

QUEENS EAST RIVER AND NORTH SHORE GREENWAY MASTER PLAN

Michael R. Bloomberg, Mayor
City of New York

Amanda M. Burden, AICP, Director
Department of City Planning

Adrian Benepe, Commissioner
Department of Parks and Recreation

2006



- Existing Multi-Use Path/Greenway
- Proposed On-Street Route
- Proposed Waterfront Route
- 2 Study Area Segment

**Queens East River and North Shore
Greenway Master Plan**

New York City
Department of City Planning

New York City
Department of Parks & Recreation

2006

Project PIN X500.97

The preparation of this report was financed in part through funds from the U.S. Department of Transportation, Federal Highway Administration. This document is disseminated under the sponsorship of the U.S. Department of Transportation in the interest of information exchange. The contents of this report reflect the views of the author, who is responsible for the facts and accuracy of the data presented within. The contents do not necessarily reflect the official views or policies of the Federal Highway Administration. This report does not constitute a standard, specification, or regulation.

Table of Contents

Introduction	1
Project Description	1
Study Area	1
Project Goals	1
Project Scope	2
Funding	2
This Document	2
Planning Framework	3
New York City Greenway System	3
Greenway Classification	4
Criteria for a Successful Greenway	5
Existing Conditions	6
Yesterday - A Brief History	6
Today	8
Land Use	8
Transportation	9
Population	9
Project Constraints and Opportunities	12
Waterfront Access	12
Planning Initiatives	13
Proposed Route and Route Alternatives	14
Segment 1: Pulaski Bridge to Queensboro Bridge	16
Segment 2: Queensboro Bridge to Hallets Cove	24
Segment 3: Hallets Cove to 20th Avenue	32
Segment 4: 20th Avenue to 82nd Street	38
Segment 5: 82nd Street to LaGuardia Airport/Flushing Bay Promenade	46
Coordination/Future Steps	53
Appendix 1 Design and Materials Guide	54
Appendix 2 Bridges and Tunnels	58
Appendix 3 Traffic Accident Analysis	59
Appendix 4 Shared-Use Sidewalks	62
Acknowledgements	70
Credits	71

Introduction

Project Description

The Queens East River and North Shore Greenway is a proposed 10.6-mile urban shared-use trail, intended to provide access to the shoreline in Queens and improve non-motorized commuter options. It will connect the neighborhoods of Long Island City, Hunters Point, Ravenswood, and Astoria in western Queens with Steinway, Jackson Heights and East Elmhurst in northern Queens and connect four parks on the East River shoreline. This proposed greenway is part of an ambitious multi-year effort to implement a comprehensive citywide network of cycling lanes and greenways. The 1997 *New York City Bicycle Master Plan* identified a 900-mile bicycle network that incorporated the 350-mile network of bicycle and pedestrian paths recommended in the 1993 *Greenway Plan for New York City*. That plan also highlights the East River section of the Queens East River and North Shore Greenway as a priority route. This project seeks to establish continuous waterfront access as recommended in the City's *Comprehensive Waterfront Plan* of 1992.

Study Area

The proposed East River and North Shore Greenway follows the natural boundaries of the western and northern shorelines in Queens. The relatively flat terrain of the study area makes it a desirable route for cyclists, as does proximity to the East River, local parks with unmatched views of Midtown, cultural institutions, landmarks, and links to Manhattan via three bridges. The two gateways to the study area are the Pulaski Bridge in the south and the Flushing Bay Promenade to the northeast. The Pulaski Bridge, with its existing shared-use path,

provides the link between Brooklyn and Queens across Newtown Creek. The 1.4-mile Flushing Bay Promenade establishes a connection along Flushing Bay with a link to downtown Flushing and the 40-mile Brooklyn Queens Greenway.

The study area has two major sections: The East River section, and the North Shore section. For reasons of manageability, the entire study area has been divided into five segments (1 through 5):

East River:

- (1) Pulaski Bridge to Queensboro Bridge
- (2) Queensboro Bridge to Hallets Cove
- (3) Hallets Cove to 20th Avenue

North Shore:

- (4) 20th Avenue to 82nd Street
- (5) 82nd Street to LaGuardia Airport to the Flushing Bay Promenade

Project Goals

The proposed route would greatly improve public access to the City's waterfront. Many waterfront segments, however, are inaccessible due to current industrial or commercial uses, or because they are privately owned. The creation of an uninterrupted esplanade along the waterfront is at best a long-term project requiring the cooperation of numerous stakeholders. For this reason, this study examines two parallel (and, in some segments, identical) routes, a discontinuous one along the waterfront and a continuous one on-street. The on-street route would take less time and cost to implement, given its use of existing streets and sidewalks, park paths and esplanades (some of which are not on-street), and would be in place as the waterfront esplanade is developed. The on-street route is not just an interim solution; it would provide a direct and

continuous route to major destinations preferred by commuters. The on-street route would connect to the Queensboro, Triborough, and Roosevelt Island bridges, link residential and commercial areas, and connect to existing parks and esplanades. Most of the upland communities along the North Shore are separated from the waterfront by industrial, utility, or transportation uses, adding to the importance of an on-street facility.



Study Area

Project Scope

This master plan, a joint effort by the New York City Department of City Planning (DCP) and Department of Parks & Recreation, identifies conceptual greenway routes, describes the selection of the preferred route and the criteria used to make the selections.

The scope of work covers proposed signage, striping, landscaping, design guidelines for the trails and lanes, and recommended improvements or alterations to existing facilities.

The Queens East River and North Shore Greenway has been planned and designed in consultation with an advisory committee. The committee included Community Boards 1, 2, and 3, civic organizations and community groups, as well as federal, state and local agencies. Numerous field visits, committee meetings, and valued community input helped shape the outcome of this study.

This master plan should serve as a resource and guide for city, state and federal agencies, community groups and private developers to implement the plan. The many recent or current projects in the study area have been incorporated into this master plan in an effort to create a continuous route in the future.

Funding

Funding for this master plan is provided by the Congestion Mitigation Air Quality (CMAQ) program under the Transportation Equity Act for the 21st Century (TEA-21). CMAQ was first established under TEA-21's predecessor, the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991. The program for the first time provides Federal Highway Administration (FHWA) funds for the planning, design, and construction of pedestrian and bicycle facilities to reduce congestion and emissions in non-attainment areas, such as New York City, which does not presently meet air quality standards. The project has \$150,000 in funding (80 percent federal, 20 percent local) to prepare the project master plan. Parks & Recreation has been awarded \$2,640,000 in CMAQ funds for implementation of the in-park portions along the Queens East River (Phase 1). Councilmember Gioia also allocated \$500,000 for this phase. An additional \$160,000 in local match funds is needed.

This Document

This document describes the greenway planning framework, discusses the existing conditions within the study area, and proposes routes and route alternatives. The Planning Framework chapter describes the planning initiatives and the framework for the implementation of greenways, bicycle and pedestrian facilities in New York City. The Existing Conditions chapter talks about the general identity of the area and its neighborhoods, giving a rough overview of the predominant land uses and transportation opportunities, including a brief history of the study area. The Proposed Route and Route Alternatives chapter discusses existing conditions, but in a more detailed way, specific to the five segments. This chapter discusses the inland and the waterfront corridor segment by segment, analyzes existing conditions and identifies opportunities and constraints regarding the feasibility of the routes, possible alternative routes, and potential design treatments. Connections between the on- and off-street routes are also highlighted.

Planning Framework

New York City Greenway System

The release of the 1993 *Greenway Plan for New York City* by the New York City Department of City Planning signaled the start of a multi-year effort to create the nation's most extensive urban greenway system – 350 miles of landscaped bicycle and pedestrian paths traversing New York City.

The *NYC Comprehensive Waterfront Plan* (1992), the *Plan for the Queens Waterfront* (1993), and the *New York City Bicycle Master Plan* (1997) call for improved access to the waterfront and a connected greenway facility along the shoreline of Queens.

This master plan adapts the general goals of these documents into goals specific to this study area, as follows:

- Provide non-motorized recreational and commuter opportunities for pedestrians and bicyclists along the waterfront between the Pulaski Bridge and the Flushing Bay Promenade
- Improve access to the waterfront, important landmarks, and destinations such as the East River parks, the North Shore bays, and major transportation facilities, and
- Develop a continuous on- and off-street route (as conditions permit) consistent with the citywide bicycle and greenway network.



Source: *A Greenway Plan for New York City*, DCP, 1993

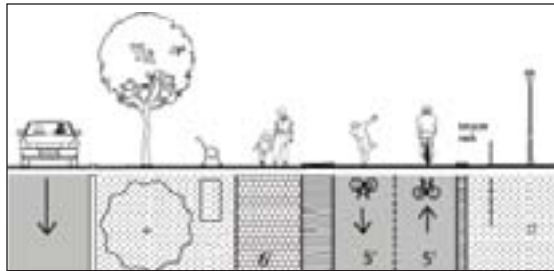
Greenway Classification

A greenway is a shared-use pathway for non-motorized transportation along linear spaces like park paths, waterfront esplanades, river corridors, shorelines, railroad rights-of-way, or city streets. These linear spaces can be natural or constructed landscaped paths for bicyclists and pedestrians. Greenways serve as open space connectors, linking origins and destinations such as parks, nature reserves, cultural areas, historic sites, employment centers, commercial areas, libraries, or schools. Greenways are used for walking, jogging, in-line skating, bicycling, and by wheelchair users.

Greenways in New York are classified by type:

Class 1: Shared-use Trail

A shared-use trail is separated from the roadway and delineated by pavement markings and regulatory signage.



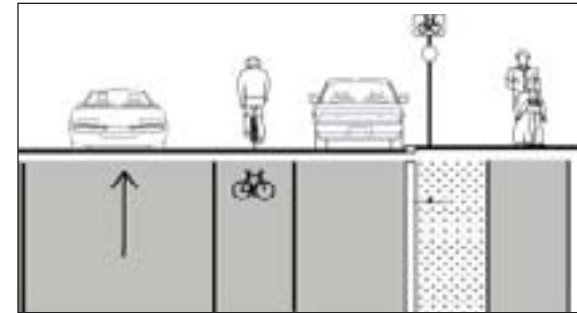
Class 1: Dual Carriageway



Class 1: Shared-Use Path

Class 2: Bicycle Lane

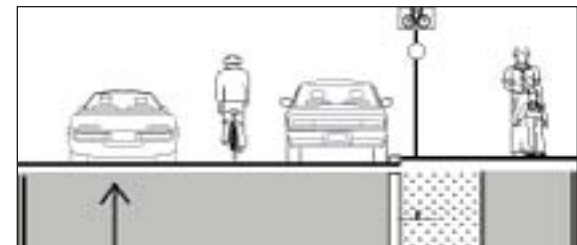
A bicycle lane is part of the roadway and delineated by pavement markings and regulatory signage.



Class 2: Striped On-street Lane

Class 3: Signed Route

Assigned route or bike route has informational signage only, typically located at each block along the route.



Class 3: Signed On-Street Route

For class 2 and 3 facilities, sidewalks or a separate facility for pedestrians would have to complement the bicycle facility in order to create a complete greenway. For a detailed description of the greenway classification system, see Appendix 1.

Criteria for a Successful Greenway

The *New York City Bicycle Master Plan* identifies six selection criteria to consider when locating greenways and on-street bicycle routes. These criteria were used to identify the preferred route(s) for the Queens East River and North Shore Greenway.

- Accessibility

Accessibility to major origins and destinations, such as the waterfront, parks, housing, transit, transportation hubs, schools, libraries, and other community facilities within and around the study area is important for greenway users.

- Connectivity

Connectivity with other existing greenway paths and bicycle lanes, and with the waterfront, parks, esplanades, and retail corridors make routes more desirable for cyclists and pedestrians.

- Directness

Routes directly connecting origins and destinations serve as non-motorized traffic corridors are preferred. The more direct a route between two points, such as home and work, the more commuter traffic it may attract.

- Continuity

Continuity of cycling conditions includes clear visual and physical connections between sections of a greenway, and between adjoining greenways. Factors include pavement conditions, steepness of grade, scenic qualities, and the overall design of a facility.

- Safety

The safety of an on-street signed or striped route is assessed using factors such as curb lane width, traffic volumes, separation between motorized and non-motorized traffic, and vehicle speed. The safety of an off-street route, or greenway, is determined by examining other considerations, such as visibility for all park users, operational conflicts on shared-use facilities and at pedestrian crossings, and access points such as underpasses and stairs. Increasing safety and/or choosing routes with the highest levels of safety would increase the number and variety of riders.

- Feasibility

Feasibility of implementing a Class 1 or 2 facility is based on factors other than funding, such as: land use and ownership, existing roadbed and park path width/conditions, natural barriers, and environmentally-sensitive or secured areas that preclude access.

Existing Conditions

Yesterday – A Brief History

The proposed on- and off-street route roughly follows the shoreline of western and northern Queens through the neighborhoods of Long Island City, Astoria, and East Elmhurst in Community Districts 1, 2, and 3. These neighborhoods previously were independent municipalities and were later incorporated into the City of New York.

Long Island City

Long Island City in western Queens is bounded to the west and the north by the East River, to the east by Hazen Street, 49th Street, and New Calvary Cemetery, and to the south by Newtown Creek. It is the largest neighborhood in the borough and takes in several smaller ones: Hunter's Point, Ravenswood, Astoria, Steinway, and Sunnyside. The area used to flood easily and was sparsely settled before 1853, when two developers, Nezhiah Bliss and Eliphalet Nott, leveled sand hills and laid out streets. Terminals were built for the Flushing Railroad (1854) and the Long Island Rail Road (1861). During the Civil War, Hunter's Point was industrialized and in 1869 was connected to Astoria by a street railway. In 1870, Long Island City became the fourth incorporated municipality within the current bounds of New York City. Between 1870 and 1873 the Steinway family erected a piano factory on the East River and laid out Steinway Village, which became heavily German. Between 1874 and 1880 swamps were drained and the land filled to end flooding. The notorious Hell Gate Reef, a deadly trap for ships, was dynamited in 1876 and again in 1885. After 1900 heavy industry moved out because of crowding, but the transportation infrastructure attracted newcomers. The Long Island Rail Road electrified its suburban routes in 1905. The Steinway Tunnel for the Flushing line

was completed under the East River in 1907 but finally opened in 1915. After the Queensboro Bridge opened in 1909, new streets were laid out, blocks of houses were built and land values rose rapidly. During the 1920s the last open land in Astoria was developed. Aircraft parts were manufactured in Astoria during both world wars. After 1945, many large factories closed or converted into uses such as the Silvercup Studios, the International Design Center, and residential units. The neighborhood attracted immigrants from Asia and Latin America in the 1980s. Long Island City remains the most industrialized area in Queens County, especially in its southern reaches.

Astoria

Astoria in northwestern Queens constitutes the portion of Long Island City north of Broadway. In 1839, the Village of Astoria was incorporated, about the time when industries began to locate in western Queens. It was developed by Stephen A. Halsey, a fur merchant who petitioned the state legislature to name it for the prominent fur trader John Jacob Astor. During the 1840s and 1850s it grew slowly inland from the ferry landing at the foot of Astoria Boulevard. Wealthy New Yorkers built mansions on 12th and 14th streets and on 27th Avenue. The German United Cabinet Workers bought four farms in 1869 between 35th and 50th Streets and developed a German town.

As mentioned, in 1870 Astoria consolidated with Hunters Point, Steinway, Ravenswood and Dutch Kills to form Long Island City. The Steinway community is named after the 19th-century entrepreneur William Steinway, manufacturer of pianos, and real estate and transit developer. The Steinway Piano Factory was built in 1872, surrounded by Victorian row houses built by Steinway for its workers.

Thousands of houses were built in the 1890s and the early twentieth century. The first rapid transit line, the Astoria elevated, opened on 31st Street in 1917. The Kaufman Astoria Studios, where Rudolph Valentino, the Marx Brothers, and Paul Robeson made films, were later used by the government for making training and propaganda films. Abandoned in 1971, the studios were eventually restored for television and motion picture production and one building now houses the Museum of the Moving Image. After the Second World War, Astoria was largely Italian. Greeks rapidly increased in number after 1965. They now account for slightly less than half its population. St. Demetrious is the most prominent of eleven Greek Orthodox Churches in the area. Other ethnic groups have also established communities in the area, including Colombians, Chinese, Guyanese, and Koreans, and to a lesser extent Ecuadorians, Romanians, Indians, Filipinos and Dominicans.

East Elmhurst

East Elmhurst in north-central Queens is bounded to the north by LaGuardia Airport, to the east by Flushing Bay, to the south by Northern Boulevard, and to the west by 85th Street. Prior to World War I, North Beach, as it was called then, was "Queens County's Coney Island" on Long Island Sound, with picnic grounds, dance halls, and amusement park rides. The area was developed in 1905 as a neighborhood of frame houses on small lots; those on the bluff overlooking the Bowery Bay had private beaches. Prior to 1937 the area was wholly residential, but transportation and utility uses, including the Bowery Bay Water Pollution Control Plant, transformed the shoreline before and after WW II.

The map illustrates the geographical layout of Astoria, Oregon, with its three community districts clearly delineated. Community District 1 covers the northern portion of the city, including areas like Wards Island and the Robert Sneyd Generating Station. Community District 2 is located in the southern part, featuring the Con Ed Refining Facility and the Columbia River. Community District 3 occupies the eastern side, home to the La Guardia Airport and the Academy of Aeronautics. The map also shows the city's proximity to the Columbia River and its various parks and educational institutions.

Built for the New York World's Fair of 1939-1940, LaGuardia Airport borders Bowery and Flushing bays on the site of the Gala amusement park and a small airport, which was enlarged by reclaiming 350 acres of waterfront. Operated by the Port Authority of New York and New Jersey, LaGuardia Airport has two runways, 72 airplane gates, and handles over 25 million passengers annually. It is a major employer: over 9,000 persons work at the airport, and it contributes \$5.7 billion in economic activity to the metropolitan region, generating 63,000 jobs. Proximity to the airport brought commercial development to Ditmars Boulevard, including airport-related uses such as hotels, bus and livery car service.

Flushing Meadows-Corona Park and Flushing Bay Promenade were built on the Corona Dumps, land-filled marshes on either side of the Flushing River, for the 1939-1940 New York World's Fair. The 1,250-acre park is populated by the remnant buildings and pavilions of both world's fairs, including the Unisphere and sports facilities such as Shea Stadium and the USTA Tennis Center.

Today

Land Use

The East River shoreline is used by industrial and manufacturing firms requiring waterfront access and proximity to Manhattan and by a sometimes incongruous mix of utility power plants, transformers, and parks with waterfront access and stunning views of Manhattan. South of the Queensboro Bridge the study area is mainly industrial, to its north is a mixed residential/commercial community of high-density housing projects interspersed with clusters of one- and two-family homes. Commercial uses are primarily corner convenience stores and delis, restaurants, and automobile-related facilities.

Development of the waterfront has revived since 1990. A new private residential development, a Con Edison training facility, and a Costco warehouse store have been built in recent years. New power-generating facilities owned by Keyspan and Con Edison have been constructed on waterfront parcels; other vacant lots have been developed as destinations within the emerging LIC arts district, such as Socrates Sculpture Park. The Citicorp Building was completed in 1989 and at 48 stories is the tallest building in New York City outside Manhattan. Several other large-scale projects are currently underway, such as the Queens West mixed-use development at Hunters Point, the rezoning of a 36-block area of Long Island City to encourage commercial development, Silvercup West, Silvercup Studio's project on the East River, and the redevelopment of Queens Plaza, including improved vehicular, pedestrian, and bicycle access to the Queensboro Bridge.

The North Shore waterfront contains primarily active industrial, utility, and transportation uses, including the Reliant Energy Astoria Generating Station (formerly Con Ed) Astoria electricity generating plant (290 acres), the Bowery Bay Water Pollution Control

plant (45 acres), the Steinway Piano factory, the bridge to Rikers Island Penitentiary, and LaGuardia Airport (680 acres) and its Marine Air Terminal. Along the waterfront east of the airport is the 1.4-mile Flushing Bay Promenade, reconstructed in 2001, at the north edge of Flushing Meadows-Corona Park.

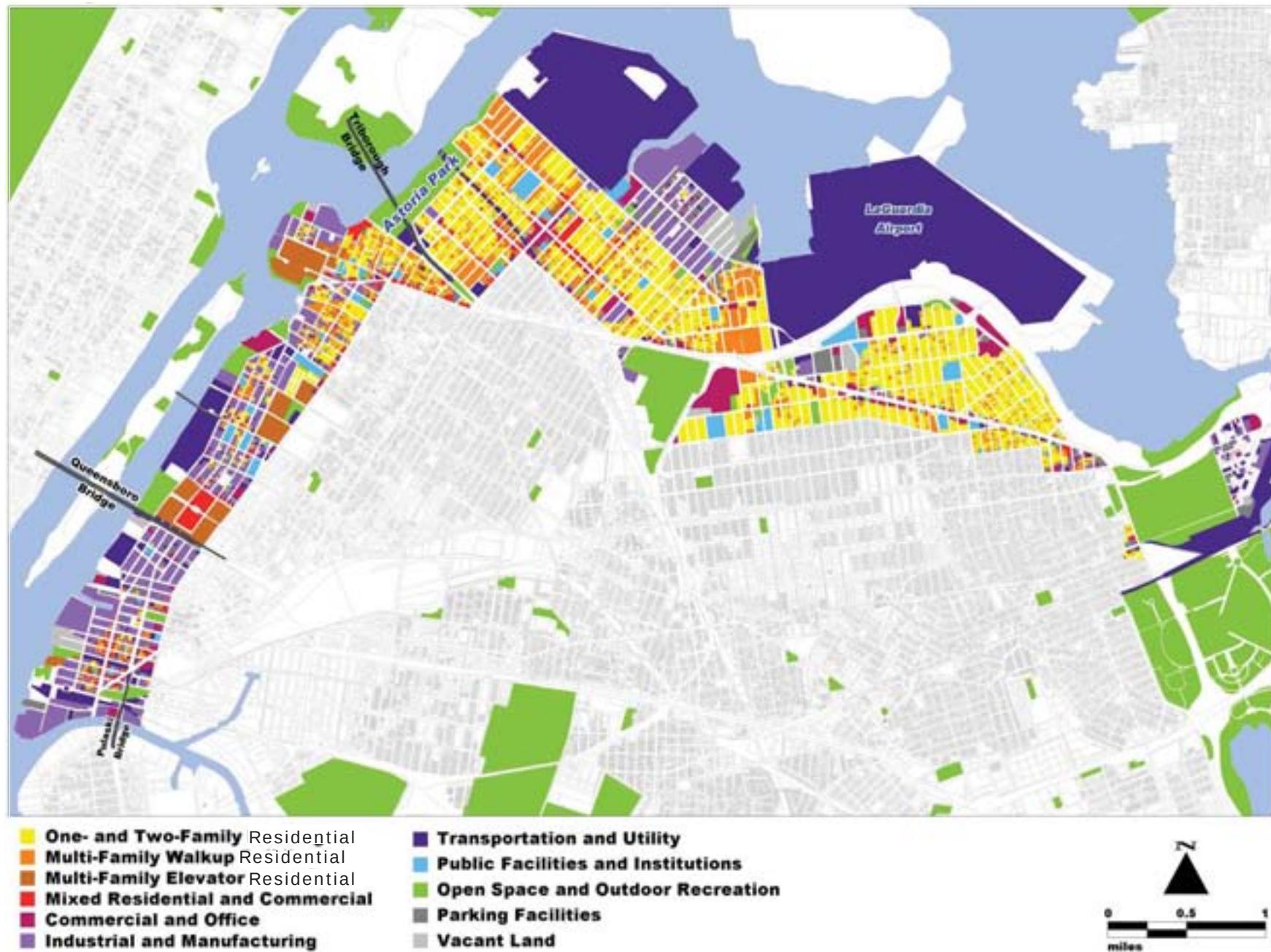
The following list gives an overview of the 2000 land use distribution for Community Districts 1 to 3, as listed in the *Queens Community District Needs 2002/2003*. The map on page 14 depicts the land uses specific to the study area.

