20TH ST, 21ST ST
PROTECTED BIKE LANES & BIKE BLVD

Presented to Brooklyn Community Board 7 - August 3, 2021
PRESENTATION OVERVIEW

1. Background
2. Existing Conditions & Route Selection
3. Proposal – 20th St One-Way Conversion, Protected Bike Lane, Shared Use Path & Connections
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PROJECT LOCATION & GOALS

- Upgrade substandard 20th St geometry, and lessens the effect of truck travel on the immediate neighborhood
- Create new bike network connection, close gap between greenway and parks
- Extend greenway experience to increase cyclist safety and comfort
- Connect neighborhoods to parks, recreation, waterfront greenway
Background
PLANNING CONTEXT

Project Motivation

- Community request for corridor study—updated analysis & street design toolkit
- Changing nature of deliveries & e-commerce
- Pedestrian & cycling activity along corridor, including Citi Bike Expansion
- Expanding bicycle network and access to waterfront greenway & parks
PLANNING CONTEXT

Delivering New York: A Smart Truck Management Plan for NYC
- Safety: implement new design standards to enhance truck safety at intersections and along corridors
- Sustainability: improve compliance using signage, targeted enforcement, and technology
- Efficiency: update the NYC Truck Route Network and publish a new map

Green Wave: A Plan for Cycling in NYC
- Citywide protected bike lane network: Build 30 miles of protected bicycle lanes annually
- Integrate and install new street design treatments, including bike boulevards to prioritize cyclists and limit vehicles

Pandemic Response – Open Streets
- Open Streets Initiative made permanent (2020)
- DOT to convert an Open Street to a Bike Blvd in every borough (2021)

Brooklyn Waterfront Greenway
- Construction beginning on 3rd Ave & Hamilton Ave segment (2021)

Citi Bike Expansion
- Phase 3 Expansion plan includes Community District 7 (2021)
PLANNING FOCUS AREAS

**Truck route**
- Address issues of narrow two-way truck route with one-way conversion

**Bike connection**
- Create new bike network connections
- Link new waterfront greenway to Prospect Park & bike network
- Accommodate new Citibike riders

**Cut through traffic**
- Minimize traffic on neighborhood streets after trucks rerouted
- Increase pedestrian safety through Open Streets / Bike Blvd treatment
Existing Conditions & Route Selection
EXISTING CONDITIONS & ISSUES – 20th STREET (3rd AVE - 7th AVE)

Commercial, residential, & industrial corridor, actively used by vehicles, pedestrians and cyclists

- Narrow two-way truck route – potential vehicle damage, opposing vehicles can’t pass easily
- Cars mount curb to park, and parking is restricted in especially narrow sections
- No dedicated space for cyclists
EXISTING CONDITIONS & ISSUES – 20th STREET (7th AVE-10th AVE)

Commercial, residential, & industrial corridor, actively used by vehicles, pedestrians and cyclists

- Narrow two-way truck route – potential vehicle damage, opposing vehicles can’t pass easily
- No dedicated space for cyclists - lack of space for vehicles to pass a cyclist or jogger
- Narrow sidewalk in poor condition along cemetery edge – joggers often use roadway
20th STREET TRAVEL PATTERNS

Role in the Network

• 20th St is a two-way truck route connecting McDonald Av with 3rd Av, 4th Av, and the southwest Brooklyn waterfront

• Directly paralleled along its entire length by the Prospect Expressway

• 60 – 75% of 20th St traffic is westbound, attributable to nearby eastbound on-ramps to the Prospect Expressway

• Traffic volume measured at 7th Avenue (AM peak hour):
  • 314 WB vehicles (36 trucks)
  • 121 EB vehicles (26 trucks)
Background

20th STREET TRAVEL PATTERNS

Eastbound Origins & Destinations

• Though the majority of traffic on 20th St is westbound, routing apps (Google Maps, Waze) route vehicles to 20th St from the avenues to get to McDonald Av

• 3rd Av, 4th Av, 5th Av, 6th Av, 7th Av, and Prospect Park West are all eastbound feeder routes for 20th St, with many of those trips originating in Red Hook, Gowanus, Park Slope, and Boerum Hill

