.gov/fdny](http://www.nyc.gov/fdny)

**Historic District Review**

LPC [www.nyc.gov/landmarks](http://www.nyc.gov/landmarks)

**Light Pole Banner Permits**

DOT [www.nyc.gov/dot](http://www.nyc.gov/dot)

**Newsracks**

DOT [www.nyc.gov/dot](http://www.nyc.gov/dot)

**Review of Works of Art and Structures (as defined in Chapter 37, Section 854 of the NYC Charter)**

PDC  
[www.nyc.gov/designcommission](http://www.nyc.gov/designcommission)

**Revocable Consents**

DOT [www.nyc.gov/dot](http://www.nyc.gov/dot)

DCWP  
(sidewalk cafés)  
[www.nyc.gov/dcwp](http://www.nyc.gov/dcwp)

DoITT  
(telecommunications)  
[www.nyc.gov/doitt](http://www.nyc.gov/doitt)

**Sewers, Catch Basins & Drainage Approval**

DEP  
[www.nyc.gov/dep](http://www.nyc.gov/dep)

**Sidewalk Shed Permits**

DOB  
[www.nyc.gov/dob](http://www.nyc.gov/dob)

**Sidewalk Work Permits**

DOB  
(Builder's Pavement Plan)  
[www.nyc.gov/dob](http://www.nyc.gov/dob)

DOT  
[www.nyc.gov/dot](http://www.nyc.gov/dot)

**Special Event/Street Fair Permits**

CECM [www.nyc.gov/cecm](http://www.nyc.gov/cecm)

NYPD [www.nyc.gov/nypd](http://www.nyc.gov/nypd)

**Street Tree Permits (including Tree Guards)**

Parks  
[www.nycgovparks.org](http://www.nycgovparks.org)

**Street Vendor Permits**

DCWP  
[www.nyc.gov/dcwp](http://www.nyc.gov/dcwp)

DOHMH  
[www.nyc.gov/health](http://www.nyc.gov/health)

**Vaults & Canopies: Permits**

DOT  
[www.nyc.gov/dot](http://www.nyc.gov/dot)

**Water Quality Permits/Approvals**

NYSDEC  
[www.dec.ny.gov](http://www.dec.ny.gov)

DEP  
[www.nyc.gov/dep](http://www.nyc.gov/dep)

**Wetlands Permits**

United States Army Corps of Engineers [www.usace.army.mil](http://www.usace.army.mil)

NYSDEC  
[www.dec.ny.gov](http://www.dec.ny.gov)

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**Operation & Maintenance**


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**Coordinated Street Furniture Franchise (bus stop shelters, newsstands, automatic public toilets, bike shelters)**


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DOT  
[www.nyc.gov/dot](http://www.nyc.gov/dot)

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DCWP  
[www.nyc.gov/dcwp](http://www.nyc.gov/dcwp)

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**Greenstreets Maintenance**


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Parks  
[www.nycgovparks.org](http://www.nycgovparks.org)

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**Roadway Maintenance and Repair**


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DOT  
[www.nyc.gov/dot](http://www.nyc.gov/dot)

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**Roadway & Retaining Wall Inspection**


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DOT  
[www.nyc.gov/dot](http://www.nyc.gov/dot)

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DDC  
[www.nyc.gov/ddc](http://www.nyc.gov/ddc)

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**Sidewalk Maintenance and Repair**


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Property Owners

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DOT  
 (in certain zoning districts or through prior notice) [www.nyc.gov/dot](http://www.nyc.gov/dot)

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**Street Cleaning, Snow Removal & Litter Removal**


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DSNY  
[www.nyc.gov/dsny](http://www.nyc.gov/dsny)

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DOT  
[www.nyc.gov/dot](http://www.nyc.gov/dot)

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Parks  
[www.nycgovparks.org](http://www.nycgovparks.org)