Community District 1:

1-2 Family Residential:	21%
Multi-family residential:	25%
Mixed residential/commercial:	5%
Commercial/Office:	7%
Industrial:	14%
Transportation/Utility:	10%
Institutions:	5%
Open Space/Recreation:	7%
Parking Facilities:	3%
Vacant Land:	3%

		Transportation	Population
Community District 2:		Long Island City and Astoria are served by several subway lines. The 7 stop at Vernon Boulevard and Jackson Avenue is the only subway station within the immediate study area. Inland east of the study corridor, the G train stops at 21st Street in LIC; the R,V, and E trains stop at Queens Plaza, and the F train stops at 21st Street in Ravenswood. Long Island Railroad (LIRR) stations in Long Island City and ferry service available from Hunters Point provide additional commutation options.	The rapid development of the East and North shores in the past century and the proximity to Manhattan make the study area a popular residence. The map on page 11 shows the population density by census tract for the year 2000. The most densely populated areas are the census tracts set back from the water, with highest densities at Queensbridge Houses and in the greater Astoria area. Astoria is part of Community District 1, which is the most ethnically mixed district in Queens with over 118 nationalities.
1-2 Family Residential:	13%		
Multi-family residential	12%		
Mixed residential/commercial:	2%		
Commercial/Office:	5%		
Industrial:	31%		
Transportation/Utility:	7%		
Institutions:	3%		
Open Space/Recreation:	14%		
Parking Facilities:	6%		
Vacant Land:	5%	Bus lines through the Queens-Midtown Tunnel to the Pulaski Bridge include the X51, X63, X64, and the X68. The Q102, Q103, and Q104 buses travel on portions of Vernon Boulevard. The Q18 bus travels on 27th Avenue between 8th and 12th streets. The Q66 bus travels between Main Street-Flushing and 21 st Street and Queensbridge along Northern Boulevard and 35 th Avenue.	
Community District 3:			
1-2 Family Residential:	46%		
Multi-family residential:	26%		
Mixed residential/Commercial:	4%		
Commercial/Office:	8%		
Industrial:	1%		
Transportation/Utility:	2%		
Institutions:	7%		
Open Space/Recreation:	1%		
Parking Facilities:	2%		
Vacant Land:	3%	The elevated N and W lines terminate in Astoria at the Astoria/Ditmars Boulevard station two blocks south of 20th Avenue. Subway service is not available along the route in Jackson Heights and East Elmhurst. The Willets Point/Shea Stadium and the Main Street Flushing stations on the 7 line provide subway access near the eastern terminus of the proposed greenway. A Long Island Railroad (LIRR) station in Flushing provides additional commutation options.	

Land Use



2000 Population by Census Tract



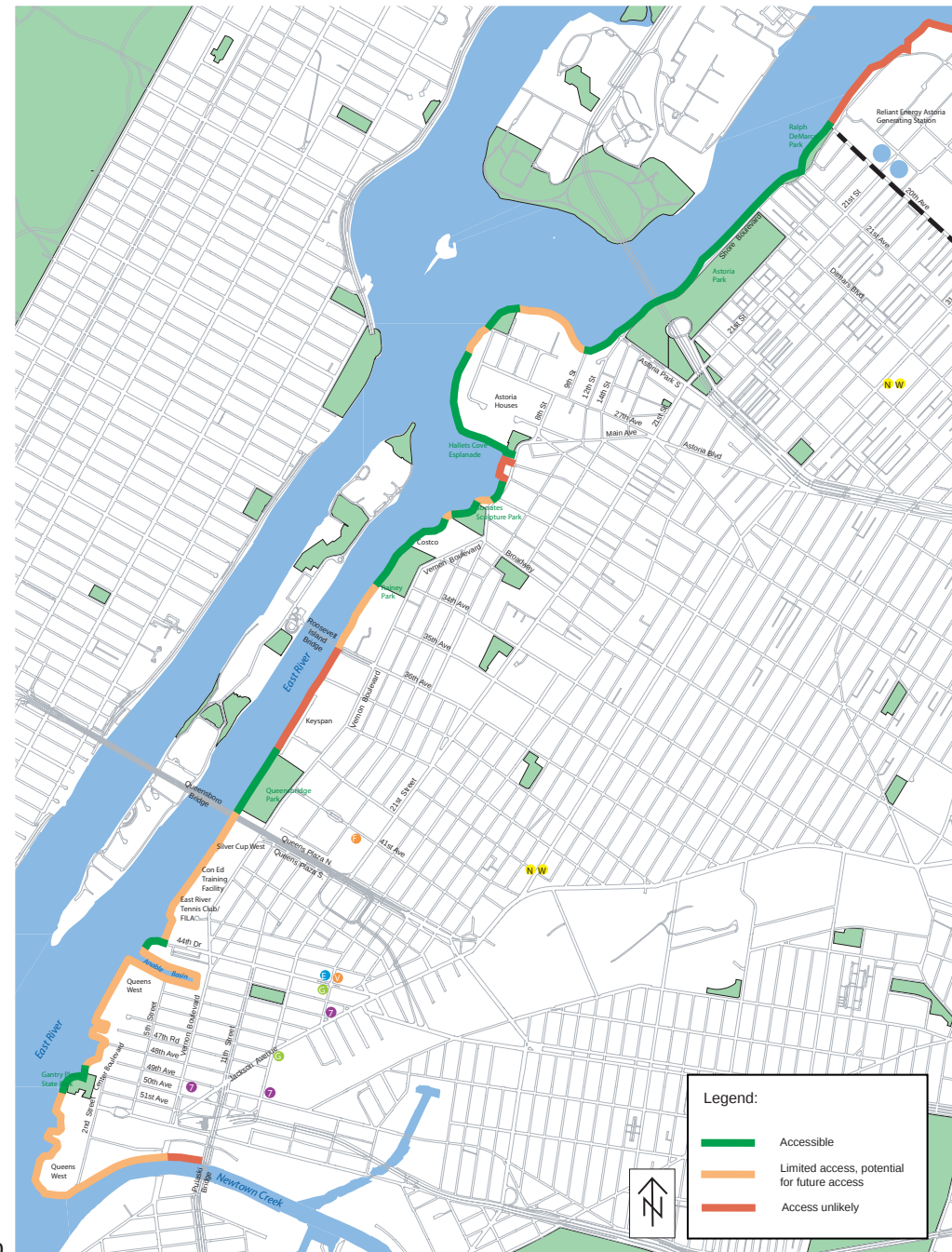
Project Constraints and Opportunities

Waterfront Access

The development of the East River waterfront over the past years, decades, and centuries created a vast mix of land uses along the shoreline. A checkerboard of industrial, commercial and residential uses, along with transportation infrastructure, parks and open spaces lines the shoreline today. Opportunities for waterfront access that existed in 1992 – as described in the Comprehensive Waterfront Access Plan – are no longer available for certain sites. In addition, the existing esplanade along the Queensbridge Park waterfront is in need of repair and has been fenced off to prevent access. However, new development precluding access to the waterfront is counterbalanced by new residential development, such as Queens West, Silvercup West, and the River East site, where waterfront access for the public is being created.

The map to the right gives an overview of current waterfront access along the East River and lists stretches with future potential access. Due to the industrial, utility, and transportation uses along the North Shore, there is no major access to that shoreline at this time.

Waterfront Access Map





In addition to the overall waterfront revival over the past years, the study area is also subject to several planning initiatives. The map on this page gives an overview of these planning proposals. The map also shows existing greenway facilities to which the Queens East River and North Shore Greenway would connect. Not shown are planning initiatives by the Department of City Planning in Flushing (Downtown Flushing Plan/Pedestrian Project) and in Long Island City (rezoning initiative in Dutch Kills, LIC). The proposed route is discussed in the next chapter.

Proposed Route and Route Alternatives

The NYC Bicycle Master Plan recommends a network of specific bicycle routes. The routes were rated then the best chosen based on the criteria listed on page 5.

The purpose of this master plan is to examine in more detail the routes identified in the *NYC Bicycle Master Plan* for the East River and North Shore portions and to offer best alternatives, such as connections between waterfront and on-street routes, easiest ways of accessing the routes, etc. Alternative routes proximate to the proposed route were examined but deemed inferior to the proposed route for a variety of reasons.

This chapter discusses the proposed inland and waterfront corridors that would provide an interconnected route for the 10.6 miles along the East River and North Shore. Each of the five segments describes existing conditions in detail, identifies opportunities and constraints regarding the feasibility of the routes, and describes the route recommendations, and, where available, route alternatives. The proposed waterfront and on-street routes for each segment are discussed and mapped in the same chapter.

The five segments of the study are:

East River:

- (1) Pulaski Bridge to Queensboro Bridge
- (2) Queensboro Bridge to Halletts Cove
- (3) Halletts Cove to 20th Avenue

North Shore:

- (4) 20th Avenue to 82nd Street
- (5) 82nd Street to LaGuardia Airport to the Flushing Bay Promenade

Each segment is structured as follows:

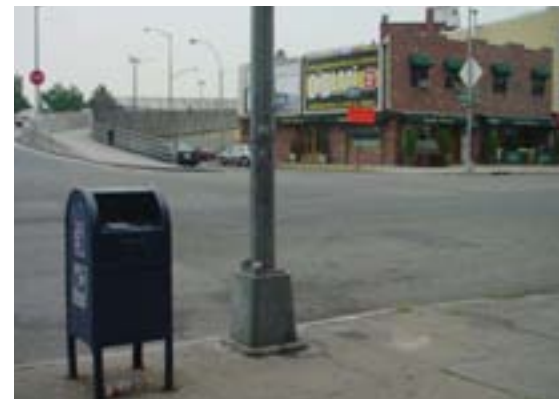
1. General overview
2. Existing:
 - On-Street
 - Waterfront
3. Proposed:
 - On-Street Route and Design
 - Waterfront Route
4. Summary of Recommendations



[illegible]

Segment 1: Pulaski Bridge to Queensboro Bridge

Length:	1.9 miles
Neighborhoods:	Hunters Point, Long Island City in Community District 2
Major Destinations:	PS 1, Queens West, major employers
Transportation:	7 train at Jackson Avenue and 51st Avenue; buses through the Queens-Midtown Tunnel to the Pulaski Bridge: X51, X63, X64, and the X68. Q102 bus runs the length of Vernon Boulevard to Roosevelt Island and from 36th Avenue to 41st Street
Typical Roadbed Width:	Jackson Avenue: 60 feet, Vernon Boulevard: 45 feet
On-Street Treatment:	Distinctive greenway signs, shared parking/bicycling lanes
Major Waterfront Uses:	Residential: Queens West Commercial: Former Fink Baking Corp., Anheuser Busch Distribution, Pepsi Co., Water's Edge restaurant, River East, Con Edison training facility Industrial: NY Power Authority temporary plant Parks: Gantry Plaza State Park
Existing Waterfront Access:	Gantry Plaza State Park between 48th and 50th avenues, 44th Drive Pier
Potential Waterfront Access:	2nd Street to 46th Avenue after completion of Queens West North of the 44th Drive Pier, including River East, South of Queensboro Bridge (at Silvercup West)
Waterfront Access Unlikely:	Con Edison



Pulaski Bridge path at Jackson Avenue



Vernon Boulevard at 51st Avenue, looking north



Vernon Boulevard at 50th Avenue, looking north

Existing

On-Street

Spanning the Newtown Creek, the Pulaski Bridge provides access to the study area and the Queens-Midtown Tunnel, the Long Island Expressway (LIE), and commercial streets and local truck routes. The bridge's shared-use path is an important entrance into Queens for Brooklyn residents who bicycle

or walk to the 7 train to commute to Midtown Manhattan. To the west of the bridge-exit Jackson Avenue connects to Vernon Boulevard. Jackson Avenue is 60 feet wide, with two 11-foot travel lanes in both eastbound and westbound directions. It is a local truck and bus route and provides access to the Queensboro Bridge, Queens Plaza, and the Queens-Midtown Tunnel. As a result it carries moderate to heavy vehicular traffic at most hours. There is parking on both sides of the Street between the Pulaski Bridge and Vernon Boulevard during



Access to the Water's Edge Restaurant on 44th Drive



Vernon Boulevard at ConEd training facility



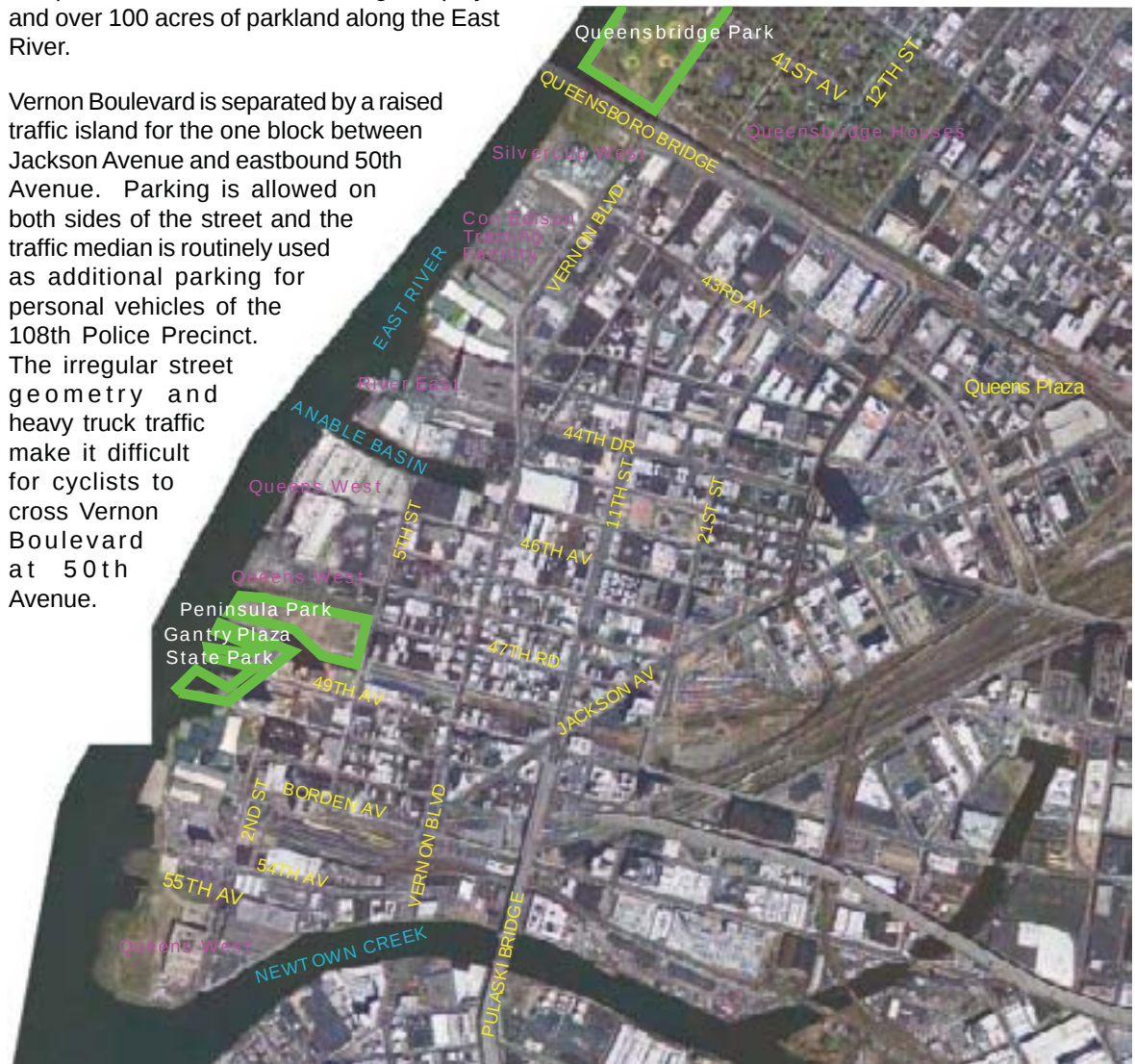
Vernon Boulevard along ConEd training facility

non-peak hours. (For more information about the tunnels and bridges in the study area, see Appendix 2).

Vernon Boulevard carries north-south traffic parallel to the East River. It is a bus and local truck route, and provides access to several large employers and over 100 acres of parkland along the East River.

Vernon Boulevard is separated by a raised traffic island for the one block between Jackson Avenue and eastbound 50th Avenue. Parking is allowed on both sides of the street and the traffic median is routinely used as additional parking for personal vehicles of the 108th Police Precinct. The irregular street geometry and heavy truck traffic make it difficult for cyclists to cross Vernon Boulevard at 50th Avenue.

Between 50th Avenue and 45th Road, Vernon Boulevard is two blocks from the shoreline. Apartments with ground-floor retail stores line Vernon Boulevard, and there are intermittent residential uses on many of the side streets of Hunters Point and Long Island City. The street is 45



Segment 1: Pulaski Bridge to Queensboro Bridge

feet wide, with one northbound and one southbound travel lane. Double parking is prevalent in this southern section of Vernon Boulevard, but does not occur as regularly north of 45th Road.

At 44th Drive, Vernon Boulevard parallels the waterfront one block from the shoreline. Larger industrial uses with active driveways occupy the east side of the street. The parking regulations in this area are standard street cleaning, opposite side postings. The street continues under the Queensboro Bridge, with connections at Queens Plaza to the bicycle and pedestrian paths on the bridge.

Waterfront

Starting in the south along the north side of Newtown Creek are several industrial facilities, such as a distribution facility by Anheuser Busch, and the former Fink Baking Corporation. There is presently no easy access to Newtown Creek in this area. A DCP study is currently looking at possible access points, and street end improvements have been designed for the area immediately under the Pulaski Bridge. Queens West is located slightly to the west and bordered by the Newton Creek, the East River and Anable Basin. It is a planned nine million square-foot development project, with 6.4 million square-feet of residences and 2.6 million square-feet of commercial and retail space. Two residential towers of the 19 planned commercial and residential buildings have been built.

The Queens West project includes the construction of a new street system which extends the grid of the adjacent neighborhood, and adds a central north-south boulevard. While any street on the grid may be used to reach the river, Queens West has designated Borden Avenue, 50th Avenue, 48th Avenue, and 46th Road as the main points of ingress and egress at the site. These gateway streets will be landscaped to tie the new neighborhood to the existing one. In addition, the City has received funds from the NYS Environmental Protection Fund (EPF) to improve Borden Avenue, the only pedestrian connection between the LIRR Long Island City Station and the Queens West ferry terminal.

The north side of Anable Basin is occupied by industrial and manufacturing businesses that extend to the water line. Immediately north, surrounded by commercial uses, is the Water's Edge restaurant, located prominently on the East River adjoining a pedestrian pier that allows great views of the river and the Manhattan skyline. The restaurant and pier are only accessible by water or via 44th Drive. Warehouse buildings are located on the north and south sides of 44th Drive. Loading and unloading



Gantry Plaza State Park



Queens West



North side of Anable Cove



Public Pier at the Water's Edge Restaurant



Pier at Water's Edge Restaurant, looking south



Bulkhead north of Water's Edge Restaurant

causes congestion and there are no sidewalks for pedestrians wishing to walk to the public pier.

The city-owned property immediately north of the restaurant is vacant, used as a parking lot and stabilized by bulkhead, which is in poor condition and needs repair. The bulkhead leads to the River East, where its members may enjoy a waterfront terrace and garden. The site is zoned for residential use and its redevelopment as a mixed-use residential and commercial complex is scheduled to begin in 2005. Just north of the club is the Con Edison Skills Testing and Development/Overhead Line Construction Training Center. The site is occupied by a large building and an accessory parking lot, but there is a strip of unused land between the facility and the water's edge, containing a closed-off waterfront path.

Continuing north, Silvercup Studios owns the site immediately north of 43rd Avenue, where the New York Power Authority plant and the Terra Cotta Building sit. The recently-built 79 megawatt temporary power-generating plant operated by NYPA will be dismantled and removed by the end of 2006 to make way for the Silvercup West project. On the adjacent property, and just south of the Queensboro Bridge, a designated landmark, is the Terra Cotta Building, another designated city landmark dating from 1892. The Silvercup West development will renovate the Terra Cotta Building as part of its studio/office/entertainment/residential project to be built in 2007.

Proposed

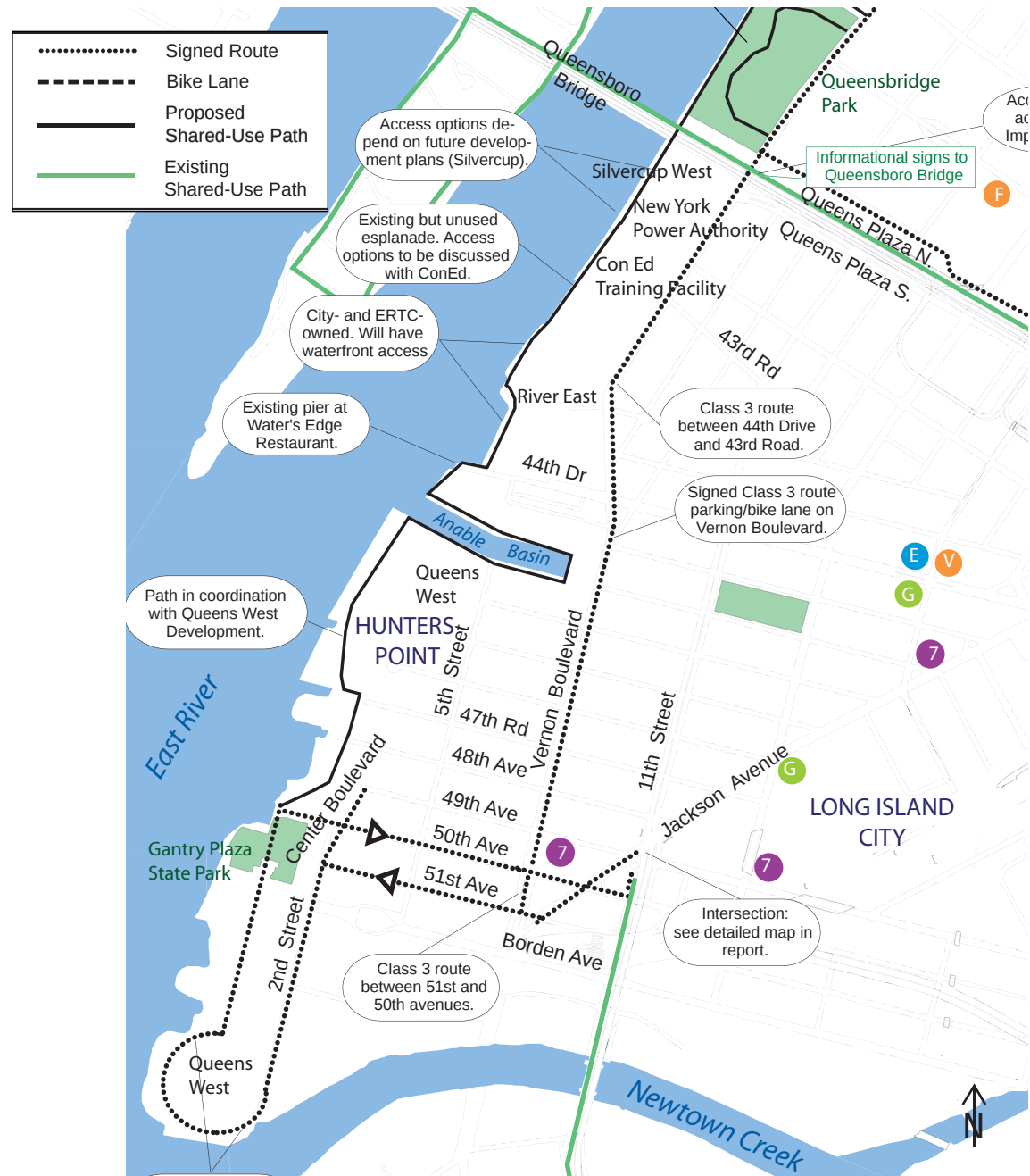
On-Street Route and Design

The route begins at the Pulaski Bridge then travels southwest for two blocks on Jackson Avenue, a short but critical connection between the bridge and Vernon Boulevard. At Vernon Boulevard the route continues parallel to the East River.

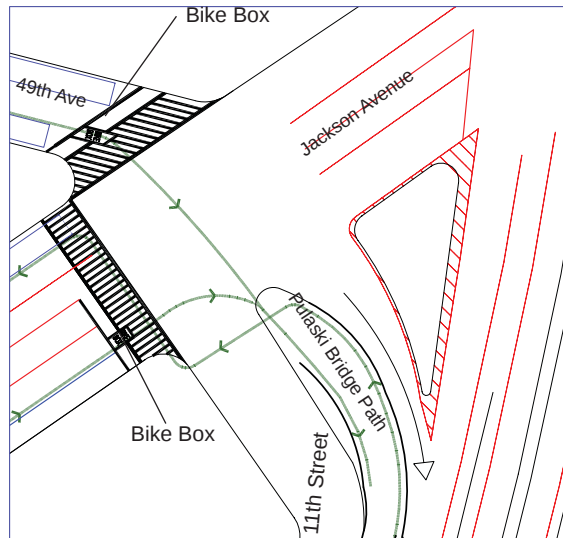
Pulaski Bridge/Jackson Avenue

The shared-use path on the west side of the Pulaski Bridge ends at the intersection of the bridge, Jackson Avenue, and 11th Street, where four streets with substantial traffic intersect at an unusual angle. The intersection is difficult to navigate and the accident analysis for 1998-2000 shows a cluster of 44 reportable accidents at this intersection, involving one pedestrian and four bicycles (see Appendix 3). The intersection was recently redesigned, but is still in need of improvement. For this reason, the intersection has been identified for study within DCP's Long Island City Links Project, and a consultant team will inspect the current conditions more closely and provide recommendations for improvement. In the meantime, the following ways are recommended for greenway users to navigate through this portion of the route:

The recent signalization of Jackson Avenue and 49th Avenue has improved the means of crossing these two streets. Cyclists and pedestrians traveling west from the bridge should dismount, cross 11th Street and Jackson Avenue using the crosswalks, then cautiously merge into traffic on the Class 3 Jackson Avenue route (see map at right). Informational signage at the end of the bridge path should be installed to direct greenway users properly. A local BID or civic group may be the appropriate entity to install such signs.