• Though trucks have fewer options, other vehicles can access the Prospect Expressway or Prospect Park Southwest from connecting avenues.
BIKE ROUTE SELECTION

Existing Bike Network

- Connections to Prospect Park
- Protected lanes on 4th Ave, 9th St, Prospect Park West
- Lack of east-west connection in South Slope
- Street network challenging to navigate due to Prospect Expressway, Greenwood Cemetery, 3rd Ave & Gowanus Expressway
Proposal: 20th St One-Way Conversion, Protected Bike Lane, Shared Use Path, & Connections
Proposal

1 20th St: 3rd Ave to 7th Ave

Parking-Protected One-Way Bike Lane

- Standard travel lane width provides improved clearance for trucks
- Cyclists protected by buffer and parked vehicles
- Add back parking on both sides between 3rd Av & 4th Av

Existing

Proposed

Example: W 29th St, MN
20th St: 7th Ave to 10th Ave / McDonald Ave

Protected two-way Shared Use Path

- Improve vehicle clearance for trucks – wider travel lane
- Separate cyclists from pedestrians and vehicles
- Pedestrians, joggers, cyclists separated by buffer and bollards
- Repurpose one parking lane

Existing

Proposed

10’-13’ North Sidewalk
8’ Parking Lane
11’ Travel Lane
11’ Travel Lane
8’ Parking Lane

Bollard-Protected Path Example: Crescent St, QN
Shared Use Path Markings: Paerdegat Av N, BK
Proposal

3. 10th Ave: 19th St to 20th St

Protected Two-Way Bike Lane
- Separate cyclists from pedestrians and vehicles
- Cyclists protected by buffer and vertical bollards
- Repurpose one parking lane on west curb
- Relocate SB B67/69 bus stop to McDonald Ave

Pedestrian Improvements:
10th Ave at 20th St / McDonald Ave
- Install new crosswalk on south side of intersection
- Expand curb extension on SE corner
- Construct curb extension & bus bulb on SW corner to accommodate relocated bus stop & crosswalk

Conceptual Diagram for illustrative purposes only
**Proposal**

**4 19th St: 10th Ave to 11th Ave**

**Conventional Bicycle Lane**
- Organize roadway, calm traffic
- Provide dedicated space for cyclists to connect to 11th Ave & continue north to Prospect Park
- Maintain existing travel and parking lanes

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**Existing**

- South Sidewalk
- North Sidewalk
- 30’ Combined Travel / Parking Lane

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**Proposed**

- South Sidewalk
  - 8’ Parking Lane
  - 17’ Travel & Parking Lane
- North Sidewalk

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**Example: 172nd St, QN**
Proposal: 21st St Bike Blvd
OPEN STREETS – 21st STREET

Streets Opened for Social Distancing - 2020

- **Pedestrians** and **cyclists** to use the roadbed of the street while maintaining social distancing when Open Streets in effect. Available daily, 8 am to 8 pm* hours may vary by location due to staffing.

- **No through traffic permitted while Open Streets are in effect.** Vehicle traffic limited to local deliveries, pick-ups/drop-offs, necessary city service vehicles, utility vehicles, and emergency vehicles only.

- **September 2020** Mayor’s office announced Open Streets initiative to be made permanent.

- **Winter 2021** DOT developing proposals to update an Open Street in each borough to a Bike Blvd.

The Open Streets initiative is a collaboration between the Mayor’s office, NYC Council, NYPD, Parks, NYC DOT, BIDs and local community organizations.
BIKE BOULEVARD

What is a Bike Blvd?