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BIDs  
 (Business Improvement Districts)  
[www1.nyc.gov/site/sbs/neighborhoods/bids.page](http://www1.nyc.gov/site/sbs/neighborhoods/bids.page)

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**Street Operations (Street Lighting, Traffic Controls, etc.)**


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DOT  
[www.nyc.gov/dot](http://www.nyc.gov/dot)

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**Supplementary Maintenance & Services, Street Furniture**


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SBS  
[www.nyc.gov/sbs](http://www.nyc.gov/sbs)

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BIDs  
 (Business Improvement Districts)  
[www1.nyc.gov/site/sbs/neighborhoods/bids.page](http://www1.nyc.gov/site/sbs/neighborhoods/bids.page)

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**Tree-Bed Maintenance**


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Parks  
 (first two years from planting)  
[www.nycgovparks.org](http://www.nycgovparks.org)

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Property owners  
 (after two years from planting)

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**Transit (Bus) Operations**


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MTA NYCT  
[www.mta.info/nyct](http://www.mta.info/nyct)

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**Utilities**


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DEP  
[www.nyc.gov/dep](http://www.nyc.gov/dep)

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Private Utilities

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Empire City Subway  
[www.empirecitysubway.com](http://www.empirecitysubway.com)

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**Enforcement**


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Enforcement of Construction Permits

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DOT  
[www.nyc.gov/dot](http://www.nyc.gov/dot)

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**Enforcement of Traffic Rules (including parking regulations)**


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NYPD  
[www.nyc.gov/nypd](http://www.nyc.gov/nypd)

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**Stoop Line Enforcement**


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DCWP  
[www.nyc.gov/dcwp](http://www.nyc.gov/dcwp)

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## Legal & Design Guidance References

The following are laws, rules, regulations, and design guidance documents that may be relevant to the design of streets. This list is provided as a reference tool, for informational purposes only, and is not an exhaustive list. All public and private actions must comply with all applicable laws, rules, and regulations, not solely those listed below.

### Federal Laws and Regulations

**Code of Federal Regulations (CFR)**  
[govinfo.gov/help/cfr](http://govinfo.gov/help/cfr)

Manual on Uniform Traffic Control Devices (MUTCD)  
[mutcd.fhwa.dot.gov](http://mutcd.fhwa.dot.gov)

**United States Code (USC)**  
[uscode.house.gov](http://uscode.house.gov)

Americans with Disabilities Act (ADA)  
[www.ada.gov/regs2010/2010ADAStandards/2010ADAStandards\\_prt.pdf](http://www.ada.gov/regs2010/2010ADAStandards/2010ADAStandards_prt.pdf)

Clean Air Act (CAA)  
[www.epa.gov/air/caa](http://www.epa.gov/air/caa)

Clean Water Act (CWA)  
[www.epa.gov/laws-regulations/summary-clean-water-act](http://www.epa.gov/laws-regulations/summary-clean-water-act)

National Environmental Policy Act (NEPA)  
[www.epa.gov/nepa](http://www.epa.gov/nepa)

National Historic Preservation Act, Section 106  
[www.nps.gov/history/tribes/Documents/106.pdf](http://www.nps.gov/history/tribes/Documents/106.pdf)

Department of Transportation Act, Section 4(f)  
[www.environment.fhwa.dot.gov/env\\_topics/4f\\_tutorial/default.aspx](http://www.environment.fhwa.dot.gov/env_topics/4f_tutorial/default.aspx)

### State Laws and Regulations

**New York State Code of Rules and Regulations**  
[www.dos.ny.gov/info/nycrr.html](http://www.dos.ny.gov/info/nycrr.html)

New York State Department of Environmental Conservation (Title 6)  
[www.dec.ny.gov/regulations/regulations.html](http://www.dec.ny.gov/regulations/regulations.html)

New York State Environmental Quality Review Act (SEQR)  
[www.dec.ny.gov/permits/357.html](http://www.dec.ny.gov/permits/357.html)