Segment 1: Proposed Route



Navigation of the Pulaski Bridge Access/Exit

As an alternative to dismounting and merging with vehicular traffic, cyclists may turn left on 11th Street to reach either the subway station on that street or a controlled intersection at 11th Street and 50th Avenue, which is two-way at this location. Bike parking should be made available at the subway stop. The southeast corner of the intersection of Jackson and 50th Avenues has a sidewalk of approximately 14 feet that wraps around the rounded building corner. Bike racks could be installed perpendicular to the wall, sheltered by the back wall of the subway entrance.

Eastbound cyclists traveling to the Pulaski Bridge should use 49th Avenue or 50th and Jackson Avenues. The installation of a bike box is recommended at both 49th and Jackson Avenues to increase visibility and allow cyclists to enter the intersection before the turning traffic (see drawing above for routes off the Pulaski Bridge, further analysis of bike box feasibility is necessary).

The route on Jackson Avenue should be signed, since the existing street geometry, vehicular traffic, and double parking on Jackson Avenue leaves

insufficient roadbed width to incorporate bicycle lanes in either direction.

Vernon Boulevard

At its southern end, between 51st Avenue and 50th Avenue, Vernon Boulevard is divided by a 29-foot wide median. The roadbed in each direction is 33 feet wide, with a single wide traffic lane and parking lanes on both sides of the street. The Economic Development Corporation (EDC) has proposed that the road be divided into two 12-foot moving lanes and one nine-foot parking lane. This would preclude a bike lane being implemented.

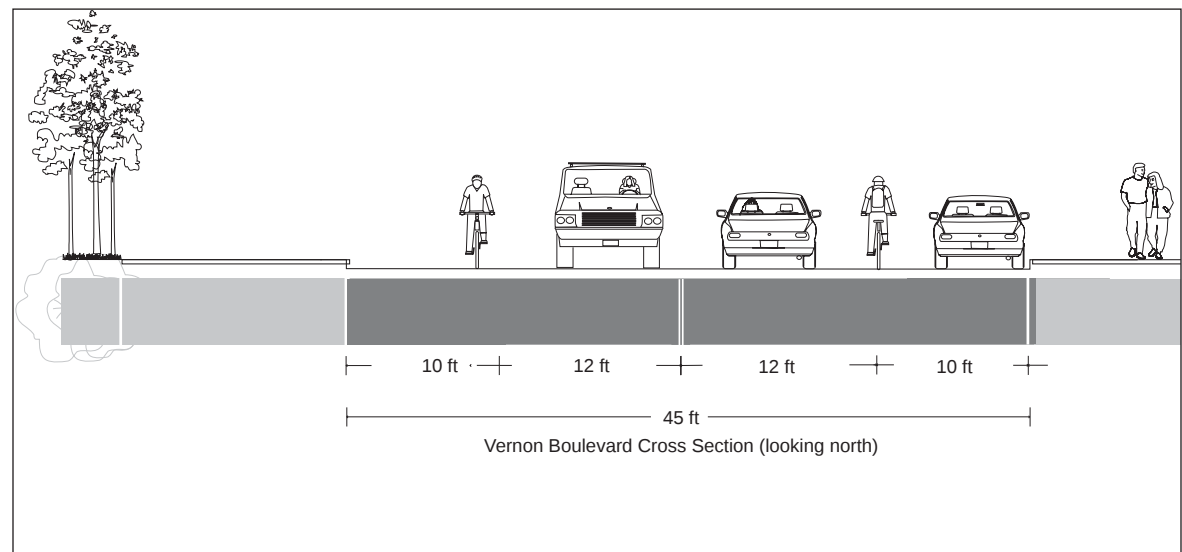
North of 50th Avenue, Vernon Boulevard is 45 feet wide and there is not sufficient room to stripe a bike lane. Vernon Boulevard should be signed a Class 3 route.

Alternative for Vernon Boulevard

Starting at 44th Drive and continuing north there is a 15-foot sidewalk along the west side of Vernon Boulevard. This sidewalk continues along the Con Edison training facility to 43rd Avenue and is roughly

1600 feet long. Due to the space constraints on Vernon Boulevard an alternative for this segment is a shared-use sidewalk. An eight- to ten-foot shared-use path could be accommodated easily on the existing sidewalk. Current conditions in this section are suitable for this kind of facility as the on-street conditions do not permit sufficient room for a bike facility, and as there are no cross streets and only three driveways (two for Con Edison training and one at the tennis club) intersecting the sidewalk. The existing pedestrian volumes are light. In the future, however, pedestrian volumes may increase or more obstructions may be added, making a shared-use sidewalk more difficult and unlikely to be implemented.

Shared-use sidewalks would be set up much like greenways, with pedestrians and cyclists divided by a marked (either a painted or raised) barrier and all users separated from the street. They face several legal issues, chief among them whose jurisdiction they would lie under. Please refer to Appendix 4 for a more detailed discussion of shared-use sidewalks and criteria for implementation, as well as a description of the shared-use sidewalk proposal for Vernon Boulevard along Segments 1 and 2.



The intersections of 44th Drive and 43rd Road are signalized and crosswalks are striped. Northbound greenway users would dismount and cross the boulevard with the pedestrian light to reach the shared-use sidewalk or return to the on-street route. Eventually, the shared-use sidewalk along the west side of Vernon Boulevard could be extended north along the temporary power plant and the Terra Cotta Building. This additional stretch of approximately 700 feet would provide a seamless connection to Queensbridge Park. EDC has a project underway at Vernon Boulevard and 43rd Avenue, but it should not affect the greenway.

Shared use sidewalks are for the purposes of this document, only suggested as a possible alternative to the recommended Class 3 route along Vernon Boulevard. It is not the preferred alternative for the NYC Department of Transportation. NYC DOT proposes that bicycle facilities take advantage of the streets, parks or other public access areas; and that sidewalks be reserved for pedestrians and hence, will not be considered a viable solution to the space constraints along Vernon Boulevard. As such, riders heading south to Queens West could use one-way 5th Street (via 46th Avenue) as an alternative to Vernon Boulevard.

Waterfront Route

Private industrial uses at the water's edge constrain the building of a continuous waterfront route at this time.

Newtown Creek North (Pulaski Bridge to 2nd Street)

Light industrial uses line the water on the north side of Newtown Creek between the Pulaski Bridge and 2nd Street. The route from the bridge to the waterfront is impeded by the vehicular entrance to the Queens-Midtown Tunnel, and it does not seem desirable to provide an esplanade in this industrial neighborhood at this time.

As part of City Planning's Newtown Creek Access Study, the area immediately underneath the Pulaski Bridge will be improved as a public recreation area, with basketball courts and waterfront access. This area can be reached either by stairs leading down from the bridge or via Borden Avenue. Signs should be installed at the bridge and on Borden Avenue.

2nd Street to Anable Basin

Beginning at 2nd Street, a good opportunity for improved waterfront access arises with the Queens West mixed-use development, where an esplanade along the waterfront between 2nd Street and Anable Basin is planned. 2nd Street and the new Center Boulevard would serve as the major north-south spine within the site. The waterfront esplanade to be built offers a unique opportunity to access the waterfront along this 1.2 mile stretch. Although cycling would be allowed on the esplanade, fast moving bikes and heavier bicycle traffic would be directed to use a Class 3 route on Center Boulevard or 2nd Street between Queens West and 50th Avenue, while pedestrians, skaters and others would use the waterfront esplanade.



Waterfront Access Plan
Source: New York City Zoning Resolution: Article 6,
Chapter 2 62-851 (DCP)

Queens West is slightly west of the proposed on-street route on Vernon Boulevard. While any Street of the grid may be used to reach the river, Queens West has designated Borden Avenue, 50th Avenue, and 48th Avenue as landscaped gateway streets to tie the new neighborhood to the existing one.

Anable Basin to the Water's Edge Restaurant (44th Drive)

Anable Basin is similar to the north side of Newtown Creek. Manufacturing uses are immediately adjacent to the Anable Basin waterfront and there is no extra space for a promenade. The restaurant, at this time quite isolated, is only accessible via Vernon Boulevard and 44th Drive. The major property owner around Anable Basin has some plans for a future residential community, including a possible marina within the basin.

Water's Edge Restaurant (44th Drive) to Queensboro Bridge

From the 44th Drive pier, the route would continue on the Water's Edge Restaurant's terrace, which directly overlooks the river. After the terrace, the route could continue along the existing bulkhead, which needs to be renovated. The waterfront path will then continue along the River East. In 1991 the River East property was rezoned for residential use with commercial overlays. Redevelopment of the site is anticipated to begin by early 2007, with two 28-story condominium towers and attached low-rise units, adding up to 910 residential units to the site. As part of the redevelopment there will be a public esplanade accessible from 44th Avenue, which is currently a paper street.

After the River East site is a Con Edison training facility, which has an existing but unused waterfront esplanade. Waterfront access at the Con Edison training facility will require further research and negotiations due to the company's security concerns.

Regardless of whether there is public access at the Con Edison training facility, there will be a new esplanade at the Silvercup West site, which encompasses the New York Power Authority site and the Terra Cotta building. Silvercup West has developed plans for a mixed-use development that includes a waterfront esplanade.

Summary of Recommendations

- Sign Class 3 route from Pulaski Bridge to Vernon Boulevard.
- Sign Vernon Boulevard, north of 51st Avenue.
- Further explore the potential for a shared-use sidewalk along the west side of Vernon Boulevard between 44th Drive and 43rd Road.
- Connect the waterfront route with the planned Queens West esplanade at 50th and 51st Avenues.
- Install directional signs to Queens West and Gantry Plaza State Park to promote on- and off-street connections along the route. (Signs of this type would potentially be installed by a BID or other similar local group.)
- Repair the bulkhead north of Water's Edge restaurant to continue waterfront path and clarify maintenance.

Segment 2: Queensboro Bridge to Hallets Cove

Length:	1.5 miles
Neighborhoods:	Long Island City, Astoria, Ravenswood in Community Districts 1 and 2
Major Destinations:	Queensbridge Park, Rainey Park, Socrates Sculpture Garden, Noguchi Museum
Transportation:	The Q102 bus runs the length of Vernon Boulevard to Roosevelt Island and from 36th Avenue to 41st Street. The Q103 runs from 41st Street to 51st Street and 40th Street to 27th Street. The Q104 runs from 34th Avenue to Broadway
Typical Roadbed Width:	Vernon Boulevard: 45 feet
On-Street Treatment:	Distinctive greenway signs, bicycle lanes, shared parking/bicycling lanes
Major Waterfront Uses:	Residential: Wharf conversions at Hallets Cove Commercial: Costco wholesale Industrial: Keyspan power plant and distribution facilities Parks: Queensbridge Park, Rainey Park and Socrates Sculpture Park
Existing Waterfront Access:	Queensbridge Park (bulkhead in disrepair), Rainey Park, Costco esplanade, Socrates Sculpture Park, Vernon Boulevard at Hallets Cove
Potential Waterfront Access:	Keyspan property north of Roosevelt Island Bridge and adjacent properties
Waterfront Access Unlikely:	Keyspan power-generating plant (active waterfront), Hallets Cove wharfs

Existing

carrying two-way traffic, with a typical width of 45 feet and one travel lane in each direction. There are intermittent traffic controls on local cross streets, but few crosswalks traverse Vernon Boulevard. At the Queensboro Bridge, Vernon Boulevard abuts Queensbridge Park on the west side and Queensbridge Houses on the east side. Built in 1939, Queensbridge Houses has over 3,000 units in 26 six-story buildings. Farther north and inland are

On-Street

Vernon Boulevard is the main street parallel road to the riverfront area and is generally located one block from the shoreline. From the Queensboro Bridge to its terminus at Hallets Cove it is a tree-lined street



Sidewalk along Vernon Boulevard and Keyspan



Cyclists currently use wide sidewalk on Vernon Boulevard along Keyspan facility



Vernon Boulevard at Queensbridge Houses looking north



Vernon Boulevard near 33rd Avenue/Costco



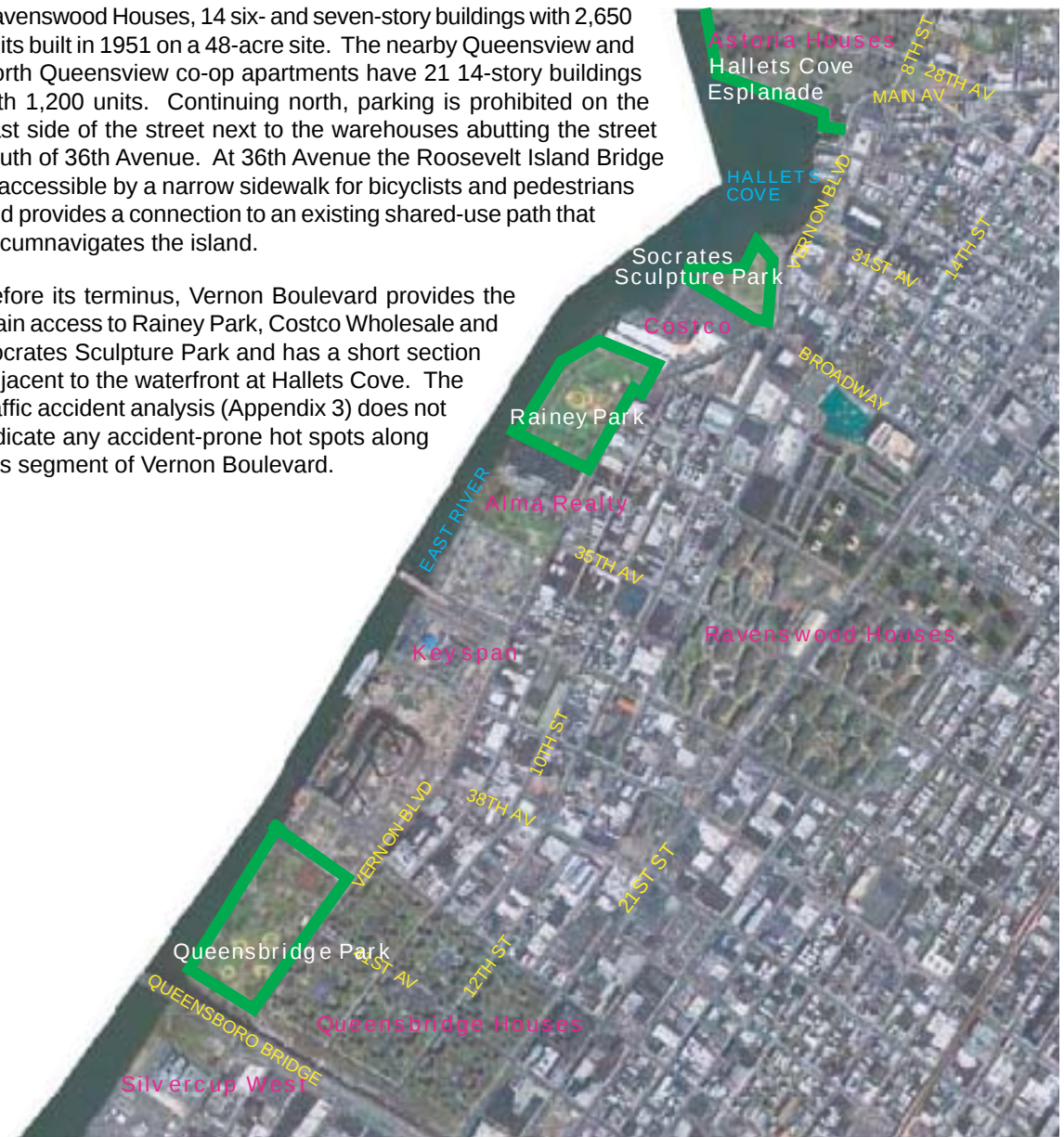
Vernon Boulevard near 38th Avenue



Vernon Boulevard at Halletts Cove

Ravenswood Houses, 14 six- and seven-story buildings with 2,650 units built in 1951 on a 48-acre site. The nearby Queensview and North Queensview co-op apartments have 21 14-story buildings with 1,200 units. Continuing north, parking is prohibited on the east side of the street next to the warehouses abutting the street south of 36th Avenue. At 36th Avenue the Roosevelt Island Bridge is accessible by a narrow sidewalk for bicyclists and pedestrians and provides a connection to an existing shared-use path that circumnavigates the island.

Before its terminus, Vernon Boulevard provides the main access to Rainey Park, Costco Wholesale and Socrates Sculpture Park and has a short section adjacent to the waterfront at Halletts Cove. The traffic accident analysis (Appendix 3) does not indicate any accident-prone hot spots along this segment of Vernon Boulevard.



Segment 2: Queensboro Bridge to Halletts Cove

Waterfront

At the south end of the segment, between Vernon Boulevard and the waterfront, is Queensbridge Park, the second largest park in the district at almost 20 acres. The park offers baseball, shared-use fields, a playground, picnic areas, and a new comfort station. Public access to the park's 30-foot waterfront esplanade is currently prohibited due to failing seawall conditions, with one portion collapsed completely. Parks & Recreation plans to remove the existing seawall to create a soft-edge waterfront to improve habitat and water quality.

Keyspan's Ravenswood 1,000 mega-watt power-generating plant occupies the waterfront from Queensbridge Park to the Roosevelt Island Bridge. Barges dock along the active waterfront to load and unload. North of the Roosevelt Island Bridge is another Keyspan property, a transformer station. There is vacant land between the station and the waterfront, but it narrows to about three feet at several points.

North of the transformer station are three residentially-zoned waterfront parcels that contain non-conforming utility and industrial uses. A rezoning request has been filed to permit an increase in residential density to allow for two 19-story buildings.

Rainey Park, immediately adjacent to these parcels, is another local park with immediate waterfront access. Built in 1912, it has a softball field, a basketball court, and a comfort station. The park also features a lawn that slopes down to the water. The main paved path in Rainey Park connects to the Costco public esplanade, which is not as wide as a standard shared-use path. The path was constructed and is maintained by Costco as per the city's waterfront zoning requirements. Parts of the esplanade had fallen into the East River due to problems with the bulkhead, but Costco has plans to reconstruct the esplanade in the spring.

The Costco esplanade merges into a sidewalk on the north side of the property and leads pedestrians along a parking lot to Vernon Boulevard. Socrates Sculpture Park is immediately adjacent to Costco, but the two properties are separated by fences and there is no access to the park on the waterfront side. Socrates Sculpture Park, opened in 1986, is the only public space devoted to large-scale outdoor sculpture and artist work areas. A small path with pavers loops around the park and connects to two access gates at Vernon Boulevard. Parks has acquired 1.01 acres of land north of the park to add to Socrates Sculpture Park in the future.

North of the park, Vernon Boulevard runs immediately along the waterfront, with only the sidewalk separating the Street and the water. Immediately south of Halletts Cove are two privately-owned scrap yards and several boathouses and wharfs at the water's edge. The existing esplanade at Astoria Houses begins just north of the wharfs.



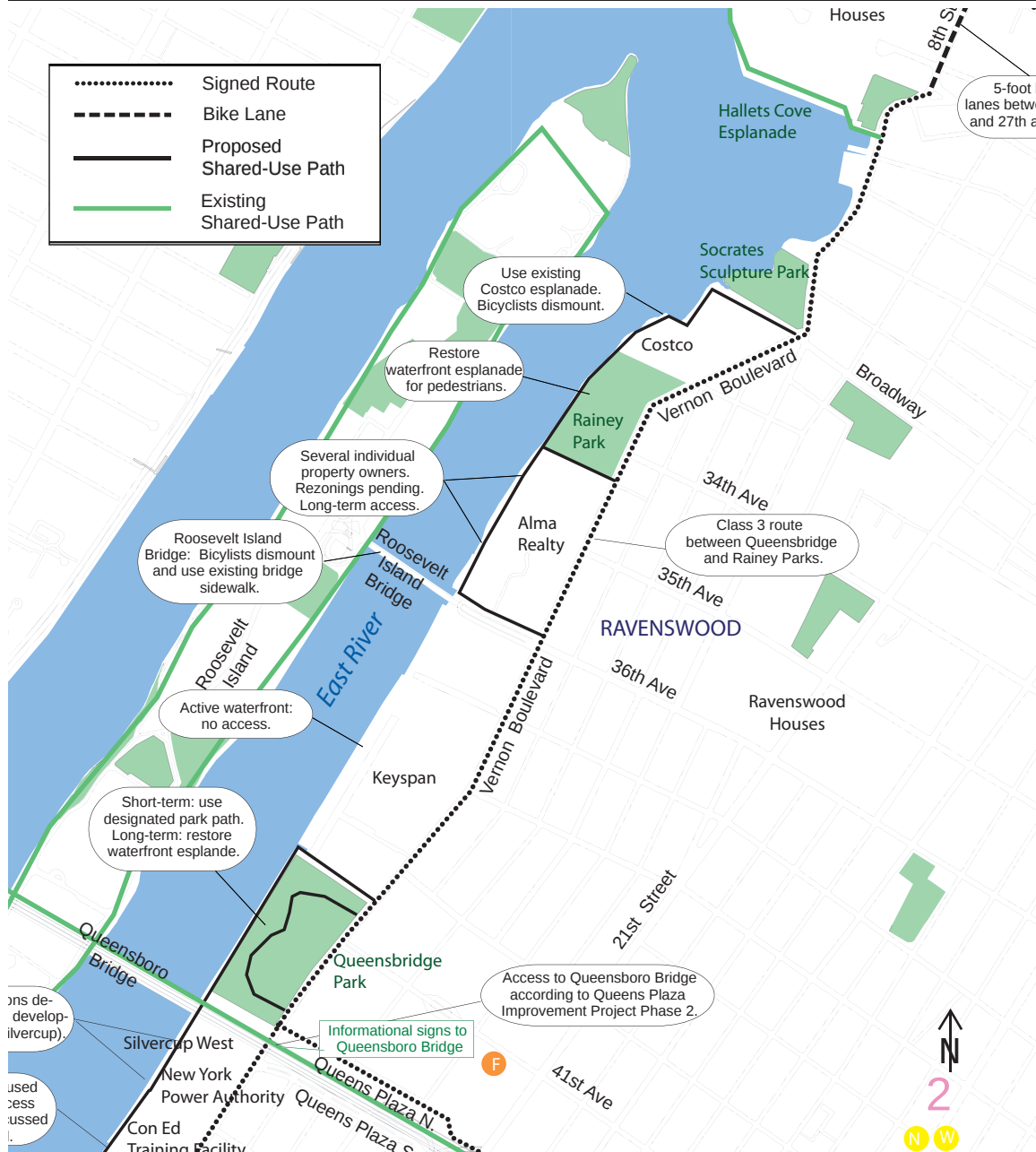
View from Queensboro Bridge, looking north: Queensbridge Park and Keyspan Ravenswood



Queensbridge Park



Queensbridge Park, looking north



Segment 2:
Proposed Route

Proposed

On-Street Route and Design

The route would continue on Vernon Boulevard from the Queensboro Bridge to its terminus at Halletts Cove. Two options are recommended:

(1) As in the previous segment, Vernon Boulevard would be signed, Class 3 route. Directional signs to the Queensboro Bridge shared-use path in Queens Plaza North should be installed on Vernon Boulevard. The connection will most likely be along Queens Plaza North, where shared-use paths are proposed to approach the bridge. Destination signs highlighting park and waterfront access should also be installed.

(2) A shared-use sidewalk as described in Segment 1 could be built for the stretch between the northern edge of Queensbridge Park and the southern edge of Rainey Park along the Keyspan generating plant and the Con Edison Ravenswood substation north of the Roosevelt Island Bridge. Cyclists and pedestrians would be allowed in Queensbridge and Rainey parks. The west side of Vernon Boulevard is a minimum of 15 feet-wide. The first 350 feet of existing sidewalk north of the park are 15 feet wide. For the next 650 feet the sidewalk widens to 25 feet, and then returns to 15 feet for the remaining 1000 feet to the Roosevelt Island Bridge. The sidewalk has a five-foot curbside amenity strip with tree plantings and Street lights.

As mentioned in the previous segment, NYC Department of Transportation proposes that bicycle facilities take advantage of the streets, parks or other public access areas; and that sidewalks be reserved for pedestrians.

Waterfront Route

The opportunities for a continuous waterfront esplanade offered by the numerous city parks on the East River are counterbalanced by major constraints in the form of several power-generating plants with active waterfront uses.

Queensbridge Park

Queensbridge Park is a major destination within the study corridor. A new synthetic soccer field, volleyball courts, and a picnic area are currently under construction. A 30-foot esplanade formerly extended along the entire 1450 linear feet of the park that parallel the waterfront. Currently, the esplanade is fenced off from the rest of the park. The bulkhead is in unsound condition and parts of the esplanade have fallen into the water. Parks is redesigning the shoreline to have an ecologically-sustainable soft edge and will build a path, potentially designed to shared-use specifications.

The park currently slopes slightly down to the waterfront and the esplanade lies hidden from view at Street level. This is a potential safety concern, but the area is well-lit. The main park path wraps around the perimeter of the park and offers access to the park at several points.

In the short term, the main path could serve as the greenway connection. This upland path at Street level is well-lit, making visibility relatively high. The path is 12 feet wide and suitable for shared use by pedestrians and wheeled users. The cracks in the path indicate an eventual need for repaving, but the surface condition is not of concern should the greenway ultimately be rerouted onto the repaired existing esplanade.

Unless explicitly allowed, bicycling is not permitted on park paths. The Parks & Recreation borough commissioners, however, do have the authority to designate paths for use by wheeled users (bicyclists,



Keyspan facility from Roosevelt Island Bridge



Keyspan active waterfront



Water's edge north of Roosevelt Island Bridge



Designated paths in Queensbridge Park



Existing western path at Rainey Park



View from Rainey Park towards Costco



Costco Esplanade

in-line skaters). Park paths recommended in this study for greenway use have been approved by the current Queens Borough Commissioner. A new playground is also planned for the park.

Keyspan Ravenswood (between Queensbridge Park and Roosevelt Island Bridge)

The Ravenswood power-generating facility is a major impediment to the realization of a waterfront route. With its industrial use, strict security regulations, and – most importantly – active waterfront, public access to the property along the waterfront is unlikely, and therefore the greenway would be limited to the on-Street route. The existing 12-foot path at the north end of Queensbridge Park would lead to Vernon Boulevard where greenway users would continue on a shared-use sidewalk or the on-Street bike route.

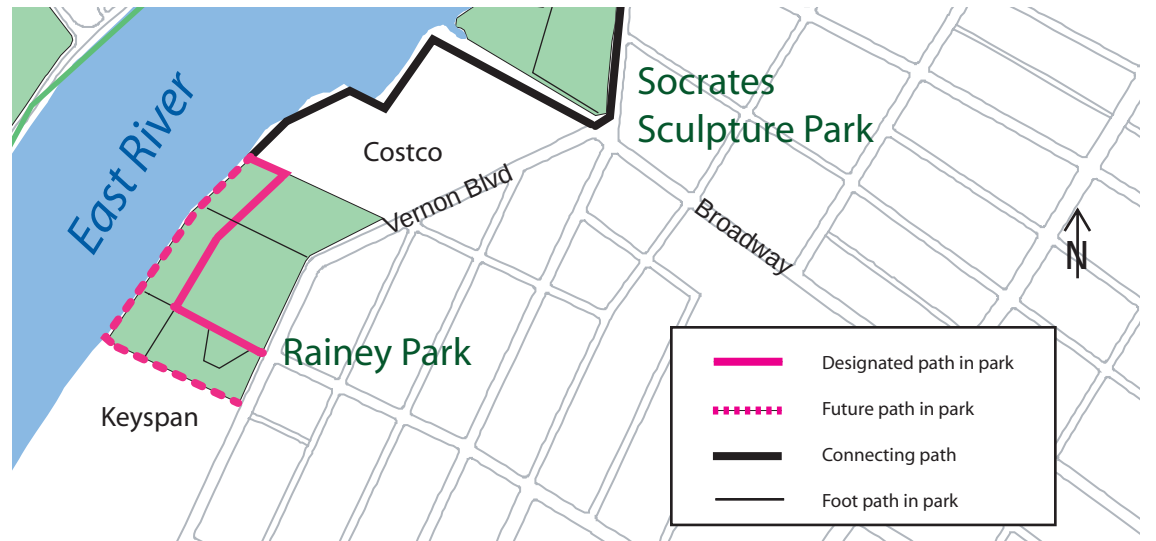
Roosevelt Island Bridge to Rainey Park

At the Roosevelt Island Bridge, the waterfront route would return to the East River. 36th Avenue runs underneath the bridge ramp and dead-ends at the

shore. The bridge provides pedestrian and bicycle access to Roosevelt Island on a narrow sidewalk, which requires bicyclists to dismount. Directional signage should be installed to direct greenway users to the existing Roosevelt Island esplanade.

The next property to the north, a Keyspan transformer station, does not make active use of the waterfront. There is a strip of land of varying width between the transformer station and the water's edge, which could be used to connect the waterfront route. Further research needs to be conducted to assess its feasibility.

The three parcels immediately north of the transformer site are slated for development of two 19-story residential buildings consistent with waterfront zoning regulations. Parks & Recreation has been working with the developer to ensure that the required waterfront esplanade will connect to future segments of the greenway. A large two-story industrial building, owned by Modell's, occupies the lot to the north of the development site. Waterfront access along this site will have to be negotiated with the corporation.



Designated paths in Rainey Park



Designated paths by Socrates Sculpture Park



Socrates Sculpture Park

Rainey Park to Halletts Cove (at Vernon Boulevard)

Rainey Park's waterfront esplanade has always been a grassy path, but as the bulkhead is in good condition, construction to current standards would be relatively easy. Parks & Recreation plans to improve the path and designate it for shared use. Due to changes in terrain the waterfront is at a much lower grade than the rest of the park, limiting visibility from the street. Stairs connect these first and second tiers, making access from the main walking path above more difficult. Lighting may have to be upgraded to insure safe and secure conditions for the lower waterfront level.

Two entrances to the park provide at-grade access

from Vernon Boulevard. The path at 34th Avenue is 12 feet wide and leads from the sidewalk to the 12-foot main path, which runs on the upland western edge of the park, parallel to the closed waterfront esplanade. The short-term plan allows greenway users to use this existing path. In the long term, Parks & Recreation plans to create a new path along the southern edge of the park; this path would connect to the restored waterfront esplanade. The restored waterfront esplanade would be for pedestrians while cyclists would be allowed to use the park's existing western path.

Both the existing western path and the restored waterfront esplanade connect to the north to the public waterfront esplanade along Costco, where a narrow gate separates the two properties. Bicyclists must dismount to pass. The bulkhead is in bad condition and parts of the Costco esplanade have



Path alongside Costco between Rainey Park and Socrates Sculpture Park

become unstable, but reconstruction is planned to begin in 2006. At six feet, the Costco esplanade is too narrow to meet standards for a shared path and difficult for bicyclists to navigate because of its winding curves. Parks & Recreation and DCP are working with Costco to widen the esplanade and the southern entrance to the esplanade.

The greenway continues along the waterfront until Socrates Sculpture Park, where the shore path is blocked by a 50-foot wide bay. Greenway users should be directed to walk their bikes on the sidewalk adjacent to the northern edge of Costco's parking lot to return to Vernon Boulevard once the sidewalk ends. Those wishing to access Socrates Sculpture Park can do so from Vernon Boulevard. As a future possibility, Parks & Recreation will investigate creating a midblock connection between the Costco sidewalk and the park. This would have

to be negotiated with Costco as they own the land between the sidewalk and the park.

Access to Costco and Socrates Sculpture Park is limited. Costco's esplanade is open from dawn until dusk; the park is open from 10 a.m. to sunset. When these two sites are closed, greenway users would connect to the on-Street route at Rainey Park and Vernon Boulevard. Pedestrians would use the existing sidewalk; bicyclists would continue on-Street.

At Hallets Cove, Vernon Boulevard abuts the waterfront and, at this point, the separate routes would merge. Pedestrians would use the existing sidewalk on the west side of Vernon Boulevard and bicyclists would continue on the Class 3 route to connect to the existing esplanade at Astoria Houses.

Summary of Recommendations

- Sign Vernon Boulevard a Class 3 route.
- Reconstruct the waterfront esplanade in Queensbridge Park as part of the edge reconstruction project
- In the interim, use the main 12-foot park path as the greenway connection.
- Reconstruct the waterfront esplanade in Rainey Park.
- Replace bike rack in Socrates Sculpture Park.
- Widen the Costco esplanade.

Segment 3: Hallets Cove to 20th Avenue

Length:	1.9 miles
Neighborhoods:	Astoria/Ditmars/Steinway in Community District 1
Major Destinations:	Astoria Park, Hallets Cove
Transportation:	The elevated N and W trains stop several blocks east of the area along 31st Street. The Q18 bus travels on 27th Avenue between 8th and 12th streets.
Typical Roadbed Width:	8th Street: 50 feet, Shore Boulevard: 30 feet
On-Street Treatment:	Bicycle lanes and distinctive greenway signs
Major Waterfront Uses:	Residential: Astoria Houses, Shore Towers Condominiums, neighborhoods around Astoria Park Industrial: Miscellaneous uses around Hallets and Pot coves Parks: Hallets Cove Esplanade, Astoria Park and Ralph DeMarco Park
Existing Waterfront Access:	Hallets Cove Esplanade, Whitey Ford Field, Shore Towers Condos, Astoria Park/Shore Boulevard, Ralph DeMarco Park
Potential Waterfront Access:	None
Waterfront Access Unlikely:	Pot Cove (long-term)



Hallets Cove Esplanade and Astoria Houses



8th Street at Main Avenue



12th Street

Existing

Avenue is 30 feet wide, west of the intersection it is 49 feet wide, both directions it has a travel lane and a parking lane in each direction. 12th and 14th streets are parallel narrow one-way residential streets with houses dating to the first settlement of Astoria. Parking is permitted on both sides of each street. Currently cyclists and pedestrians travel east from the intersection of Astoria Park South and 12th Street to access the bicycle and pedestrian path on the Triborough Bridge, which connects to Manhattan and to Randall's Island and its recreational facilities.

On-Street

Vernon Boulevard terminates near Hallets Cove at the busy, signalized intersection of eastbound Main Avenue and 8th Street. Main Avenue is between 41 and 45 feet wide and 8th Street is 50 feet wide. There is parking on both sides of each street. North of Main Avenue 8th Street connects to two-way 27th Avenue. There is significant pedestrian traffic on this block due to the large population of Astoria Houses, bus stops at 27th Avenue, and convenience stores at 28th Avenue.

A traffic signal controls 8th Street's intersection with 27th Avenue. East of the intersection 27th

Immediately north of the intersection is the 61-acre Astoria Park. The largest park in the corridor, it gently slopes to the East River. Sandwiched by the Triborough and Hell Gate bridges, the park contains ball fields, playgrounds, and a WPA-era pool and bathhouse. The park is separated from the



Public Esplanade at Shore Towers



Astoria Park



Shore Boulevard at Astoria Park (looking south)

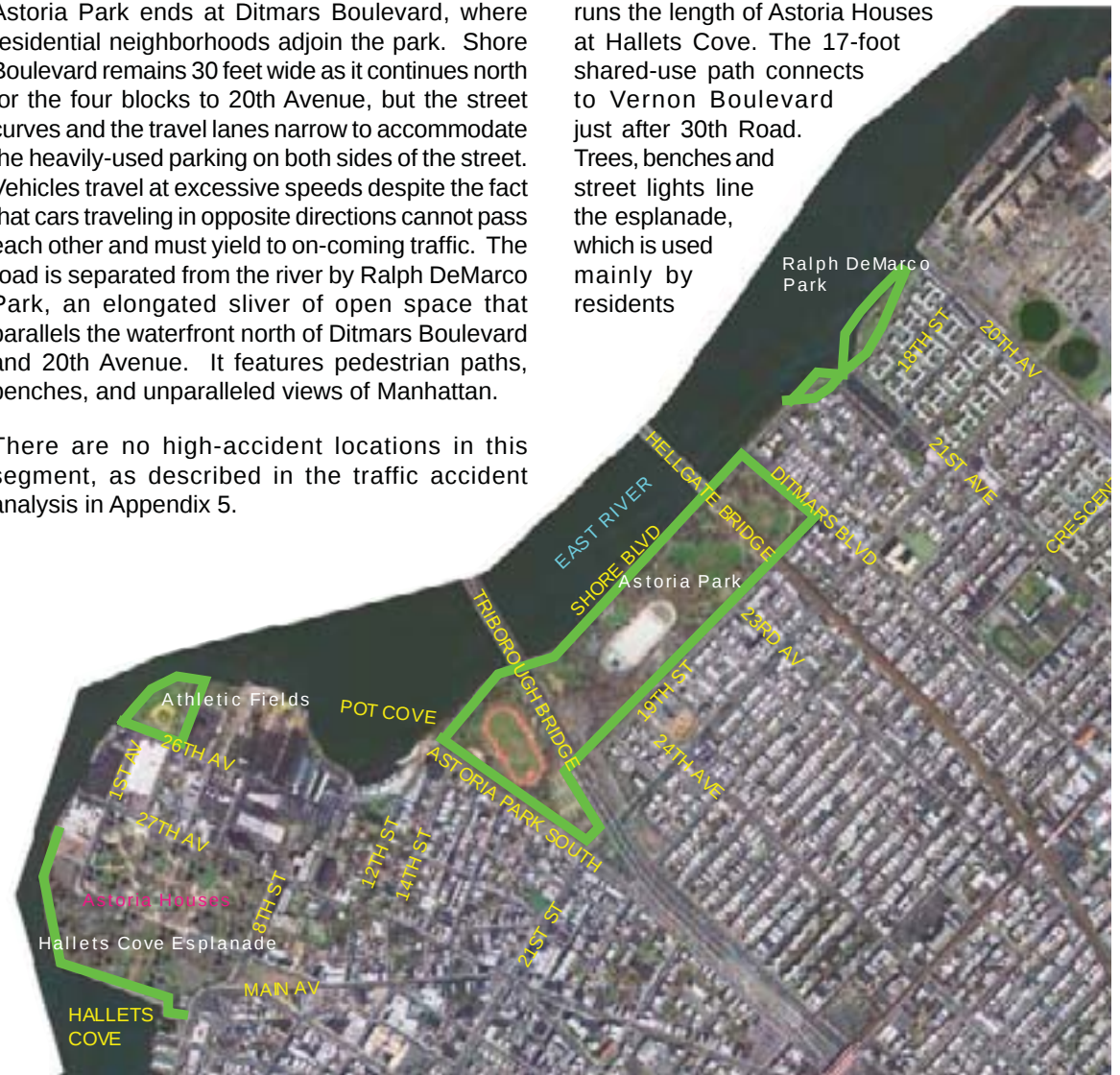
waterfront by Shore Boulevard, which is 30 feet wide with one northbound and one southbound travel lane and on-street parking along the East River curb only. The street has several speed humps along Astoria Park and is consistently patrolled.

Astoria Park ends at Ditmars Boulevard, where residential neighborhoods adjoin the park. Shore Boulevard remains 30 feet wide as it continues north for the four blocks to 20th Avenue, but the street curves and the travel lanes narrow to accommodate the heavily-used parking on both sides of the street. Vehicles travel at excessive speeds despite the fact that cars traveling in opposite directions cannot pass each other and must yield to on-coming traffic. The road is separated from the river by Ralph DeMarco Park, an elongated sliver of open space that parallels the waterfront north of Ditmars Boulevard and 20th Avenue. It features pedestrian paths, benches, and unparalleled views of Manhattan.

There are no high-accident locations in this segment, as described in the traffic accident analysis in Appendix 5.

Waterfront

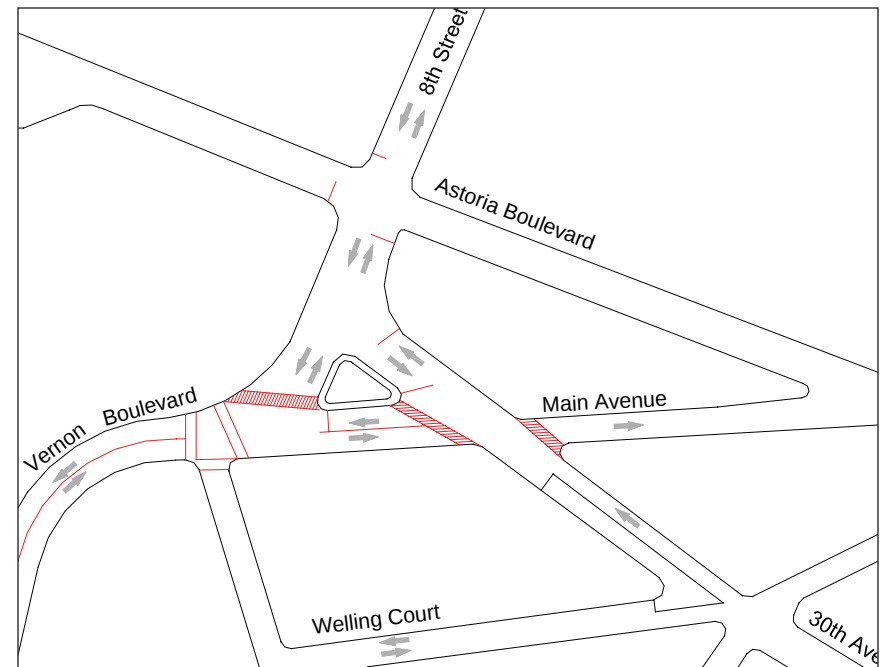
A thumb of land juts into the East River just north of the end of Vernon Boulevard, creating Hallets Cove on the southerly side and Pots Cove on the northerly side. An existing waterfront esplanade runs the length of Astoria Houses at Hallets Cove. The 17-foot shared-use path connects to Vernon Boulevard just after 30th Road. Trees, benches and street lights line the esplanade, which is used mainly by residents



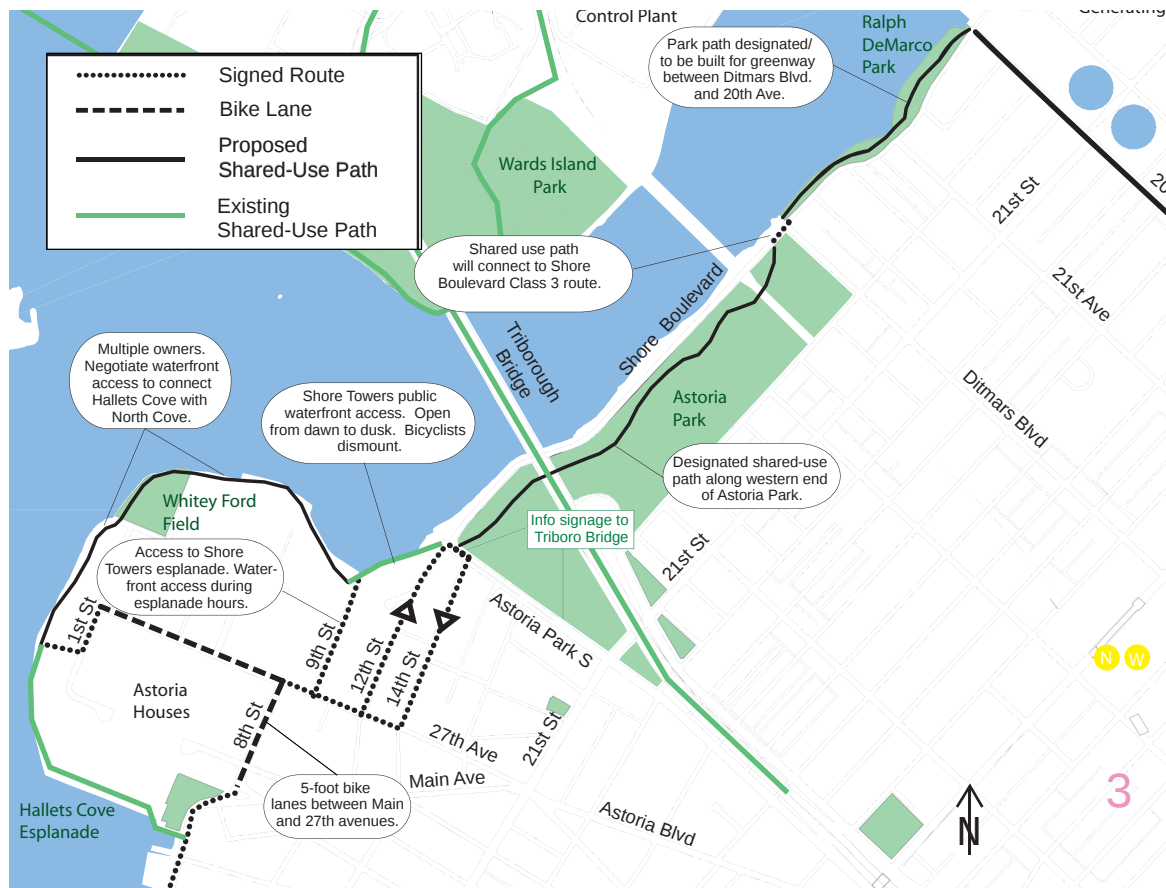
Segment 3: Hallets Cove to 20th Avenue

of Astoria Houses. Built after World War II, the housing development consists of 22 seven-story cruciform buildings with 1,104 dwelling units. At the west end the esplanade is only accessible via 27th Avenue or through the housing development. The path dead-ends where the waterfront uses change to industrial and manufacturing. Whitey Ford Field, a neighborhood ballpark named after the former pitcher for the New York Yankees, is located at the tip of 26th Avenue. It is the only non-industrial use along Pot Cove. There is a strip of land between the industries and the waterfront.

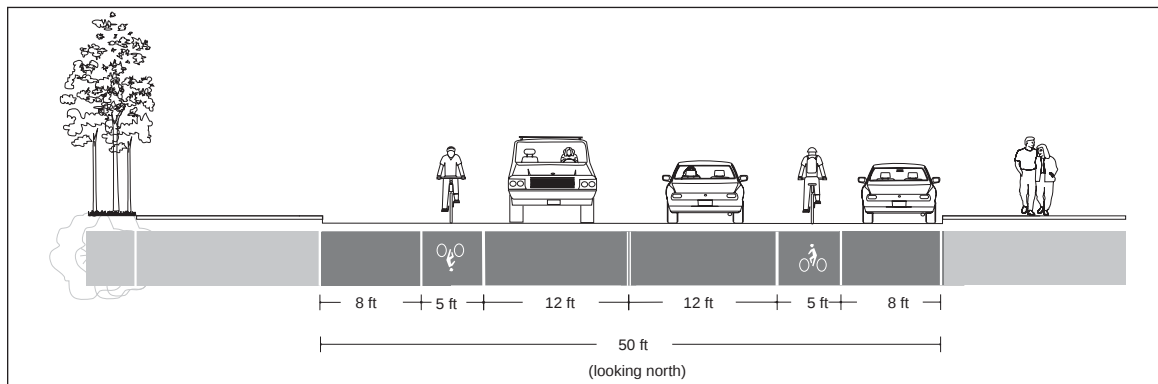
North of 8th Street, the waterfront uses change to residential and parkland. Shore Towers Condominiums, a new cooperative high-rise, overlooks Pot Cove and features a waterfront plaza accessible to the public at certain times. North of the condominiums the waterfront is bordered by Astoria and Ralph DeMarco parks, as described in the on-street section.