New York State Historic Preservation Act, Section 14.09  
[parks.ny.gov/shpo/environmental-review/state-regulations.aspx](http://parks.ny.gov/shpo/environmental-review/state-regulations.aspx)

New York State Department of Transportation (Title 17)  
[www.dos.ny.gov/info/nycrr.html](http://www.dos.ny.gov/info/nycrr.html)

**New York State Environmental Conservation Law (ECL)**  
[public.leginfo.state.ny.us](http://public.leginfo.state.ny.us)

**New York State Highway Law**  
[public.leginfo.state.ny.us](http://public.leginfo.state.ny.us)

**New York State Transportation Law**  
[public.leginfo.state.ny.us](http://public.leginfo.state.ny.us)

**New York State Vehicle and Traffic Law (VTL)**  
[public.leginfo.state.ny.us](http://public.leginfo.state.ny.us)

### Local Laws and Regulations

**New York City Charter**  
[www.amlegal.com/codes/client/new-york-city\\_ny](http://www.amlegal.com/codes/client/new-york-city_ny)

City Planning (Chapter 8)

Department of Buildings (Chapter 26)

Department of Citywide Administrative Services (Chapter 35)

Department of Consumer Affairs (Chapter 64)

Department of Design and Construction (Chapter 55)

Department of Environmental Protection (Chapter 57)

Department of Health (Chapter 22)

Department of Parks and Recreation (Chapter 21)

Department of Sanitation (Chapter 31)

Department of Small Business Services (Chapter 56)

Department of Transportation (Chapter 71)

Fire Department (Chapter 19)

Franchises, Revocable Consents, and Concessions (Chapter 14)

Landmarks Preservation Commission (Chapter 74)

**Local Laws and Regulations (cont.)**

Police Department (Chapter 18)

Public Design Commission/Art Commission (Chapter 37)

**Administrative Code of the City of New York**

[www.amlegal.com/codes/client/new-york-city\\_ny](http://www.amlegal.com/codes/client/new-york-city_ny)

Budget; Capital Projects (Title 5)  
NYC Traffic Rules

Construction and Maintenance (Title 27)

Consumer Affairs (Title 20)

Contracts, Purchases and Franchises (Title 6)

Environmental Protection and Utilities (Title 24)

Fire Prevention and Control (Title 15)

Health (Title 17)

Housing and Buildings (Title 26)

Land Use (Title 25)

Parks (Title 18)

Police (Title 14)

Sanitation (Title 16)

Transportation (Title 19)

**Rules of the City of New York**

[www.amlegal.com/codes/client/new-york-city\\_ny](http://www.amlegal.com/codes/client/new-york-city_ny)

City Planning (Title 62)

Community Assistance Unit (Title 50)

Department of Buildings (Title 1)

Department of Citywide Administrative Services (Title 55)

Department of Environmental Protection (Title 15)

Rules Governing the Construction of Private Sewers

Rules Governing the Use of the Water Supply

Department of Consumer Affairs (Title 6)

Department of Health (Title 24)

Department of Parks and Recreation (Title 56)

Department of Sanitation (Title 16)

Department of Small Business Services (Title 66)

Department of Transportation (Title 34)

NYC Traffic Rules (Chapter 4)  
NYC Highway Rules (Chapter 2)  
Revocable Consents (Chapter 7)

Fire Department (Title 3)

Franchise and Concession Review Committee (Title 12)

Landmarks Preservation Commission (Title 63)

Police Department (Title 38)

Public Design Commission/Art Commission (Title 57)

**Zoning Resolution of the City of New York**

[www1.nyc.gov/site/planning/zoning/about-zoning.page](http://www1.nyc.gov/site/planning/zoning/about-zoning.page)

**City Environmental Quality Review**

[www1.nyc.gov/site/oec/environmental-quality-review/environmental-quality-review.page](http://www1.nyc.gov/site/oec/environmental-quality-review/environmental-quality-review.page)