Vernon Boulevard, Main Avenue and 8th Street



Segment 3: Proposed Route



Proposed 8th Street cross-section

Proposed

On-Street Route and Design

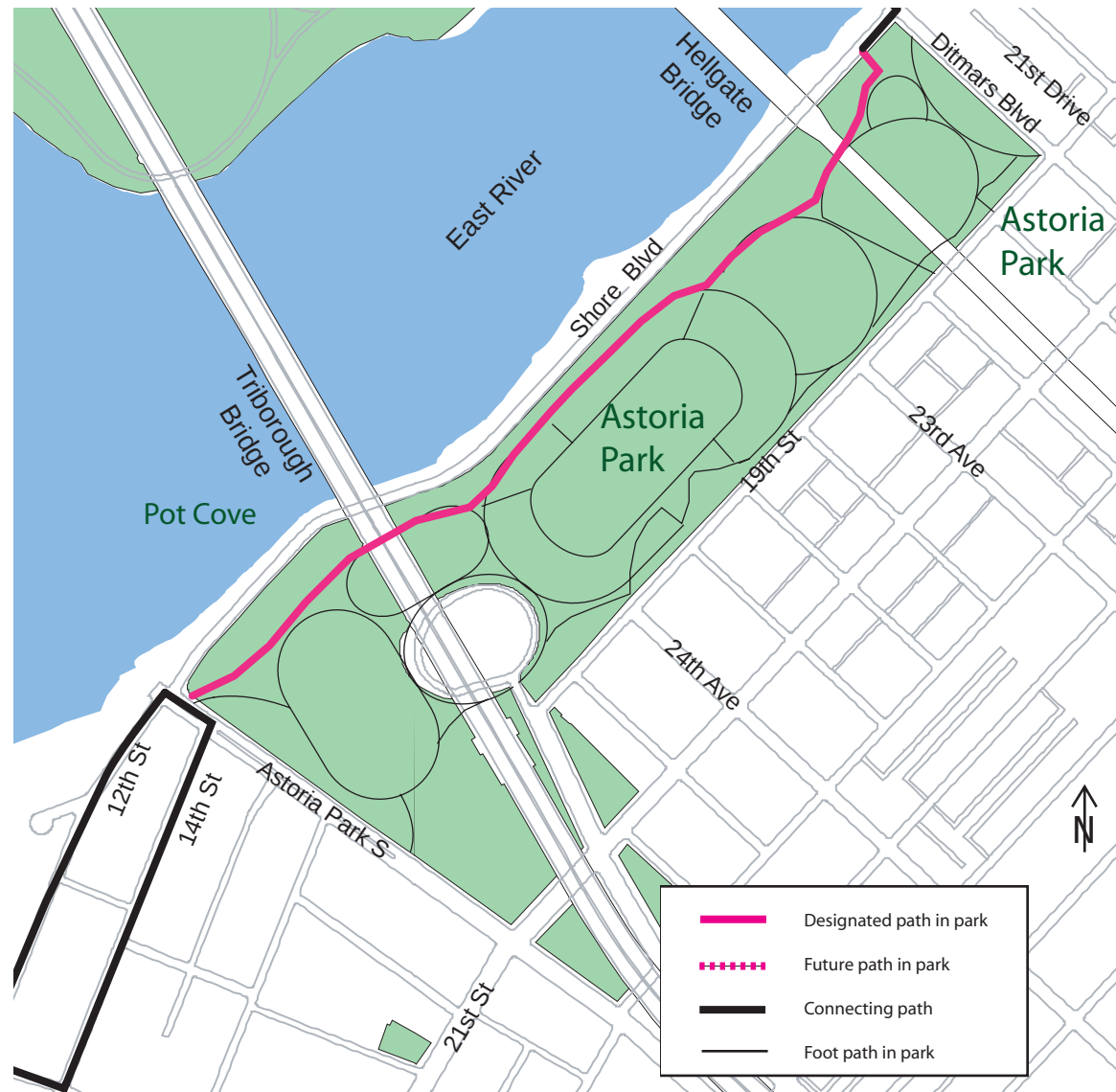
The on-street route continues on paired local one-way streets between Vernon Boulevard and Shore Boulevard, then follows Shore Boulevard to its terminus at 20th Avenue, where the route turns east.

Vernon Boulevard to Shore Boulevard

The northbound route would follow Main Avenue to 8th Street to 27th Avenue to 12th Street to Astoria Park South to Shore Boulevard. The parallel southbound route would follow Shore Boulevard to Astoria Park South to 14th Street to 8th Street to Main Avenue. Except for 8th Street none of these streets is sufficiently wide to accommodate a striped bicycle lane, thus the route through this section would be signed only. Several bicycle route signs would appropriately guide cyclists to and from Astoria Park South at the terminus of 12th Street. 8th Street is 50 feet wide, with parking on both sides and one travel lane in each direction. It could accommodate a five-foot bike lane in each direction, leaving two eight-foot parking lanes and two 12-foot travel lanes. 9th Street should be signed as a Class 3 connection to the waterfront at Shore Towers.

Astoria Park South to 20th Avenue

The designated shared-use path along the western end of Astoria Park will connect to a signed Class 3 on street route on Shore Boulevard. This route will connect the two designated park paths for the greenway between Ditmars Boulevard and 20th Avenue.

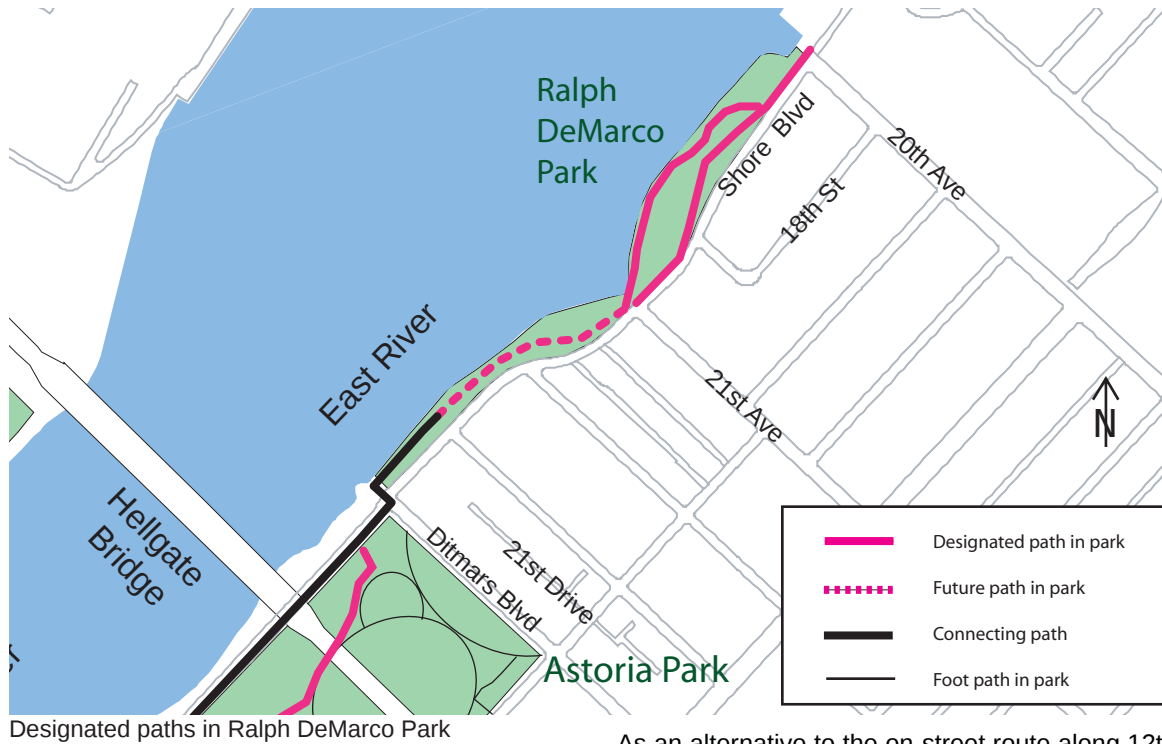


Designated paths in Astoria Park

Waterfront Route

At Halletts Cove, the waterfront route could continue along the existing esplanade at Astoria Houses. The esplanade is currently not used by through traffic since the path is somewhat secluded, does not link major destinations, and terminates at the commercial properties that line the Pot Cove waterfront. A strip of land available between the manufacturing businesses and the waterfront may be wide enough to continue the route. Access and esplanade options are long-term at best. The New Housing New York Design Ideas Competition – launched in the fall of 2003 and sponsored by the City Council, the American Institute of Architects, and the City University of New York – looked at the area of the Pot Cove industrial parcels as a site for proposed affordable housing. A waterfront esplanade was one of the design recommendations. If bicyclists and pedestrians choose to use the waterfront route they can reconnect to the on-street route via 1st Street and 27th Avenue. 1st Street must either have its western sidewalk repaired or a crosswalk added for pedestrians to cross to the eastern sidewalk. A new curbcut should also be installed for cyclists to safely access the street. The crosswalk and curbcut would be installed midblock at the Halletts Cove Esplanade exit. There is no stop control here, but traffic is very light. The intersection with 27th Avenue is stop-controlled. There are no crosswalks striped across 1st Street at 27th Avenue. These and either a stop sign or a “yield to pedestrians” sign should be installed. 27th Avenue is, at 49 feet, wide enough for a five-foot bike lane to be striped in each direction. However, the road has a significant uphill slope eastbound between 4th and 8th streets.

Further east along Pot Cove the waterfront is accessible at the Shore Towers Condominiums, where the public waterfront plaza has been renovated. It is gated and is supposed to be open from dawn until dusk, and bicyclists must dismount to prevent conflicts with residents and pedestrians.



Segment 3: Proposed Route

As an alternative to the on-street route along 12th and 14th streets, greenway users could use the Class 3 route on 9th Street (a two-way street) to connect between Shore Boulevard and 27th Avenue via the public waterfront plaza during its hours of access.

North of Pot Cove, the waterfront route would follow park paths in Astoria Park and Ralph DeMarco Park designated for greenway users. The shared-use path in Astoria Park (depicted on the graphic to the left) would follow the western edge of the park on an existing 15-foot path. The existing path ends in a staircase at the northern end of the park. A new path adjacent to the staircase will extend to the end of the park to accommodate wheeled users. The Department of Parks & Recreation has proposed a shared-use sidewalk on their property along the edge of Ralph DeMarco Park, between Ditmars Boulevard and 21st Drive. In this section of the

Summary of Recommendations

- Stripe five-foot bike lanes on 8th Street between Main Avenue and 27th Avenue.
- Sign Shore Boulevard a class 3 route.
- Explore feasibility of reducing posted speed on Shore Boulevard.
- Use existing esplanade at Astoria Houses.
- In the long-term continue waterfront path along industrial properties.
- Connect via the Shore Towers esplanade and 12th/14th streets to Shore Boulevard, Astoria Park, and Ralph DeMarco Park.
- In Astoria Park, designate park paths for greenway users and create an additional path segment to connect the existing path to the sidewalk at the northern end of the Park.
- Designate a shared-use sidewalk adjacent to Ralph DeMarco Park (on park property), between Ditmars Boulevard and 21st Drive.
- Create a new four- to eight-foot path along Ralph DeMarco Park, between 21st Drive and 21st Road and move existing railing west of the path.

park a row of large bushes prevents the installation of a path within the park. North of 21st Drive, the sidewalk would connect to a proposed new four- to eight-foot park path paralleling Shore Boulevard between 21st Drive and 20th Road. The park's existing railing would be moved west of the new path. The path will be designated for multiple uses, thereby alleviating the need to ride on-street (see map above). Where the park widens around 20th Road, bicyclists would use existing park path while pedestrians would use the park's waterfront path.

Segment 4: 20th Avenue to 82nd Street

Length:	2.5 miles
Neighborhood:	Astoria and Steinway in Community Districts 1 and 3
Major Destinations:	Steinway Piano factory and mansion, Rikers Island
Transportation:	The R101 runs along 20th Avenue from 21st Street to Hazen Street. The Q19A runs along Ditmars Boulevard from 76th to 81st streets.
Typical Roadbed Width:	20th Ave: 50 feet, Ditmars Blvd: 72 feet/variable
On-Street Treatment:	Bicycle lanes, planted raised medians, distinctive greenway signs
Major Waterfront Uses:	Industrial: Reliant Energy Astoria Generating Station, Steinway Piano Factory, Bowery Bay Water Pollution Control Plant, petroleum storage tanks
Existing Waterfront Access:	None
Potential Waterfront Access:	Bowery Bay
Waterfront Access Unlikely:	Reliant Energy Astoria Generating Station, Bowery Bay Water Pollution



20th Avenue looking east from Shore Boulevard



20th Avenue, north sidewalk (between 31st Street and Shore Boulevard)



20th Avenue at Hazen Street

Existing

On-Street

The North Shore section of the greenway begins at 20th Avenue, a 50-foot two-way eastbound and westbound street with parking on both sides of the street for most of its 30-block length. The street acts as a general dividing line between land uses, with residences to the south and utilities, industrial, and commercial facilities along the waterfront to the north.

The residences to the south feature mostly one- and two-family homes, many with alleys leading from 20th Avenue to private residential parking. Also in the area is Marine Terrace, a rental complex built in 1948, with 1,388 units in 26 buildings south of 20th Avenue.

20th Avenue has low traffic volumes and the substantial street width makes this area a popular

driver training route. Community board members have also complained about the street being used for illegal night races. The off-street residential parking and the large adjacent parking lot for power plant employees lessen demand for on-street parking between Shore Boulevard and Steinway Street. 20th Avenue is currently a signed, or Class 3, bicycle route that connects to the recently-striped bicycle lane on 36th Street.

Hazen Street, located near the east end of 20th Avenue, continues over the East River as the Rikers Island Bridge, connecting Queens to the 440-acre island prison that has been in operation as a penitentiary since the Civil War. At the intersection of 20th Avenue and Hazen Street, the street grid changes direction and is characterized by one-way residential streets. Southbound 75th Street and northbound 76th Street offer the most direct connection between 20th Avenue and Ditmars Boulevard. Each has restricted on-street parking during school hours due to the presence of a large school. These streets are up hill for one block to



Ditmars Boulevard at 79th Street looking west



82nd Street at Marine Terminal Road looking toward GCP



82nd Street at Marine Terminal Road looking north



Segment 4: 20th Avenue to 82nd Street

Ditmars Boulevard. Peak-hour traffic volumes are high at Ditmars Boulevard, a wide two-way street. Traffic controls at the intersections of Ditmars and 75th/76th Streets help address the limited southbound visibility due to the grade of 75th Street.

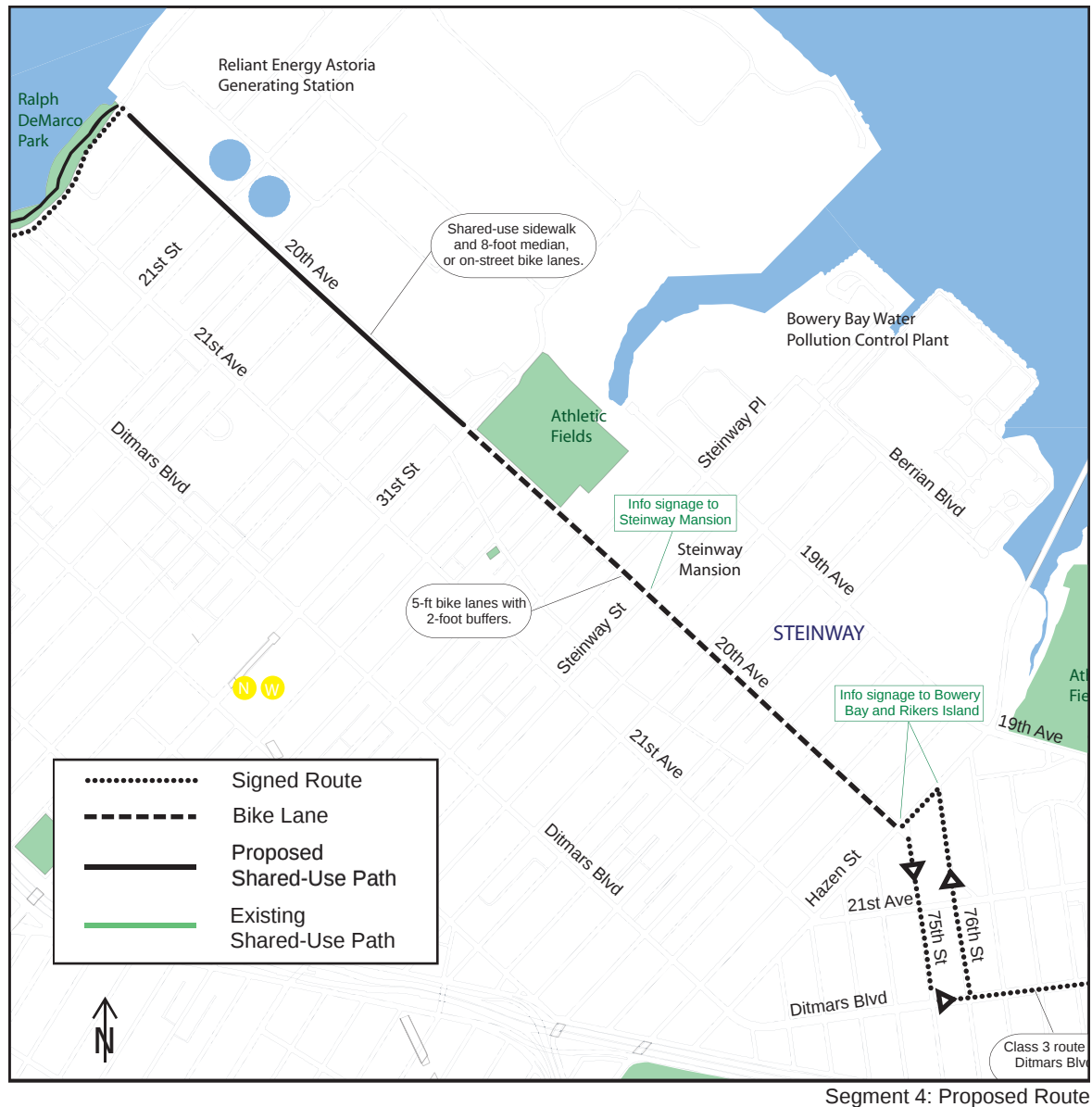
Ditmars Boulevard terminates approximately five blocks to the east at 82nd Street near the entrance to LaGuardia Airport and its Marine Terminal, a designated landmark. (Marine Terminal Road provides access to the Art Deco terminal in the western corner of the airport.) The intersection of Ditmars Boulevard and 82nd Street is signaled

and busy, with motorists traveling southbound to access the westbound Grand Central Parkway (GCP), and Corrections Department vans and buses traveling northbound towards Rikers Island. Numerous livery cabs, buses, and vehicles cross over the GCP to use local roads to access the airport and nearby residential areas. Farther south, 82nd Street connects with the 34th Avenue bike lanes.

Waterfront

The entire waterfront in Segment 4 is industrial or commercial in use. Between 20th Avenue and Long Island Sound is the Reliant Energy Generating Station. In 2002, Reliant acquired the Orion Astoria power plant, formerly the Con Edison Astoria power plant. In operation since 1906, it is located along the waterfront from the East River to roughly 38th Street. At 290 acres it is the dominant use in this area, employing 1,300 people. The Bowery Bay Water Pollution Control Plant is situated just east of Reliant Energy. Built in the 1930s on 45 acres of landfill, it treats over 150 million gallons of waste water annually. Further east are the Steinway Piano Factory and the company workers' housing. The housing dates from the 1870s and is the only residential use north of 20th Avenue.

In general, the waterfront along Segment 4 is inaccessible. The Reliant Energy Generating Station site is fully fenced in, the water pollution control plant prevents waterfront access, and few streets in the Steinway neighborhood reach the North Shore. Commercial uses (mainly airport-related) along the waterfront prevent access, even where streets meet the waterfront.



Proposed

On-Street Route and Design

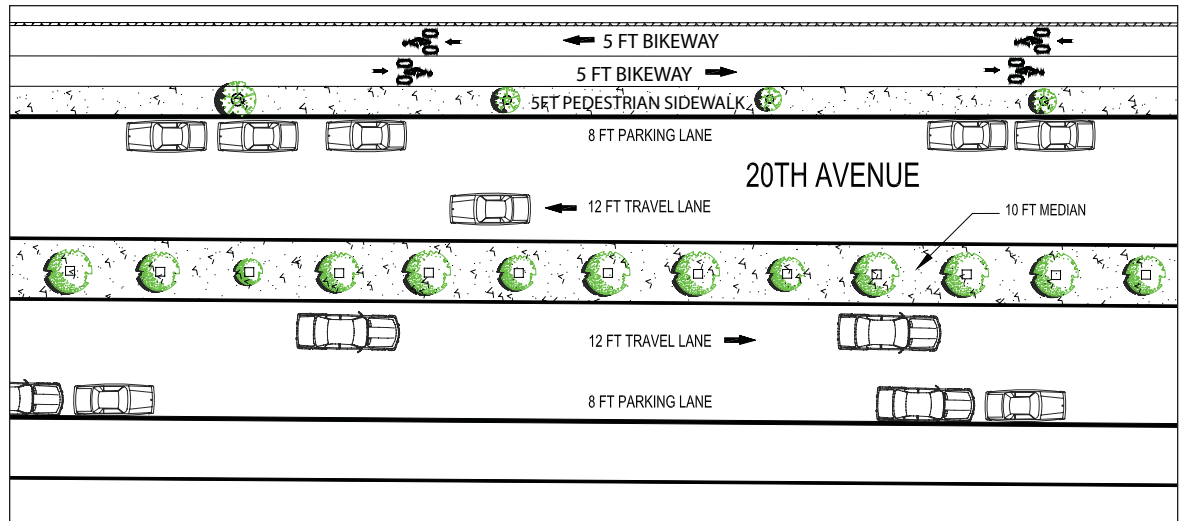
The route continues on 20th Avenue for its length to Hazen Street, where local one-way streets connect to Ditmars Boulevard north of the Grand Central Parkway.

20th Avenue from Shore Boulevard to Hazen Street

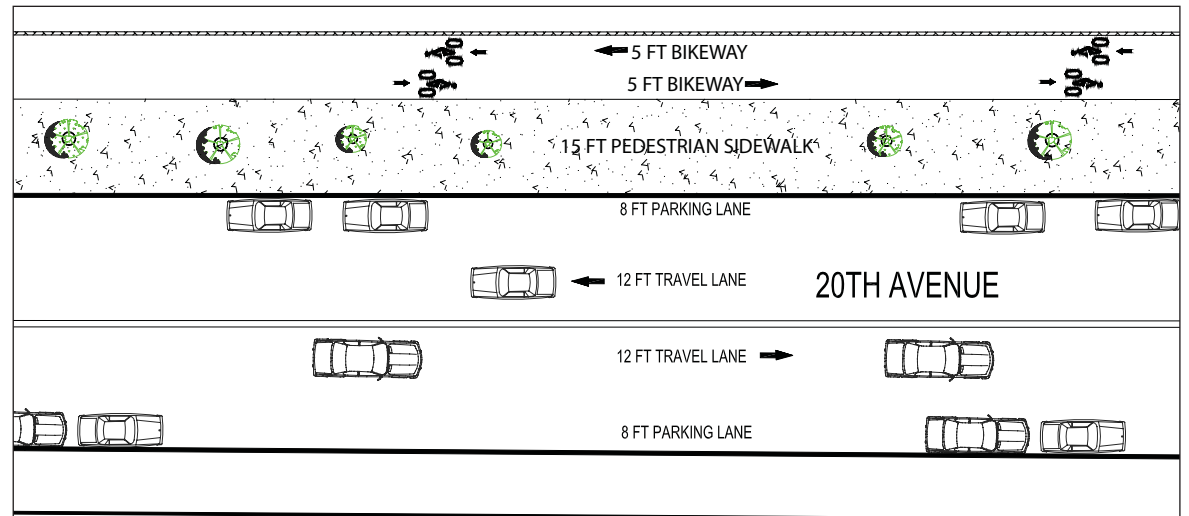
While the street is currently signed as a bike route, it is sufficiently wide to permit improvements that provide dedicated space for pedestrians and bicyclists, while calming traffic. Three options are recommended:

(1) A ten-foot shared multi-use path should be built along the north side of 20th Avenue between Shore Boulevard and 31st Street. The 15-foot sidewalk fronting the Reliant Energy Generating Station is uninterrupted by cross streets for 15 blocks. Five feet of the sidewalk currently contain tree plantings, which may serve as a buffer between the path and the roadbed. The street would be reconfigured to accommodate a ten-foot planted median on 20th Avenue, which would calm traffic and continue the concept of the greenway route. An eight-foot parking lane and a 12-foot travel lane would remain in each direction. The median could be a Greenstreets project, but would require a local sponsor to provide ongoing maintenance and cleaning.

(2) This shared-use sidewalk option may be expanded by extending the existing sidewalk by six feet to capture excess roadbed. This would allow for a separation of bicyclists and pedestrians on the sidewalk, with bicyclists using the existing inner-sidewalk, and pedestrians walking along the new curb.



20th Avenue option 1



20th Avenue option 2

(3) Alternately, the sidewalk could be extended by only five feet and the roadbed could be improved and landscaped with a five-foot wide planted median, while permitting eight-foot parking lanes and 12-foot moving lanes in each direction.

East of 31st Street 20th Avenue carries more traffic and the regular street grid resumes. Construction of a median could hamper turning movements for trucks and other commercial vehicles. Between 31st Street and Hazen Street, 20th Avenue should be improved with two five-foot bike lanes, while maintaining two eight-foot parking lanes and 11-foot travel lanes (see drawing below).

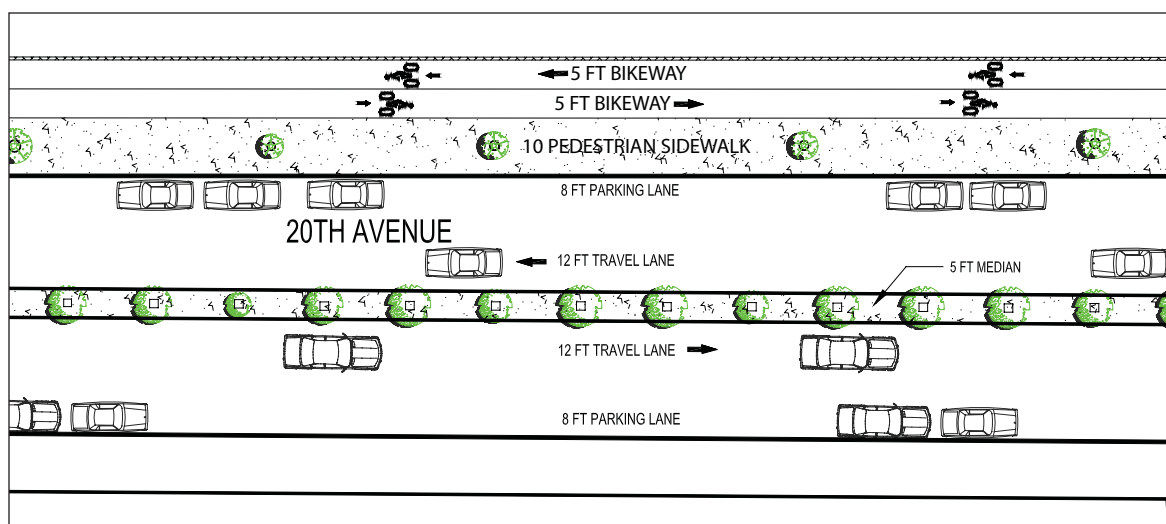
There are several destinations in this segment – the Steinway Piano Factory, Steinway Mansion, and Bowery Bay east of the Rikers Island Bridge. Informational signage to these points of interest should be installed along the route on 20th Avenue at Steinway and Hazen streets. A BID or other local civic organization may be interested in installing these signs.

NYC Department of Transportation is most comfortable with the option of keeping 20th Avenue from Shore Boulevard to Hazen Street a Class 2 bicycle facility, with no raised center median, and pedestrians utilizing the north sidewalk.

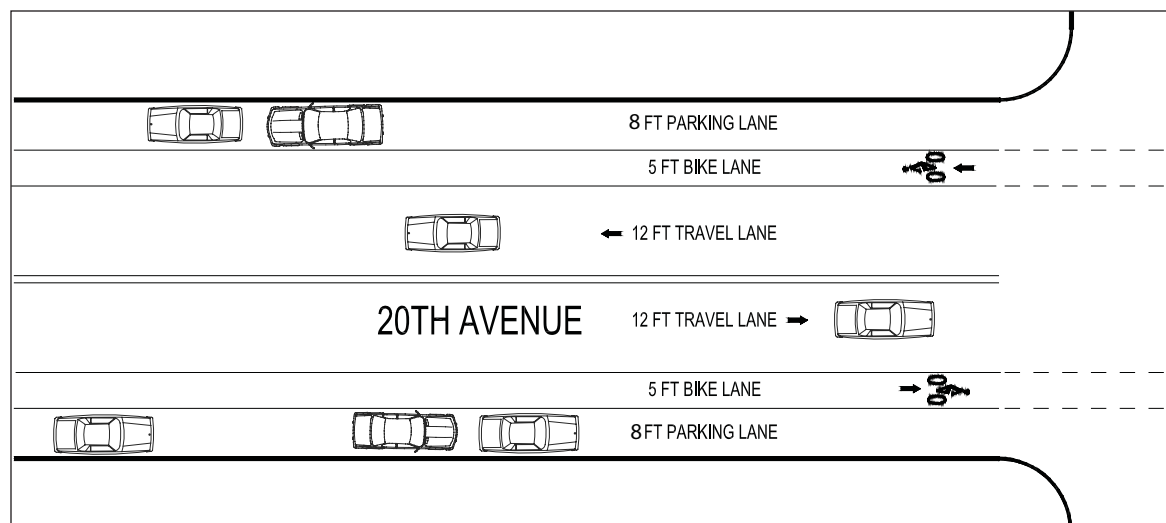
Hazen Street to Ditmars Boulevard

The route would continue from Hazen Street to Ditmars Boulevard via northbound 76th Street and southbound 75th Street, narrow one-way residential streets that would be signed Class 3. Traffic lights regulate the intersections of 75th and 76th streets and Ditmars Boulevard. This allows greenway users to safely cross and merge onto Ditmars Boulevard to continue the east-west route.

Greenway users trying to reach Bowery Bay and its athletic facilities should use Hazen Street and 19th Avenue, which are not part of the greenway but should be signed as Class 3 routes.



20th Avenue option 3



20th Avenue East of 31st Street



82nd Street looking north from 23rd Avenue



82nd Street at 23rd Avenue looking northeast



82nd Street at 23rd Avenue - GCP crossing

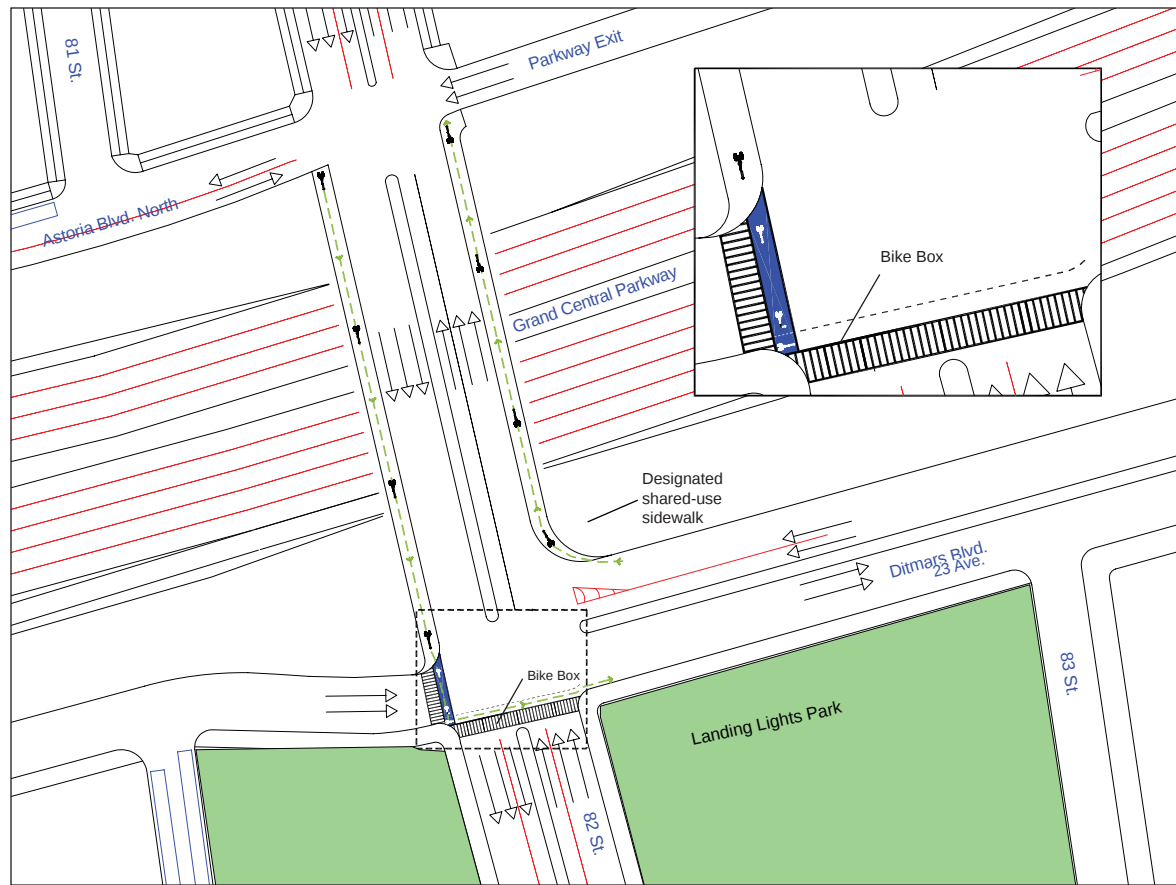
Ditmars Boulevard for the five blocks to 82nd Street

Ditmars Boulevard is 69 feet wide, with two travel lanes and a parking lane in each direction. Trees line the street and a planted median of five feet divides the street starting at 78th Street. Since there is not enough room to stripe a standard bike lane with buffer without affecting traffic levels, a Class 3 bicycle facility is recommended. At 82nd Street, inexperienced cyclists should dismount and use the sidewalks.

Marine Terminal Road provides access to the landmark Marine Air Terminal in the western corner of the airport, where a defunct ferry connection between the airport and Manhattan may be reinstated. Marine Terminal Road has rather high traffic volumes, allows trucks, and has an intersection with 82nd Street that is very congested. However, it still provides the best route for greenway users to reach the airport terminal. The Port Authority does not encourage bicycle use within the airport, but signage from the main greenway route should direct the few expected users to these destinations.

82nd Street/Crossing of Grand Central Parkway

The traffic volumes on 82nd Street and the GCP crossing are high due to vehicles entering and exiting the parkway and accessing the airport. The intersection of 82nd Street and 23rd Avenue has high volumes of left-turning vehicles. The traffic accident analysis shows a cluster of 67 reportable accidents at the bridge from 1998 to 2000, which included one pedestrian collision (see Appendix 3). The bridge roadbed is just wide enough to provide the needed vehicle travel lanes and does not permit on-street improvements for cyclists. To get from 82nd Street to 23rd Avenue/Ditmars Boulevard, the bridge sidewalks should be designated shared-use paths so that greenway users have a designated space in this high-traffic area. Pedestrians and cyclists would then use the signalized pedestrian crosswalk at 23rd Avenue/Ditmars Boulevard, which should be reconfigured as a combined bicycle/pedestrian crosswalk. Eastbound bicyclists should use a recommended shared crosswalk to cross 82nd Street with the green phase for motorized vehicles (see drawing next page). Parks & Recreation is exploring the possibility of creating a shared-use sidewalk along the northern edge of Landing Lights Park between 82nd and 83rd streets.



Proposed route for 82nd Street at 23rd Avenue/Grand Central Parkway Crossing

Waterfront Route

The continuation of the waterfront route along the North Shore faces almost insurmountable challenges, given the industrial, commercial, and utility uses along the river. Most of the facilities make active use of the waterfront and have high levels of security and control intended to keep unauthorized people from entering the properties or accessing the waterfront. In addition, while a route along an urban industrial waterfront may be interesting, even scenic, the North Shore waterfront would be isolated and remote from populated, residential areas, thereby raising safety concerns for potential greenway users. It therefore seems appropriate to merge the waterfront route with the on-street route along 20th Avenue.

Summary of Recommendations

- Due to the inaccessibility of the waterfront, merge waterfront and on-street routes.
- Install shared-use sidewalk with a raised, planted median (Shore Boulevard to 31st Street), and stripe bicycle lanes (31st Street to Hazen Street) along 20th Avenue.
- Sign Class 3 on-street route between 20th Avenue and Ditmars Boulevard.
- Sign Ditmars Boulevard between 76th Street and 82nd Street at the curb a Class 3 route.
- Use bridge sidewalks, shared-use crosswalk, and bike box at 23rd Avenue/Ditmars Boulevard to cross the Grand Central Parkway and 23rd Avenue.
- Install signs to points of interest (Steinway Mansion, Bowery Bay, Marine Air Terminal), perhaps using the Manhattan Waterfront Greenway kiosk signs as a model. (Signs of this type would potentially be installed by a BID or other similar local group.)

Segment 5: 82nd Street to LaGuardia Airport/Flushing Bay Promenade

Length:	1.3 miles
Neighborhood:	Jackson Heights and East Elmhurst in Community District 3
Major Destinations:	College of Aeronautics, LaGuardia Airport, airport hotels, Flushing Bay Promenade
Transportation:	The M60 runs along 23rd Avenue from 82nd Street to Junction Boulevard. The Q33 bus runs along 23rd Avenue from 85th Street to 94th Street. The Q23 bus runs along Ditmars Boulevard from 102nd Street to 27th Avenue. The Q48 bus runs from 82nd Street along 23 Avenue to Ditmars Boulevard and eventually runs to downtown Flushing. The Q33, Q47, Q48, and M60 also serve LaGuardia Airport
Typical Roadbed Width:	23rd Avenue: 68 feet; Ditmars Boulevard: 60 feet
On-Street Treatment:	Bike lanes, distinctive greenway signs
Major Waterfront Uses:	Residential: None Industrial: LaGuardia Airport Parks: Flushing Bay Promenade
Existing Waterfront Access:	Flushing Bay Promenade
Potential Waterfront Access:	None
Waterfront Access Unlikely:	LaGuardia Airport



23rd Avenue at College of Aeronautics, looking east



23rd Avenue at the College of Aeronautics, looking west



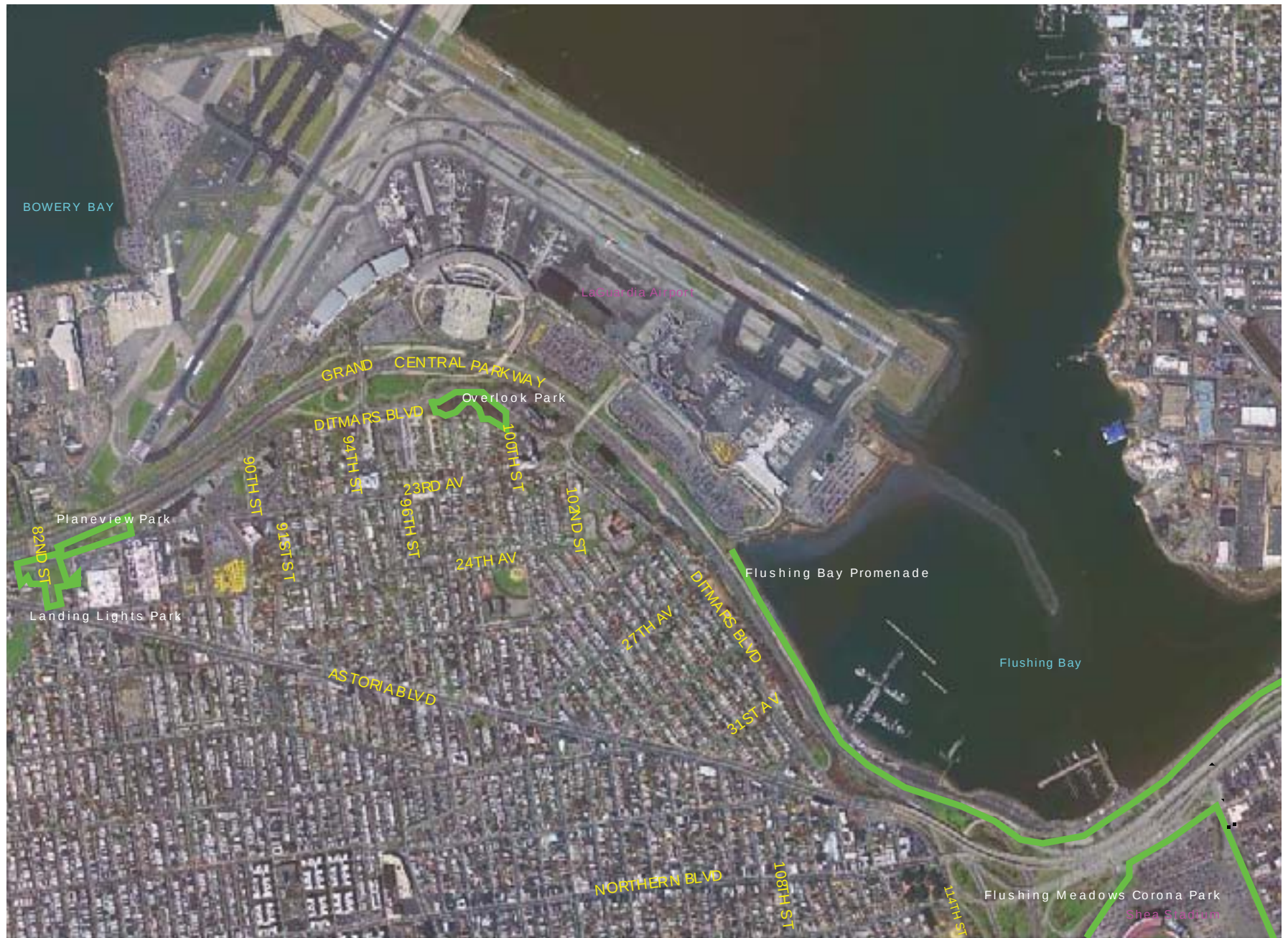
Planeview Park at 23rd Avenue

Existing

23rd Avenue has a 68-foot roadbed, with two eastbound and westbound travel lanes separated by raised medians for the mile between 82nd and 102nd streets. Airport-related transportation uses, such as rental car agencies, bus parking lots, livery cars, and the College of Aeronautics, are located at the western end of 23rd Avenue. The western medians are in poor repair – they are crumbling from the effects of illegal turning movements – but become planted green streets in the residential area to the east. There are dedicated left turning bays at unsignalized intersections, such as the intersection of 23rd Avenue and eastbound Ditmars Boulevard, where Planeview Park forms a small pocket of open

On-street

The eastern-most segment of the route is occupied by three main land uses: LaGuardia Airport, one of three major airports serving New York City, borders waterfront; an inland residential neighborhood; and the 1.4-mile Flushing Bay Promenade at the eastern terminus of the study area.



Segment 5: 82nd Street to Flushing Bay Esplanade

space. It offers unique views of the airport with airplanes taking off and landing. Parking regulations vary with the land uses.

Ditmars Boulevard is one-way eastbound between 85th and 94th streets, where it serves almost as a 30-foot wide service road. There is a single travel lane with parking on both sides until 92nd Street, where the parking lanes end and two travel lanes funnel traffic into the intersection at 94th Street.

From 23rd Avenue there is direct access to LaGuardia Airport over the parkway at 94th Street and 102nd Street. 23rd Avenue connects to Ditmars Boulevard at 102nd Street, where intersection traffic is controlled by a roundabout, to be reconstructed by the Port Authority. Airport employees often traverse the roundabout when walking to the airport parking lot. There are currently no signals or crosswalks to assist these movements.

Ditmars Boulevard east of 102nd Street is 60 feet wide, with two-way travel and parking on both sides of the street. The street is a bus route, with several stops along this stretch. Directly east of the roundabout are airport-related hotels with active driveways. East of 25th Avenue, Ditmars Boulevard is lined with single-family residences. Several cross streets terminate at Ditmars Boulevard because of the Grand Central Parkway; these T-intersections significantly reduce potential conflicts between cyclists and vehicles in the westbound direction. Along Ditmars Boulevard at 27th Avenue and 31st Drive are two existing pedestrian overpasses, both ramped but steep, that connect with the Flushing Bay Promenade.

The traffic accident analysis for 1998-2000 shows four intersections with higher numbers of accidents than elsewhere in this segment, highlighting the need for improvements. The intersections are: 94th Street at 23rd Avenue, with 23 reportable accidents (including two pedestrian accidents); 94th Street at Ditmars Boulevard, with 51 reportable accidents (including two pedestrian incidents);

100th Street at Ditmars Boulevard, 20 reportable accidents (including one pedestrian and one bicycle accident); and the roundabout at 23rd Avenue and Ditmars Boulevard, with ten reportable accidents, including one bicyclist, highlighting the need for improvements. For a detailed description see Appendix 3.



23rd Avenue at 100th Street



23rd Avenue at 101st Street



Ditmars Boulevard parallel to LaGuardia Airport



Ditmars Boulevard at 25th Avenue, looking west



Ditmars Boulevard at 27th Ave, looking east



Entrance to pedestrian overpass at 27th Avenue

Waterfront

The 680-acre LaGuardia Airport occupies almost four miles of shoreline between Bowery Bay and the Flushing Bay Promenade. Built for the New York World's Fair of 1939-1940, LaGuardia Airport occupies the site of the former Gala amusement park and a small airport, which was enlarged by reclaiming 350 acres of waterfront. Owned by the City of New York and operated by the Port Authority of New York and New Jersey, the airport has two runways, 72 airplane gates, and handles over 25 million passengers annually. It is a major employer: over 9,000 persons work at the airport, and it contributes \$5.7 billion in economic activity to the metropolitan region, generating 63,000 jobs. Local streets, including Marine Air Terminal Road, 94th Street and 102nd Street, provide access to the airport, as do entrance and exit ramps from the Grand Central Parkway.

The 1.4-mile Flushing Bay Promenade, owned and operated by Parks & Recreation, extends along Flushing Bay and marks the eastern terminus of the Queens East River and North Shore Greenway. The Promenade, which was funded by the Department of Environmental Protection in exchange for Parks allowing the construction of a new sewer overflow tank in Flushing Meadows-Corona Park, was constructed in 2001 and includes a shared-use asphalt path, benches, and lighting. While the Grand Central Parkway separates the promenade from residential uses, thereby isolating the facility and leading to low use in the evening, it is well-used in the warm weather by local airport employees and others. The Port Authority and Parks & Recreation have made efforts to keep the area litter-free, especially behind the gas station and near the airport, and to remove graffiti.

The Flushing Bay Promenade lies just north of Flushing Meadows-Corona Park and takes pedestrians and cyclists along Flushing Bay from LaGuardia Airport to the public boat launch to the

east. Airport employees use the pedestrian bridge at 27th Avenue, then walk west along the esplanade to the airport road at its east edge. As a result, a narrow desire line, a temporary path in the berm between the esplanade and airport, has been created by pedestrians. However, the greenway does not provide access to the park due to the highways and subway tracks. This is unfortunate as the park features the USTA National Tennis Center, host to the US Open tennis tournament each September, other facilities related to the 1939 World's Fair, the Queens Museum of Art, the New York Hall of Science, Queens Theater in the Park, bike rental facilities, and off-street paths that connect to the Brooklyn-Queens Greenway to the east.

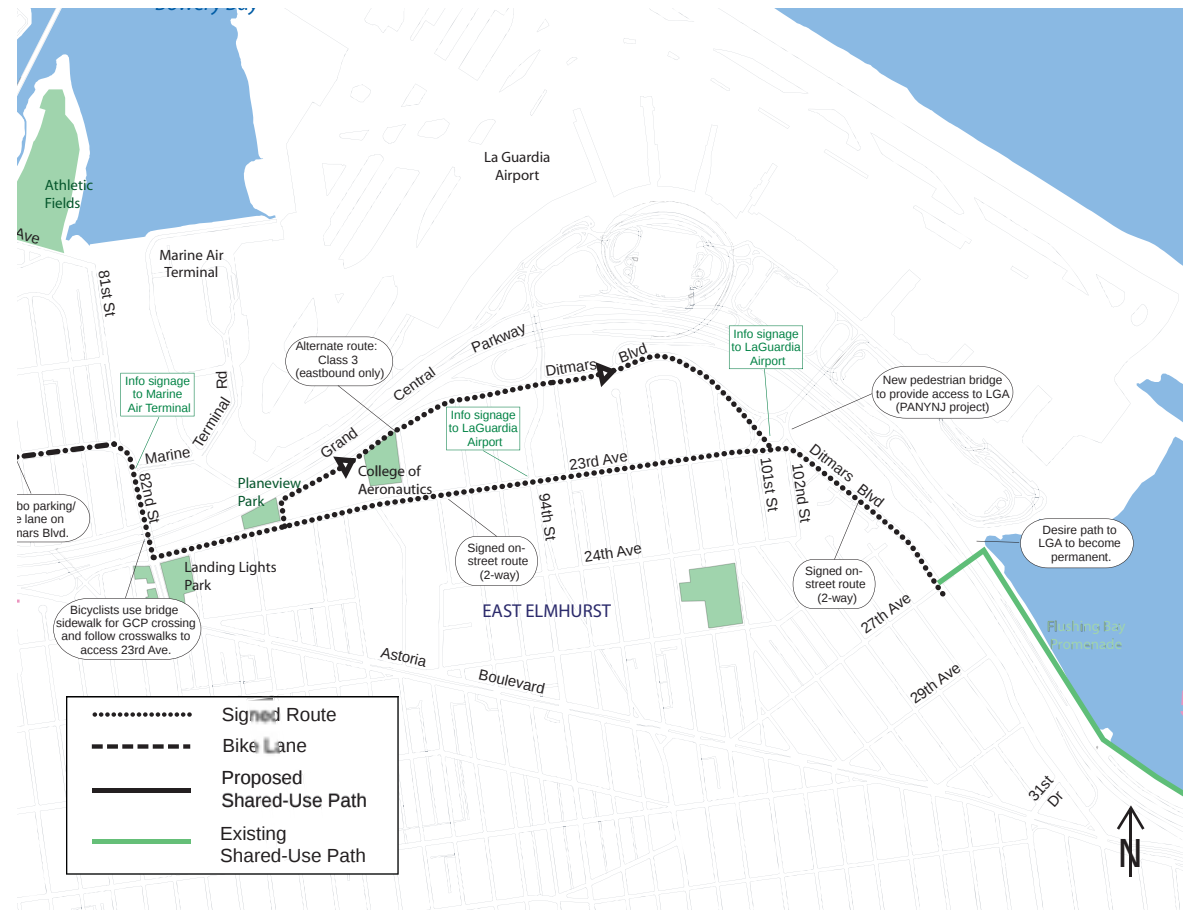
Proposed

On-Street Route and Design

The on-street route would continue on 23rd Avenue and Ditmars Boulevard, skirting LaGuardia Airport south of the Grand Central Parkway, then return to the waterfront at the Flushing Bay Promenade.