CEQR Technical Manual  
[www1.nyc.gov/site/oec/environmental-quality-review/technical-manual.page](http://www1.nyc.gov/site/oec/environmental-quality-review/technical-manual.page)

New York City Charter (Chapter 8)

Rules of the City of New York (Title 43 and 62)

**National Design Guidance Sources**

**American Association of State Highway and Transportation officials (AASHTO)**  
[www.transportation.org](http://www.transportation.org)

*A Policy on Geometric Design of Highways and Streets*, 7th Edition (AASHTO: 2018; [store.transportation.org/item/collectiondetail/180](http://store.transportation.org/item/collectiondetail/180))

*A Guide for Achieving Flexibility in Highway Design* (AASHTO: 2004; [store.transportation.org/item/collectiondetail/31](http://store.transportation.org/item/collectiondetail/31))

*Guide for the Planning, Design, and Operation of Pedestrian Facilities* (AASHTO: 2004; [store.transportation.org/item/collectiondetail/131](http://store.transportation.org/item/collectiondetail/131))

*Guide for the Development of Bicycle Facilities*, 4th Edition (AASHTO: 2012; [store.transportation.org/item/collectiondetail/116](http://store.transportation.org/item/collectiondetail/116))

**American Planning Association (APA)**

*U.S. Traffic Calming Manual* (APA and American Society of Civil Engineers: 2009)

**Federal Highway Administration (FHWA)**

[www.fhwa.dot.gov](http://www.fhwa.dot.gov)

*BIKESAFE: Bicycle Safety Guide and Countermeasure Selection System*  
[www.pedbikesafe.org/bikesafe](http://www.pedbikesafe.org/bikesafe)

*PEDSAFE: Pedestrian Safety Guide and Countermeasure Selection System*  
[www.pedbikesafe.org/pedsafe](http://www.pedbikesafe.org/pedsafe)

*Pedestrian Facilities Users Guide* (FHWA: 2002; [www.fhwa.dot.gov/publications/research/safety/01102/01102.pdf](http://www.fhwa.dot.gov/publications/research/safety/01102/01102.pdf))

*Designing Sidewalks and Trails for Access* (FHWA: 2001; [www.fhwa.dot.gov/environment/bicycle\\_pedestrian/publications/sidewalks/index.cfm](http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalks/index.cfm))

*Flexibility in Highway Design* (FHWA: 1997; [www.fhwa.dot.gov/environment/publications/flexibility/index.cfm](http://www.fhwa.dot.gov/environment/publications/flexibility/index.cfm))

### National Design Guidance Sources (cont.)

*Public Involvement Techniques for Transportation Decision-Making* (FHWA and FTA: 2015; [www.fhwa.dot.gov/planning/public\\_involvement/publications/pi\\_techniques](http://www.fhwa.dot.gov/planning/public_involvement/publications/pi_techniques))

MUTCD (Manual on Uniform Traffic Control Devices)  
[mutcd.fhwa.dot.gov](http://mutcd.fhwa.dot.gov)

**Institute of Transportation Engineers (ITE)**  
[www.ite.org](http://www.ite.org)

*Urban Street Geometric Design Handbook* (ITE: 2008; [ecommerce.ite.org/IMIS/ItemDetail?iProductCode=TB-018](http://ecommerce.ite.org/IMIS/ItemDetail?iProductCode=TB-018))

*Designing Walkable Urban Thoroughfares: A Context Sensitive Approach* (ITE: 2010; [www.ite.org/pub/?id=E1CFF43C-2354-D714-51D9-D82B39D4DBAD](http://www.ite.org/pub/?id=E1CFF43C-2354-D714-51D9-D82B39D4DBAD))

*The Design and Safety of Pedestrian Facilities* (ITE: 1998; [safety.fhwa.dot.gov/ped\\_bike/docs/designsafety.pdf](http://safety.fhwa.dot.gov/ped_bike/docs/designsafety.pdf))