23rd Avenue between 82nd and 102nd streets is not wide enough to permit the installation of a bicycle lane while maintaining two travel lanes in each direction. The roadbed without median is 30 feet in each direction, which is just enough for a parking lane plus two travel lanes. Route signs should be installed. Parks & Recreation is considering creating a shared-use sidewalk adjacent to Lansing Lights Park, between 82nd and 83rd streets. As an alternative, eastbound riders could turn left at 85th Street and continue on Ditmars Boulevard, as far as 102nd Street. One-way Ditmars Boulevard would be signed a Class 3 route, as NYC DOT believes that a bike lane would create safety concerns including obstructed sightlines and conflicts with airport-bound limousines.

The route would continue as a signed Class 3 route at 23rd Avenue and 102nd Street where the



Segment 5: Proposed Route



Entrance to pedestrian overpass at 27th Avenue



Ramp to Flushing Bay Promenade at 27th Avenue



Flushing Bay Promenade with LaGuardia Airport in background

roundabout connects to Ditmars Boulevard. At 27th Avenue and 31st Drive greenway users would cross over the Grand Central Parkway to the Flushing Bay Promenade via the existing pedestrian bridges.

Airport Access

The Port Authority is currently improving access to the airport at 102nd Street. A separate pedestrian bridge connecting the airport to the roundabout at Ditmars Boulevard will be built across the GCP, then ramp down to street level, where a crosswalk would lead to a designated path to the terminal area via parking lot 4 (where buses are available to reach the other terminals).

At this time the Port Authority does not deem it feasible to permit bicycle access. In the future, bicycle locking facilities could be placed in a confined section of the parking lot. Bicyclists would have to walk their bikes across the pedestrian bridge since space limitations do not allow for a standard 12-foot wide shared-use bridge.

Several alternative routes to and around the airport were considered

One route option would have followed the southern perimeter of the airport using the local streets that parallel the Grand Central Parkway and offer access to the multiple terminals. This option was not pursued due to heavy traffic volumes, a lack of sufficient space for a separated path within the rights-of-way, a complex street system with numerous ramps, traffic circles, and intersections, and Port Authority concerns about adding a new mode of transportation to the complicated airport transportation system.

A second route option would have used the Grand Central Parkway right-of-way between 82nd Street and Flushing Bay to build a greenway on either the north or south side of the parkway. While the right-of-way is sufficiently wide for a path on either side, an extensive network of at-grade entrances and exits, overpasses, and ramps interrupt the parkway, thereby

requiring a complex system of underpasses and overpasses to continue the greenway and avoid conflict with vehicular traffic. The cost of such an alternative was considered disproportionate to its overall benefit.

Waterfront Route

With its large-scale transportation uses, the North Shore offers little opportunity to pursue a viable waterfront route. Access to the waterfront around LaGuardia Airport is prohibited. The airport runways extend into Flushing Bay on pilings, and for obvious reasons the general public is not permitted into secured areas beyond the terminals. Safety issues aside, the impact on users of noise and vibrations along a waterfront greenway would be unbearable.

However, the airport is a regional destination and a major employer, and the proposed greenway would provide improved access to the airport for non-motorized users via the on-street route, which follows 82nd Street, 23rd Avenue, and Ditmars Boulevard. The waterfront route would recommence along the Flushing Bay Promenade, with entry at 27th Avenue and 31st Drive via the existing pedestrian bridges over the Grand Central Parkway.

No official path connects the existing Flushing Bay Promenade with the airport. Currently only a desire line exists between the Flushing Bay Promenade and the LaGuardia Airport parking lots. Parks & Recreation is exploring formalizing this desire line. To do so it would need to work with all underlying property owners, including the Port Authority.

The Flushing Bay Promenade ends just north of Flushing Meadows-Corona Park. Off-street paths in the park connect to the Brooklyn-Queens Greenway, which links Kissena Park, Cunningham Park, the Vanderbilt Motor Speedway, Alley Pond Park, and the waterfront esplanade fronting Little Neck Bay in eastern Queens. The promenade connects to

the northern portion of Flushing Meadows Corona Park via a service road to the Shea Stadium parking lot. In the future, signs should be installed to clarify this connection and a dedicated, non-vehicular connection between the promenade and the park should be pursued. Through an on-going project, DCP is seeking to improve pedestrian and bicycle connections to the Flushing River along College Point and Northern boulevards. This study will figure into the recommendations made in that study.

Summary of Recommendations

- Merge waterfront and on-street routes due to lack of waterfront access.
- Stripe parking lanes along 23rd Avenue and Ditmars Boulevard (east of 102nd Street) to channel traffic.
- Sign on-street route along 23rd Avenue and Ditmars Boulevard.
- Sign on-street route on Ditmars Boulevard between 85th Street and 94th Street.
- Make the airport more accessible for bicyclists and pedestrians via planned projects at 102nd Street and Flushing Bay Promenade, and provide secure bike parking within the airport.
- Connect Flushing Bay Promenade with downtown Flushing through current DCP College Point Boulevard pedestrian-bicycle improvement project.
- Install signs to strengthen the connection between the Flushing Bay Promenade and Flushing Meadows-Corona Park or create a dedicated, non-vehicular path between the promenade and the park.



Flushing Bay Promenade northwest of Shea Stadium

Coordination/Future Steps

There is a small amount of funding available under the Bicycle Network Development Program of the NYC Department of Transportation and \$2,640,000 in newly acquired CMAQ funds through Parks & Recreation and \$500,000 in Councilmember funds for implementation of the Queens East River portion of the greenway (Phase 1). The balance of the local match needed (\$160,000) will be sought through the City budget or discretionary funds available through local and state officials.

A good opportunity to implement this greenway arises with the revival of the East River waterfront and the wide array of private and public land use, planning, and transportation initiatives ongoing throughout the entire study area.

The following coordination and implementation opportunities exist:

- Continue coordination with DCP's *Long Island City Links* project, which includes intersection improvements (Pulaski Bridge/Jackson Avenue), street end improvements, and improved traffic flow and connections for motorized traffic, bicyclists and pedestrians.
- Coordinate with DCP's *Queens Plaza Bike and Pedestrian Improvement Project* to optimize access from the Queensboro Bridge to Vernon Boulevard and the waterfront.
- Coordinate with DCP's *Downtown Flushing Multimodal Connections Project* to optimize access from the Flushing to the Flushing Bay Promenade.
- Coordinate with DOT on striping of Class 2 bike lanes and signing Class 3 routes.
- Coordinate with the Queens West Development for waterfront access and bicycle and pedestrian facilities south of Anable Cove.
- Coordinate with adjacent property owners to implement a shared-use sidewalk.
- Coordinate with individual property owners to provide continuous waterfront access along the East River.
- Coordinate East River access improvement efforts with Parks & Recreation in conjunction with the newly formed City Parks Foundation Initiative.
- Coordinate with the Port Authority of NY/NJ to continue improving bike and pedestrian access to LaGuardia Airport and provide bike parking.

Appendix 1

Design and Materials Guide

Greenway Facilities Classification

Greenways in New York City are classified by type:

Class 1: Multi-Use Trail or Path

A multi-use trail is separated from the roadway and delineated by pavement markings and regulatory signage. Trails are usually shared by multiple users, including cyclists, pedestrians, joggers, in-line skaters, and wheelchairs. Typical widths are 12 to 16 feet.

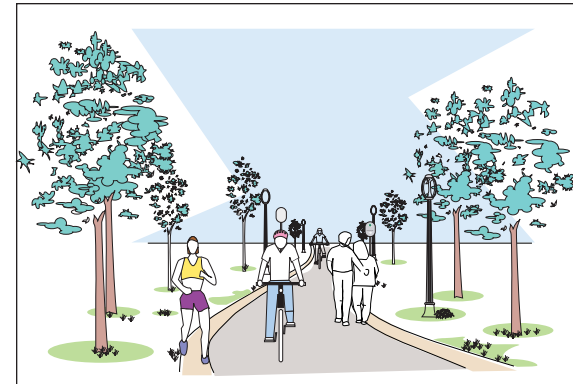
Dual carriageway trails separate foot and wheeled traffic. At trail and roadway intersections the design treatment should include bollards and landscaping to prevent access to the trail by motorized vehicles other than maintenance and emergency vehicles.

Class 2: On-Street Bicycle Lane

A bicycle lane is part of the roadway and delineated by pavement markings and regulatory signage. The lane is usually next to the curb parking lane, but may also be adjacent to the curb where parking is prohibited. The lane is usually separated from motorized traffic by a striped buffer. A sidewalk complements a bike lane to form a greenway for multiple users. The typical width of a striped bike lane is five feet, with a one-to-five-foot striped buffer.

Class 3: Signed or Bicycle Route

A signed route has informational signage only, usually located at each block along the route. Bicyclists share the roadbed with motorized vehicles without special delineation. A signed route is typically located on lightly-traveled streets, neighborhood streets, or where space constraints do not allow the striping of a separate bike lane. A signed route also provides information directing users to bicycle lanes or multi-use trails.



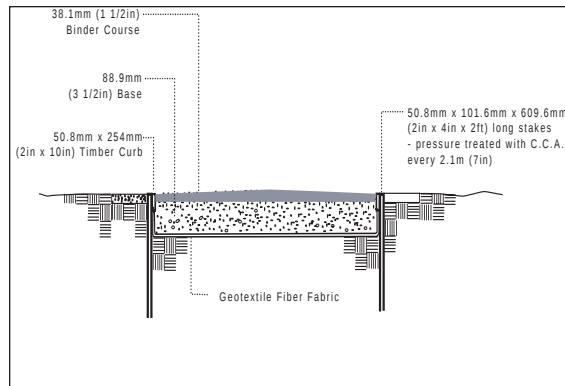
Class 1: Multi-Use Trail



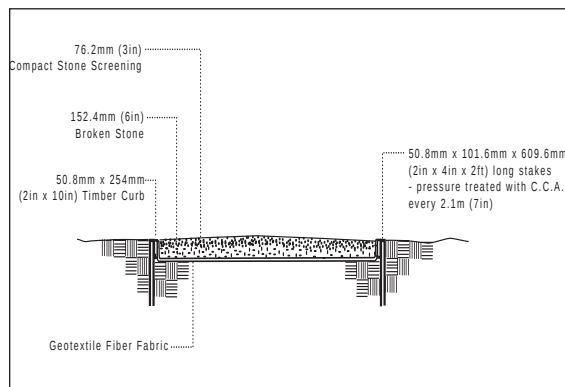
Class 2: On-Street Bicycle Lane



Class 3: Signed or Bicycle Route



Asphalt Trail Cross-Section



Crushed Stone Trail Cross-Section

Trail Design – Materials

Depending on conditions and environmental aspects a choice of trail materials is available. The two most common materials are discussed below.

Asphalt Trail

The standard material used for trails consists of hot rolled asphalt with a crushed stone clear zone. An alternative is to use concrete plates, which is more expensive to construct but provides longer durability. Trail widths may vary depending on space availability. The typical design for a two-way multi-use trail is 12 feet with a one-inch timber edge. According to the American Association of State Highway and Transportation Officials (AASHTO), the minimum width for two-way bicycle travel is eight feet.

Crushed Stone Trail

The crushed stone or chipped wood trail design is often used in environmentally-sensitive areas. Trail width may vary depending on the environmental sensitivity of the natural landscape. Design

standards are the same as for asphalt trails. If bicycle travel has to be excluded for environmental reasons, trail width may be less than eight feet.

Typical Details

Bicycle Lanes

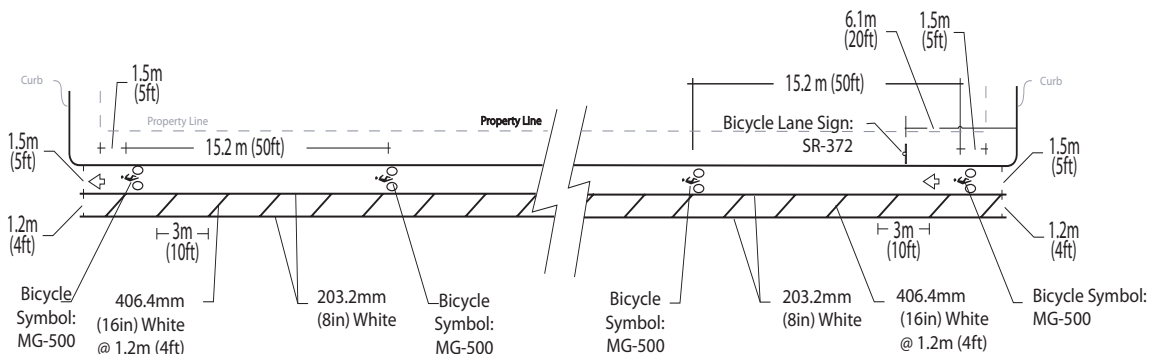
A bicycle lane is used to channel one-way bicycle travel. The design may vary depending on roadway width and traffic conditions. According to AASHTO the minimum width for bicycle lanes is five feet; in several U.S. cities four-foot bike lanes may be found.

A bike lane may be accompanied by a striped buffer zone to provide additional space separating the bicycles from the automobile lane and to increase the visibility of the bicycle lane. The width of the buffer zone depends on the available roadway space. One foot is the minimum; the typical width is four to five feet. Bicycle symbols and diamonds further identify the lane.

Pedestrian Lanes

The use of pedestrian lanes as part of a greenway route is an infrequent recommendation. With a lack of sidewalks, the obvious solution would be to build sidewalks along properties lacking them. However, sidewalk construction costs must be incurred by the property owner. Pedestrian lanes, a less costly alternative which allow people to walk in the street, may temporarily allow for safe pedestrian circulation.

Pedestrian lanes are most suitable on roads that may safely accommodate a pedestrian lane and two-way traffic. These roads usually carry low vehicular volumes and are wide enough to delineate a pedestrian lane.

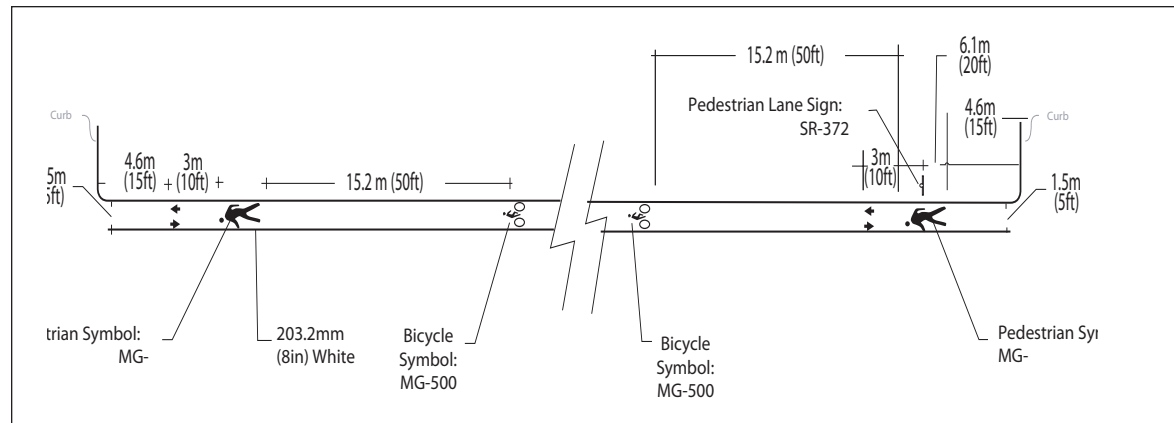


Typical Bike Lane Design

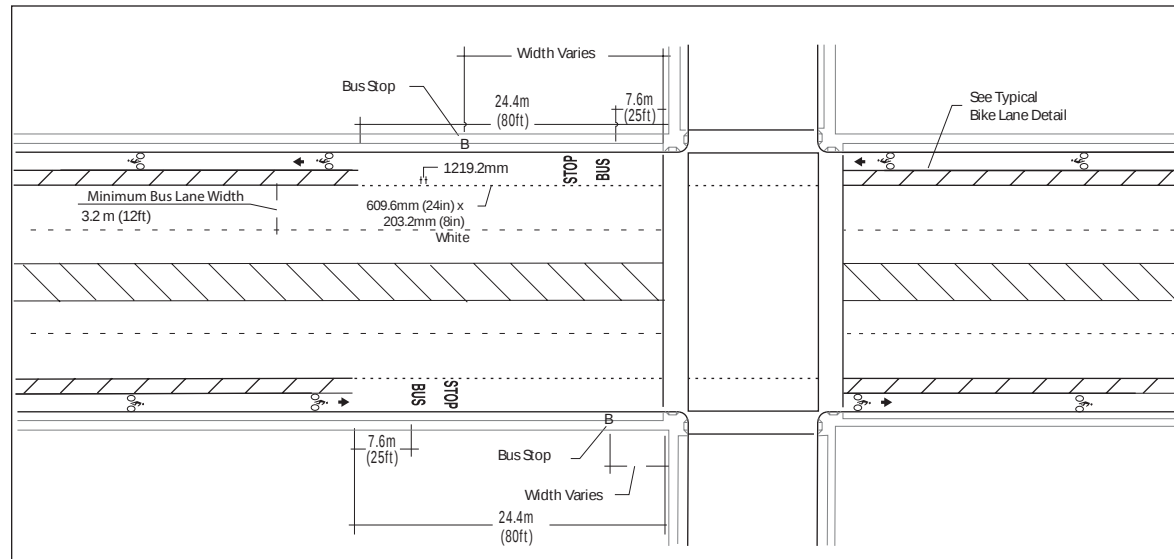
Bus and Bike Interface

The design for the convergence of a bus and a bike lane includes signage and pavement markings, warning both bus driver and cyclist in advance of the convergence area.

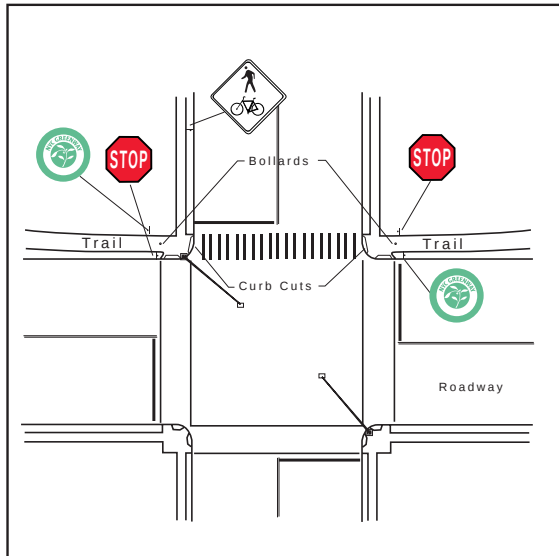
At a bus stop the bike lane is typically discontinued for approximately 80 feet. Bikes and buses share the same road space. Regular striping of the bike lane continues past the bus stop.



Typical Pedestrian Lane Design



Bus and Bike Lane Interface



A: Trail Crossing at Signalized Intersection

Trail and Roadway Interface

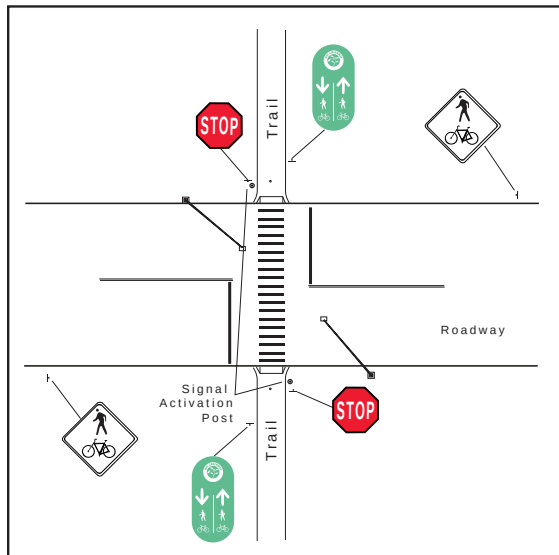
The design of a trail and roadway interface is extremely important in greenway or trail development. AASHTO provides design guidelines as shown in the diagrams and also recommends the following:

- Traffic controls (signals, stop signs, etc.) should be located so that motorists and cyclists are not confused by which controls apply to them.
- When a path terminates at an existing road, the path should be safely integrated into the system of roadways.
- Path intersections and approaches should be on relatively flat grades; stopping sight distances at intersections should be checked and adequate warning should be provided.

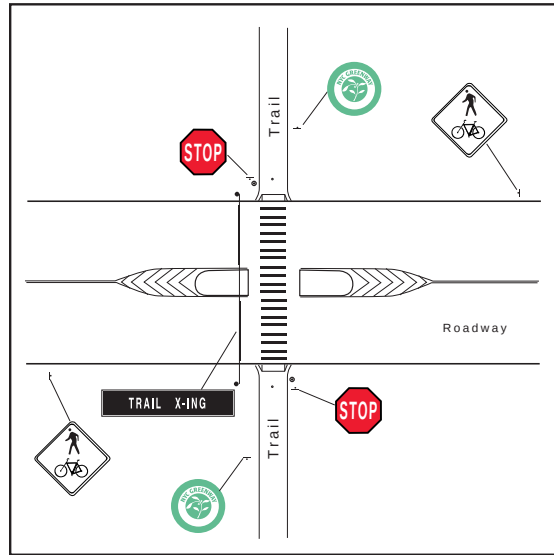
- Ramps and curb cuts at intersections should be the same width as paths, providing a smooth transition between the path and roadway.

Some typical design elements include warning and regulatory signage, located in advance of the junction. Where roadway crossings occur, traffic signals may be used. If the crossing occurs at a timed, signalized intersection, trail users cross with the green phase (see figure A).

When a trail crosses mid-block, there are two possible design treatments, depending upon the roadway's vehicular volume. The first design treatment, for a roadway with modest vehicular volumes, uses a traffic signal, activated by trail users only. This allows for continuous vehicular travel until a trail user needs to cross (see figure B). The second design treatment, for a roadway with higher vehicular volumes, utilizes traffic islands for refuge while crossing (see figure C). High-visibility pavement markings demarcate the crossing.



B: Mid-Block Trail Crossing with Signalization on Demand



C: Mid-Block Trail Crossing with Signage

Appendix 2

Bridges and Tunnels

The **Pulaski Bridge** spans the Long Island Expressway and Newtown Creek, the Queens-Brooklyn border. Built in 1954 and operated by the city, it is a counter-balanced drawbridge (bascule). It has three travel lanes in each direction and a multi-use path on the west side of the structure. The bridge was reconstructed in 1994 at a cost of \$40 million.

The **Queens-Midtown Tunnel** carries four lanes of traffic in two tubes under the East River for over a mile between Hunters Point and East 42nd Street. The tunnel, a tolled facility operated by MTA Bridges and Tunnels, was constructed in 1940. It carries almost 26 million vehicles annually.

The **Queensboro Bridge**, also called the 59th Street Bridge, is a designated city landmark. Built in 1909 to connect Long Island City and Midtown Manhattan, the two-deck cantilever bridge spans almost 7,000 feet. The bridge has nine travel lanes, carrying an average of 180,000 vehicles per day (2000), and a well-used 12-foot multi-use path on the North Outer Roadway.

Known as the Welfare Island Bridge when it opened in 1955, the **Roosevelt Island Bridge** provides vehicular, pedestrian, and bicycle access to the Roosevelt Island street system from 36th Avenue in Queens. The vertical lift moveable bridge, operated by the city, has a single travel lane in each direction and a narrow sidewalk.

The **Triborough Bridge** connects Queens, Manhattan, and the Bronx, carries over 62,000,000 vehicles per year to points throughout the metropolitan region, and provides access to open spaces and municipal facilities on Ward's and Randall's islands. A suspension bridge designed by O.H. Amman and built in 1936, it is a "whole highway

system, trestled and bridged..." A tolled facility operated by the MTA, it has eight total traffic lanes and pedestrian paths in each direction. Bicyclists are not permitted to ride on the facilities and must walk their bikes.

The **Hell Gate Bridge**, completed in 1916, was the longest steel-arch span in the world at the time and the only four-track long-span railroad bridge ever built. It marked the culmination of American railroad power and prosperity. Construction began in 1912 on this 3.2 mile long viaduct, which still today carries high-speed trains from Boston to New York. With a span length of 977 feet (298 meters) the bridge crosses the East River at Hell Gate. This fantastic design, for a four-track railway, was created by Gustav Lindenthal.