**National Association of City Transportation Officials (NACTO)**  
[www.nacto.org](http://www.nacto.org)

*Urban Street Design Guide* (NACTO: 2013; [www.nacto.org/publication/urban-street-design-guide](http://www.nacto.org/publication/urban-street-design-guide))

**United States Access Board**  
[www.access-board.gov](http://www.access-board.gov)

*Accessible Public Rights-of-Way: Planning and Designing for Alterations* (US Access Board: 2007; [www.access-board.gov/attachments/article/756/guide.pdf](http://www.access-board.gov/attachments/article/756/guide.pdf))

*ADA and ABA Accessibility Guidelines* (US Access Board: 2004; [www.access-board.gov/attachments/article/412/ada-aba.pdf](http://www.access-board.gov/attachments/article/412/ada-aba.pdf))

*The Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities* (US Access Board: 2002; [www.access-board.gov/attachments/article/1350/adaag.pdf](http://www.access-board.gov/attachments/article/1350/adaag.pdf))

*Accessible Rights-of-Way: A Design Guide* (US Access Board: 1999; [safety.fhwa.dot.gov/intersection/other\\_topics/fhwasa09027/99.htm](http://safety.fhwa.dot.gov/intersection/other_topics/fhwasa09027/99.htm))

### Local Design Guidance Sources

**DCP**  
[www.nyc.gov/planning](http://www.nyc.gov/planning)

*New York City Bicycle Master Plan* (DCP and DOT: 1997; [nacto.org/references/new-york-city-bicycle-master-plan-1997](http://nacto.org/references/new-york-city-bicycle-master-plan-1997))

**DDC**  
[www.nyc.gov/ddc](http://www.nyc.gov/ddc)

*Active Design Guidelines: Promoting Physical Activity and Health in Design* (DDC, DOHMH, DOT, DCP & OMB: 2010)

*High Performance Infrastructure Guidelines: Best Practices for the Public Right-of-Way* (DDC and Design Trust for Public Space: 2005)

*Sustainable Urban Sites Design Manual* (DDC: 2008; [www.nyc.gov/html/ddc/downloads/pdf/ddc\\_sdsitedesignmanual.pdf](http://www.nyc.gov/html/ddc/downloads/pdf/ddc_sdsitedesignmanual.pdf))

**DEP**  
[www.nyc.gov/dep](http://www.nyc.gov/dep)

*Standard Designs and Guidelines for Green Infrastructure Practices* (DEP: 2017; [www1.nyc.gov/assets/dep/downloads/pdf/water/stormwater/green-infrastructure/green-infrastructure-standard-designs.pdf](http://www1.nyc.gov/assets/dep/downloads/pdf/water/stormwater/green-infrastructure/green-infrastructure-standard-designs.pdf))

*PlaNYC Sustainable Stormwater Management Plan* (NYC: 2008; [www.nyc.gov/html/planyc/downloads/pdf/publications/nyc\\_sustainable\\_stormwater\\_management\\_plan\\_final.pdf](http://www.nyc.gov/html/planyc/downloads/pdf/publications/nyc_sustainable_stormwater_management_plan_final.pdf))

**DOT**  
[www.nyc.gov/dot](http://www.nyc.gov/dot)

*Under the Elevated: Reclaiming Space, Connecting Communities* (DOT and Design Trust for Public Space: 2015)

*EI-Space Toolkit: Strategies for Reclaiming Sites Beneath Elevated Transportation Infrastructure, Version 1.0* (DOT and Design Trust for Public Space: 2019; [designtrust.org/media/files/DesignTrust\\_EI-SpaceToolkit\\_v5.pdf](http://designtrust.org/media/files/DesignTrust_EI-SpaceToolkit_v5.pdf))

*Standard Highway Specifications* (DOT: 2015; [www1.nyc.gov/site/ddc/resources/publications.page#infra](http://www1.nyc.gov/site/ddc/resources/publications.page#infra))