The **Rikers Island Bridge**, a fixed bridge completed in 1966, provides access between Queens and the city's jail on the 440-acre Rikers Island in the East River.

Appendix 3

Traffic Accident Analysis

Accident data was analyzed for the three-year period between 1998 and 2000, the most recent full years for which data is available, in order to assess the safety of existing and proposed routes. All data was obtained from the New York State Department of Motor Vehicles (NYSDMV) accident database, which summarizes information from local New York City Police Department (NYPD) accident reports. The NYSDMV designates motor vehicle accidents as reportable if they result in physical damages of \$1,000 or more or if there is an injury or fatality. Accidents resulting in less monetary damage or no injuries are designated as non-reportable (which does not mean that no police report was filed). Pedestrian and bicycle accidents are reportable by their very nature.

Accidents in the study area in general were low, even along main roads such as Vernon Boulevard, 20th Avenue, and 23rd Avenue there is a somewhat 'even' distribution of accidents at the intersections with cross streets.

Segment 1 shows a cluster of accidents at the intersection of Jackson Avenue and the Pulaski Bridge, and Jackson Avenue and Vernon Boulevard (see map *Total Reportable Accidents 1998-2000, Segment 1*). The intersection of the Pulaski Bridge at Jackson Avenue had a total for the three-year period of 44 reportable accidents, which included one pedestrian and four bicycle accidents. A total of 20 reportable accidents occurred at the intersection of Jackson Avenue and Vernon Boulevard. No pedestrian or bicycle accidents occurred. There was one pedestrian fatality reported on Vernon Boulevard between 48th Avenue and 47th Road in 1998. The accident occurred mid-block when a pedestrian darted out from behind a parked vehicle.

Vernon Boulevard between 43rd Avenue and Astoria Boulevard/Main Avenue does not have any clusters of high accident locations and no fatalities. There is an even distribution of one to two accidents per year at some intersections or mid-block, with three to four reportable accidents at the intersection of the Roosevelt Island Bridge, 33rd Road, and Broadway. These numbers are low and do not indicate any accident hot-spots.

This is also true for the remainder of **Segments 2, 3, and 4**. Reportable accidents did occur along Shore Boulevard and 20th Avenue, but they only averaged one to four accidents per year.

Not included in this data is the fatal accident involving a child bicyclist at the intersection of **Ditmars Boulevard and 75th Street**, which took place in April 2003. The NYC Department of Transportation has since installed traffic lights at the intersections of 75th and 76th streets and Ditmars Boulevard, thereby increasing the safety of pedestrians and bicyclists who are attempting to cross or connect to Ditmars Boulevard.

The intersection of **82nd Street and 23rd Avenue** had 67 total reportable accidents between 1998 and 2000, which included one pedestrian accident (see map *Total Reportable Accidents 1998-2000, Segment 4*). High traffic volumes and multiple turning movements contribute to the high total.

Higher numbers of accidents occurred in **Segment 5**. The intersection of 94th Street and 23rd Avenue had a total of 23 reportable, which includes two pedestrian accidents, and 94th Street and Ditmars Boulevard, with a total of 51 reportable accidents, including two pedestrian accidents, over the three-year period. (See map *Total Reportable Accidents 1998-2000, Segment 5*.) The intersection of 100th Street and Ditmars Boulevard had 20 accidents, with one pedestrian and one bicycle involved in a collision. The roundabout at 23rd Avenue and Ditmars Boulevard had ten reportable accidents, including one pedestrian collision. Other high-

accident locations are along the Grand Central Parkway and are not relevant to the study.

High Reportable Accident Locations 1998-2000 Segment 1



High Reportable Accident Locations 1998-2000 Segment 4



High Reportable Accident Locations 1998-2000 Segment 5



Appendix 4

Shared-Use Sidewalks

General

Grade-separated, curbside bicycle lanes (as multi-use sidewalks are called) are recommended in the *New York City Bicycle Master Plan*, the Department of City Planning's 1999 document *Making Streets Safe for Cycling*, and in Transportation Alternative's 1993 *Bicycle Blueprint: A Plan to Bring Bicycling Into the Mainstream in New York City*.

The recommendations for shared-use sidewalks in this document are based on criteria that were developed for this study. Shared-use sidewalks should be implemented in places where on-street travel is unsafe or traffic conditions and space do not permit bicycles to be ridden on the street safely. Shared-use sidewalks are recommended for corridors under the following circumstances:

- The facility should be planned along corridors with low-density land uses that do not require the loading and unloading of goods and people.
- Driveways, cross streets and parking lots/garages along the corridor should be minimal.
- The corridor sidewalks should have light pedestrian volumes.
- Sidewalks should be at least 15 feet wide, with street furniture, where existing, aligned in a curbside amenity strip.
- Intersections should have wide curb cuts to provide easy bicycle access to and from the multi-use sidewalk.
- Crosswalks should be marked at all intersections to ensure safety and the continuity of the path.

- Standard greenway signs should be installed to identify the route.

The installation of a shared-use sidewalk raises issues of maintenance and legal responsibility that would have to be clarified and agreed upon before installation. The City's revised Administrative Code gives property owners other than one-to-three family homes the responsibility for the maintenance and legal liability of the sidewalks abutting their property. The City, either DOT or Parks & Recreation, depending on the sidewalk's location and jurisdiction, would have to designate and design the shared-use sidewalk and assume all responsibility for its operation.

Concerns over pedestrian safety are often raised in relation to shared-use sidewalks. The sidewalks, however, would be similar to greenways, where pedestrian safety is not an issue. The proposed shared-use sidewalk would be an eight- to ten-foot shared-use path, striped on the existing sidewalk to separate users. This approach has been used by Parks & Recreation on the sidewalk along Pelham Bay Park in the Bronx. A centerline separating wheeled- and non-wheeled users is effective even when applied on heavily-used facilities, such as the Hudson River Greenway on Manhattan's west side and the East River Greenway on the east side. Use of different paving materials (asphalt and concrete) and signage would be installed along the sides to instruct greenway users and identify the route.

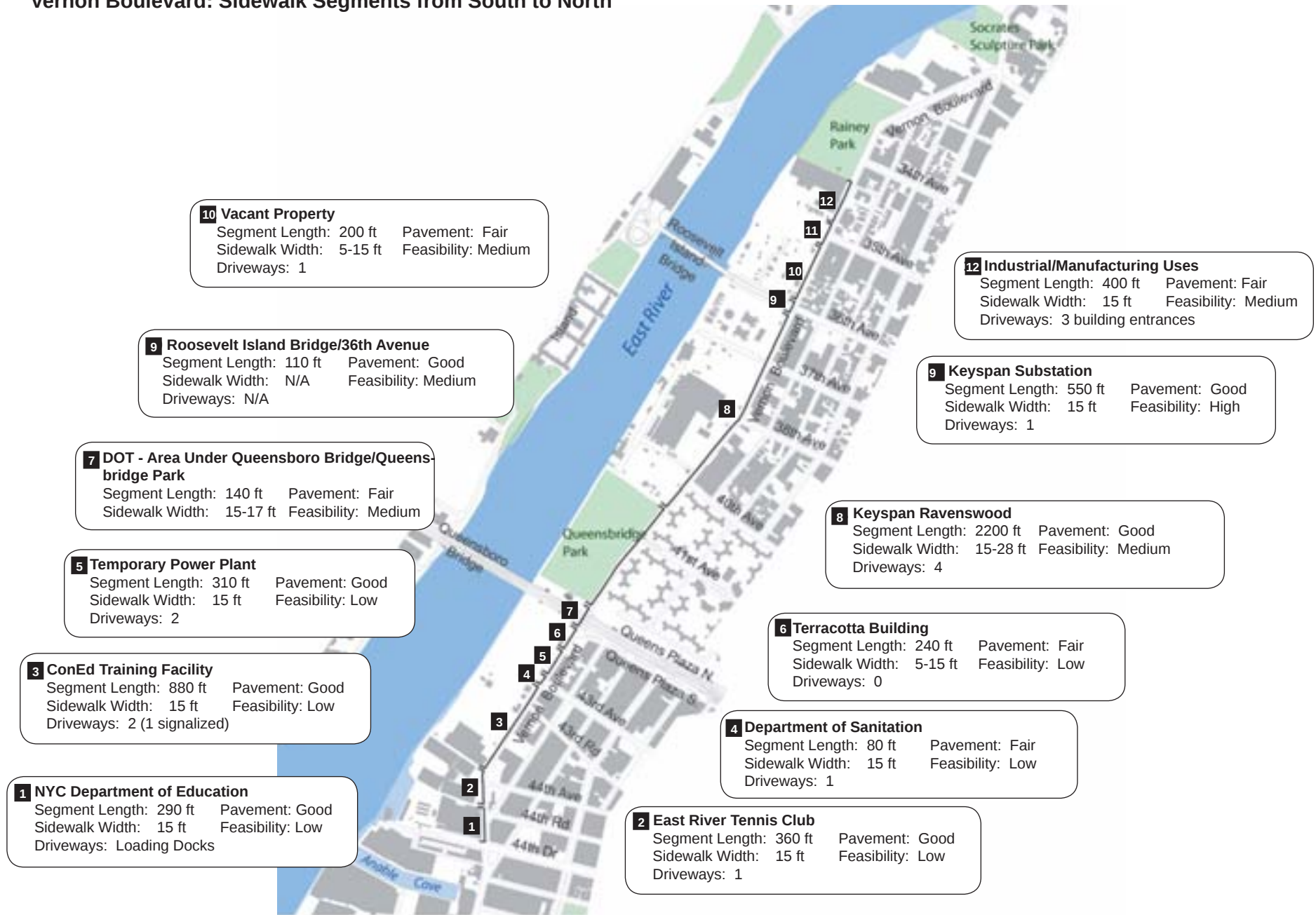
It is also worth noting that children under 14 are legally allowed to ride their bikes on the sidewalk (and frequently do without regard for other users), thus making all city sidewalks de facto shared-use paths.

Project-Specific

The option of a shared-use sidewalk is most critical on Vernon Boulevard, which is not wide enough to permit a standard Class 2 bicycle facility and has usually heavy traffic and truck volumes. The shared-use sidewalk is recommended for a stretch of 6860 feet (1.3 miles) between 44th Drive and Rainey Park (34th Avenue) on the west side of Vernon Boulevard, although its implementation south of the Queensboro Bridge is unlikely given the new Silver Cup West development.

Since the shared-use sidewalk recommendation extends across two study segments, it is being discussed in its entirety in this chapter. The purpose is to highlight the opportunities to use existing portions of sidewalk, point out gaps in the existing sidewalk, and describe recommendations for improvement. The map on the following page gives an overview of the existing sidewalk segments, adjacent uses, and the number of driveways.

Vernon Boulevard: Sidewalk Segments from South to North



Inventory of uses and driveways along the west side of Vernon Boulevard between 44th Drive and Rainey Park, from south to north:

Adjacent Use/Owner:	Length of Segment:	Number of Driveways/ Access Points:
1 Department of Education (Purchasing Dept.)	290 ft	Several Loading Docks
2 East River Tennis Club	360 ft	1
3 ConEd Training Facility	880 ft	2 (one is signalized)
4 Department of Sanitation (Salt Storage)	80 ft	1
5 NY Power Authority (Temp. Power Plant)	310 ft	2 (one main, one service access)
6 Terracotta Building	240 ft	0
7 DOT (under Bridge) Queensbridge Park	140 ft 1100 ft	1 3
8 Keyspan Ravenswood	2200 ft	4 (one main entrance)
9 Crossing of Roosevelt Island Bridge	110 ft	
10 Keyspan Ravenswood Substation	550 ft	1 (main access on south side)
11 Vacant Property	200 ft	1
12 Industrial/Manufacturing Uses	400 ft	approx. 3 building entrances
Total	6860 ft	

Detailed Discussion

1. Department of Education – 290 feet

The 15-foot sidewalk abuts a building of the Purchasing Department of the NYC Department of Education. The building has loading docks on its east and south side, a use that would typically not encourage a shared-use sidewalk. However, 44th Drive south of the building offers a signalized access point to the sidewalk, while there is no easy and safe access point to the north. Bicyclists would be directed to dismount during business hours, but would be able to use the facility during off-hours and weekends.



Vernon Boulevard at 44th Drive



Department of Education building

2. East River Tennis Club (site of future residential development) – 360 feet

The 15-foot sidewalk continues along the East River Tennis Club, which has one driveway at 44th Avenue. Street lights and some utilities occupy the curb side of the sidewalk, but eight to ten feet of sidewalk could be dedicated for a shared-use path.

As mentioned, the tennis club site is to be developed as mixed-use residential and commercial buildings, thereby increasing motorized and pedestrian traffic. The shared-use sidewalk could, however, provide for improved access to the site from Vernon Boulevard and possibly connect to the proposed waterfront promenade.



15-foot sidewalk along East River Tennis Club

3. Con Edison Training Facility – 880 feet

The 15-foot sidewalk has a five-foot curbside amenity strip with planted trees and utilities. There are two access points to the training facility. 43rd Road is signalized for vehicles and pedestrians. The sidewalk is in very good condition. It is bordered by a fence along the property and a tree line that buffers noise and traffic from Vernon Boulevard. Bicyclists have been observed riding on the sidewalk.



15-foot sidewalk continues along ConEdison's training facility



Sidewalk along ConEdison; 15 feet with a five-foot amenity strip



Sidewalk along ConEdison; signal at 43rd Road

4. Department of Sanitation (salt storage) – 80 feet

The sidewalk continues past the Con Edison facility, but is interrupted by a driveway into the Sanitation Department's salt storage site at 43rd Avenue. The roadbed is covered by salt and sand, making it less easy to cross for bicyclists. The installation of wider curb cuts and keeping the access free of salt would provide for a seamless connection of the shared-use sidewalk.



15-foot sidewalk at 43rd Avenue



Driveway to salt yard

5. NY Power Authority, temporary power plant – 310 feet

The 15-foot sidewalk along the temporary power plant is in good condition and has a five-foot amenity strip with trees. One main entrance and one service entrance serve the site. Silvercup West will be taking over the site, but as it is now the shared-use sidewalk could continue without impediments. Future waterfront access may make a shared-use sidewalk unnecessary. But because of increased traffic due to the Silvercup West development, the realization of a shared-use sidewalk is unlikely.



15-foot sidewalk along temporary power plant

6. Terracotta Building – 240 feet

The fence surrounding the Terracotta Building occupies much of Vernon Boulevard's sidewalk, narrowing it to five feet with a 3-foot amenity strip. At the end of the building the fence is set back and the sidewalk is 15 feet wide, but only five feet is evenly paved; the rest is gravel or covered with uneven pavers. If a shared-use sidewalk were to be implemented significant improvements would have to be made to the site.

Silvercup West will also be taking over this site, so the need for and chance of a shared-use sidewalk are as in the previous segment.



Sidewalk narrows along Terracotta Building



Five-foot paved sidewalk with three-foot gravel strip along Terracotta Building

7. DOT, under Queensboro Bridge – 80 feet, Queensbridge Park – 1100 feet

The area underneath the Queensboro Bridge is fenced, but there is a 17-foot sidewalk, five feet of which are concrete, the remainder dense gravel. The shared-use sidewalk would require that the full width of the existing sidewalk be paved.



Existing sidewalk underneath Queensboro Bridge

8. Keyspan Ravenswood – 2200 feet

The sidewalk along the Keyspan power generating plant is the longest segment. The sidewalk is continuous and the concrete pavement is in good condition. There are four access points to the site but no major traffic during daytime. The sidewalk width varies between 15 and 28 feet.

The first section of 280 feet, between Queensbridge Park and 40th Avenue, contains a planted amenity strip of less than five feet, with a remaining sidewalk width of 10 feet, of which only five are currently paved. A shared-use sidewalk would require the entire 10 feet to be paved and striped. Just south of 40th Avenue is a bus shelter in marginal condition, with no side glass walls. This shelter should be removed for the shared-use sidewalk.

Between 40th and 38th avenues the sidewalk widens to almost 28 feet for almost 650 feet. A tree buffer of five feet runs along the curb. A bus shelter is located near 40th Avenue.

At 38th Avenue the sidewalk narrows back to 15 feet, five of which are an amenity strip with trees. This section is 1000 feet long and extends to the Roosevelt Island Bridge. Just south of the bridge a bus shelter occupies a section of the sidewalk. The shelter would either have to be removed or bicyclists using the shared-use sidewalk would have to dismount.

Currently the intersection of the Roosevelt Island Bridge with Vernon Boulevard is signalized. Pedestrian crosswalks are marked at the north and east sides of the intersection. People using the west side of the sidewalk on Vernon Boulevard are trapped without a signalized crossing at the end of the sidewalk. Recommended are the installation of a pedestrian signal and a shared-use crosswalk to connect the proposed shared-use sidewalk north and south of the bridge, and the installation of a pedestrian signal and a marked crosswalk on the south side of the intersection. See photos on next page.



Paved portion of the sidewalk narrows along Keyspan, just north of Queensbridge Park. Total sidewalk space is 15 ft.



North of 40th Avenue, sidewalk widens to 28 feet for approximately 650 feet



15-foot sidewalk stretches for 1000 feet between 38th Avenue and Roosevelt Island Bridge



Sidewalk along Keyspan, between Queensbridge Park and 40th Avenue



28-foot wide sidewalk along Keyspan, just south of 38th Avenue



15-foot sidewalk just south of Roosevelt Island Bridge. Bus shelter causing bottleneck.



Bus shelter at 40th Avenue causes bottleneck



Sidewalk width returns to 15 feet at 38th Avenue

9. Crossing at Roosevelt Island Bridge – 110 feet

The intersection of Vernon Boulevard, the Roosevelt Island Bridge, and 36th Avenue is signalized and crosswalks are marked on the north and east sides of the intersection. The installation of a combined bicycle/pedestrian crosswalk is recommended to connect the sidewalk along the west side of Vernon Boulevard. For design specifics see this same recommendation for the crossing at the Grand Central Parkway in Segment 5. A pedestrian signal and crosswalk should be installed on the south side of the intersection to provide a safe connection between the east and west sidewalks of Vernon Boulevard.



Keyspan sidewalk ends at Roosevelt Island Bridge, with a connection north of the intersection. Install shared-use crosswalk.



Intersection of Roosevelt Island Bridge/36th Avenue and Vernon Boulevard. Install signalized crosswalk on south side of intersection.

10. Keyspan Ravenswood Substation – 550 feet

North of the Roosevelt Island Bridge the 15-foot sidewalk continues along the entire substation. There is one driveway, but the main entrance to the site is from the south side of the property. The sidewalk contains a five-foot amenity strip with trees and is in good condition. The shared-use sidewalk could be striped on the remaining ten feet.



15-foot sidewalk along Keyspan substation, ending at 35th Avenue

11/12. Vacant Property/Industrial and Manufacturing Uses – 600 feet

Along a 50-foot section of the currently vacant property the paved sidewalk narrows to around 10 feet. The sidewalk is uneven and partly overgrown. A bus shelter on the sidewalk would cause a bottleneck for Greenway users, who would have to dismount; preferably the bus shelter would be removed.

The remainder of the sidewalk to Rainey Park is almost 15 feet wide, with some trees planted along the curb. The pavement is rather uneven, with different materials, and there are several building entrances. Parts of the structures seem abandoned. These sites are currently pending a rezoning. The shared-use sidewalk should be included into any future development designs.

Finally, the shared-use sidewalk would connect to the designated greenway paths in Rainey Park, leading greenway users to the waterfront.



15-foot sidewalk along manufacturing uses just south of Rainey Park. Uneven pavement conditions.

Acknowledgements: Technical Advisory Committee

Astoria Homeowners and Tenants Association	Con Edison	Goodwill of Greater NY/NJ
Rudy Sarchese	Carol Conslato	Gail Harris
Astoria Houses Tenants Association	Costco, Public Relations	Hunters Point Community Coalition
Carolyn MacArthur	Mike Ferraro	Thomas Paino
Astoria Residents Reclaiming Our World	Friends of Astoria Park	KeySpan
Sandra Robishaw	Lucille DeBiase	April Dubison
Community Board 1, Queens	Friends of Gantry Neighborhood Parks	Landmarks Preservation Commission
	Cindy Van Houten	Brian Hogg
Community Board 2, Queens	Friends of Queensbridge Park	LIC Business Development Corporation
Dolores Rizzotto, District Manager	Elizabeth McQueen	Dan Miner
Community Board 3, Queens	Friends of Ralph DeMarco Park	LIC Community Boathouse
Giovanna Reid, District Manager	Rahul Prakash	Erik Baard
Community Board 7, Queens	Friends of the Travers Park	LIC Roots
Marilyn Bitterman, District Manager	Len Maniace	Noah Kaufman
Community Environmental Center	Greater Astoria Historical Society	Metropolitan Waterfront Alliance
Richard Cherry	Bob Singleton	Loren Talbot

Neighborhood Open Space Coalition

Dave Lutz

NYS Assembly

Queensbridge Tenants Association

Honorable Jeffrion Aubry, District 35

Nina Adams

Noguchi Museum

Honorable Michael Gianaris, District 36

Heather Brady

Honorable Catherine T. Nolan, District 37

Queens Borough President's Office

Honorable Helen Marshall

NYC City Council

NYS Senate

Irving Poy, Planner

Honorable Eric N. Gioia, District 26

Honorable George Onorato

Honorable Hiram Monserrate, District 21

Queens Historical Society

Honorable Peter E. Vallone, Jr., District 22

NYS Department of Environmental Conservation

Stanley Cogan

Jim Gilmore

NYC Department of Environmental Protection

Queens West Development Corporation

Bob Alpern

NYS Department of Transportation

Alex Federbush

Roger Weld

NYC Department of Transportation

Ravenswood Tenants Association

Constance Moran, Former Queens Commissioner

NYS Office of Parks, Recreation and Historic Preservation

Carol Wilkins

Dan Orlando, Alternative Modes

William Ledwitz

Holly Haff, Alternative Modes

Silvercup Studios

Andrew Vesselinovitch, Alternative Modes

Mark Gold

Plaxall

Mathew Quigley

NYC Housing Authority

Socrates Sculpture Park

Michael Cornelius

Alyson Baker

Howard Marder

P.S.1 Contemporary Art

Alanna Heiss

The Sunnyside Foundation

Dorothy Morehead

Transportation Alternatives

Noah Budnick

David Snetman

United Community Civic Association

Rosemarie Poveromo

US Congress

Honorable Carolyn Maloney

Vernon Realty Holdings, LLC

Marshall Weisman

Walk Long Island City

Jack Eichenbaum

Woodside on the Move

Tomas Ryan

Credits

NYC Department of City Planning

Amanda M. Burden, AICP, Director

Richard Barth, Executive Director

Sandy Hornick, Deputy Executive Director of Strategic Planning

Elizabeth Mackintosh, Director of Planning Coordination

Ellen Ryan, Intergovernmental Affairs

NYC Department of City Planning, Transportation Division

Jack Schmidt, Director

Kevin Olinger, Deputy Director

Scott Wise, Team Leader, Pedestrian, Bicycle, and Greenway Program

Angela Kelly, Project Manager

Kate Dyson, Former Project Manager

Britta van Aartsen, Former Project Manager

Cornelius Armentrout, Planner

Richard Berger, Former Intern

Indradeep Chakrabarty, Urban Designer

Monica Peña Sastre, Planner

Amy Pfeiffer, Former Planner

NYC Department of City Planning,

Queens Office

John Young, Director

Joy Chen, Planner

Kate Dunham, Former Urban Designer

Neil Gagliardi, Associate Urban Designer

Fred Lee, Associate Urban Designer

Penny Lee, Planner

Jed Weiss, Former Planner

NYC Department of City Planning, Waterfront and Open Space

Bill Woods, Director

Sheila Metcalf

NYC Department of Parks & Recreation

Adrian Benepe, Commissioner

NYC Department of Parks & Recreation Planning Division

Joshua R. Laird, Chief

Jennifer Hoppa, Deputy Director

Jennifer Kao, Project Manager

Becky Alter, former Project Manager

NYC Department of Parks & Recreation

Capital Division

Charles McKinney, Chief of Design

Angelyn Chandler, Queens Team Leader for Capital Projects

Shirley Kindler-Penzi, Deputy Team Leader for Queens

Helen Ogrinz, Design Supervisor of Queens

Ellen Macnow, Interagency Planning Coordinator

NYC Department of Parks & Recreation

Queens Borough Office

Dorothy Lewandowski, Borough Commissioner

Richard Murphy, former Borough Commissioner

Joanne Amagrande, Chief of Staff

Jacqueline Langsam, Chief of Operations

David Bentham, Park Manager

Eric Goetz, Park Manager

NYC Department of Parks & Recreation

Partnerships for Parks

Emily Maxwell, Astoria/LIC Catalyst Coordinator

Tamara Greenfield

Helen Ho