*Standard Details of Construction* (DOT: 2010; [www1.nyc.gov/site/ddc/resources/publications.page#infra](http://www1.nyc.gov/site/ddc/resources/publications.page#infra))

*Street Lighting Specifications and Standard Drawings*  
[www.nyc.gov/html/dot/html/about/dotlibrary.shtml#spec](http://www.nyc.gov/html/dot/html/about/dotlibrary.shtml#spec)

*Instructions for Filing Plans and Guidelines for the Design of Sidewalks, Curbs, Roadways and Other Infrastructure Components*  
[www.nyc.gov/html/dot/html/permits/stpermit.shtml#instructions](http://www.nyc.gov/html/dot/html/permits/stpermit.shtml#instructions)

*Specifications for Furnishing All Labor and Material Necessary and Required for the Installation, Removal or Relocation of Street Lighting Equipment in the City of New York* (DOT: 1992; [www.nyc.gov/html/dot/html/about/dotlibrary.shtml#spec](http://www.nyc.gov/html/dot/html/about/dotlibrary.shtml#spec))

*Typical Pavement Markings Drawings*  
[www1.nyc.gov/html/dot/html/about/dotlibrary.shtml](http://www1.nyc.gov/html/dot/html/about/dotlibrary.shtml)



### Local Design Guidance Sources (cont.)

#### MOPD

[www.nyc.gov/mopd](http://www.nyc.gov/mopd)

*Inclusive Design Guidelines: New York City* (MOPD and International Code Council: 2010)

#### NYSDEC

[www.dec.ny.gov](http://www.dec.ny.gov)

New York State Stormwater Management Design Manual (NYSDEC: 2015; [www.dec.ny.gov/chemical/29072.html](http://www.dec.ny.gov/chemical/29072.html))

#### Parks

[www.nycgovparks.org](http://www.nycgovparks.org)

*Tree Planting Standards* (Parks: 2016; [www.nycgovparks.org/pagefiles/53/Tree-Planting-Standards.pdf](http://www.nycgovparks.org/pagefiles/53/Tree-Planting-Standards.pdf))

*Park Design for the 21st Century: High Performance Landscape Guidelines* (Parks and Design Trust for Public Space: 2010; [www.nycgovparks.org/sub\\_about/sustainable\\_parks/design\\_guidelines.pdf](http://www.nycgovparks.org/sub_about/sustainable_parks/design_guidelines.pdf))

### Street Planning Resources

*Downtown Brooklyn Traffic Calming Study* (NYCDOT: 2004; [www1.nyc.gov/html/dot/html/motorist/dntnbklyntraf.shtml](http://www1.nyc.gov/html/dot/html/motorist/dntnbklyntraf.shtml))

*Project Development & Design Guide* (Massachusetts Highway Department: 2006; [www.mass.gov/files/documents/2018/08/08/pddg.pdf](http://www.mass.gov/files/documents/2018/08/08/pddg.pdf))

*San Francisco Better Streets Plan* (City and County of San Francisco; [www.sfbetterstreets.org](http://www.sfbetterstreets.org))

*Smart Transportation Guidebook: Planning and Designing Highways and Streets that Support Sustainable and Livable Communities* (New Jersey DOT/Pennsylvania DOT: 2008; [www.dvrpc.org/reports/08030A.pdf](http://www.dvrpc.org/reports/08030A.pdf))

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TENEZ LA BASCULE  
POUR DESCENDRE  
HOLD ONTO THE  
SEESAW TO STEP  
OFF

JOUEZ DE  
MANIERE  
SECURITAIRE  
PLAY SAFELY

4 PERSONNES  
MAXIMUM  
4 PEOPLE  
MAXIMUM

NE MONTEZ PAS  
DEBOUT SUR LA  
BASCULE  
DO NOT STAND ON  
THE SEESAW



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