Corridor designated and designed for bicycle travel

- Enhance conventional, shared and signed bicycle routes
- Calms traffic with design interventions

Design elements include:

- Route planning: direct access to destinations
- Speed and traffic volume management: slow vehicle speeds and reduce vehicle volumes
- Signs, wayfinding, pavement markings easy to find /follow
- Street crossings: minimal cyclist delay at minor street crossings. Safe and convenient crossings at major streets

2021 DOT developing proposals to update an Open Street in each borough to a Bike Blvd
Proposal

5 21st St: 3rd Ave to 7th Ave

Bike Boulevard – Mid-block Markings
- Cyclists prioritized with Bike Blvd signage, markings
- Maintain existing travel and parking lanes

Mid-block markings

Existing

- 30’ Combined Travel / Parking Lane
- South Sidewalk
- North Sidewalk

Proposed

- 10’ Parking Lane
- 10’ Parking Lane
- South Sidewalk
- North Sidewalk

Example: Whitehall St., MN

21st St (7th Ave – 6th Ave)

Example: Greenwood Cemetery
Proposal

21st St: 3rd Ave to 7th Ave

Bike Boulevard – Intersection Treatments

- Cyclists prioritized with signage, markings & alignment shifts
- **Blockbuster** and curb extensions deter cut-through traffic & allow local access
- **Gateway treatment**: wide curb extensions on both sides calm traffic entering block
- Bicycle parking corrals to be installed in select curb extensions

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**Blockbuster & Curb Extension**

21st St at 3rd Ave & 5th Ave
- Alignment shift & painted curb extensions at entry
- Slows turning vehicles, accommodates signage
- Potential for bike parking, planters

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**Gateway Treatment**

21st St at 4th Ave & 7th Ave
- Painted curb extensions on both sides
- Potential for bike parking, planters

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Example: 9th Ave, BK

Example: 8th St, MN
6th Ave: 23rd St to 21st St

Bike Boulevard – Intersection Treatments  Mini Roundabouts & Diversers

- Mini roundabout design provides traffic calming along 6th Ave to and from the 21st St Bike Blvd
- Diverter at 21st St and 6th Ave allows bikes to continue straight, vehicular traffic to turn right
- New pedestrian crossings at un-signalized intersections

6th Ave – Conceptual Design

New Pedestrian Crossings

Conceptual Diagram for illustrative purposes only
Making It Work
### EASTBOUND ROUTING

**Alternative Routes for General Traffic**

- Many alternative eastbound routes with equivalent travel times. These alternate routes keep area traffic off 20th St.

- Trips originating in Red Hook, Gowanus and western Park Slope can access points east using the Prospect Expressway.

- Trips coming from Prospect Park West can continue south along Prospect Park Southwest.

- Trips north of Flatbush Av can use Flatbush Av, and trips south of Greenwood Cemetery can use 37th St.
EASTBOUND ROUTING

Alternative Routes for Trucks

- Trucks have fewer alternative routes because they must use the existing truck route network.

- Trucks originating in Red Hook can get on the Gowanus Expy at Columbia St, and continue onto the Prospect Expressway.

- Trucks from Sunset Park can go to 39th St before heading east or north to Flatbush Av.

- Trucks delivering in Park Slope can head down 7th Av to access the Prospect Expressway on-ramp.

- Install wayfinding signs to assist drivers to best eastbound truck route.

Example truck wayfinding sign
PARKING CHANGES

Curb Management

• Parking-protected blocks maintain most parking on both sides, and adds back parking on both sides between 3rd Av & 4th Av

• No Standing Anytime zones allow for vehicle clearance at corners and turns

• Potential to update regulations further to ensure residential & business loading needs are accommodated
LOADING AND CURB ACCESS

Driveways

- Driveway access is maintained and indicated with markings

Curb Access

- Parking-protected design maintains loading and access along both sides of the street

Curb Management Tools

- Potential for neighborhood loading zones, parking regulation changes for pickup/drop-off
OVERVIEW OF PEDESTRIAN IMPROVEMENTS

Curb Extensions & Bike Corrals
Pedestrian Island & Offset Xing
Crosswalk & Mini Roundabout

Making It Work

Pedestrian Island & Offset Crossing
4th Ave, BK
Curb Extension
8th St, MN
Mini Roundabout
Greeley Ave, SI
Images for illustrative purposes, designs may vary

Speed Humps

Curb Extensions & Bike Corrals
Pedestrian Island & Offset Xing
Crosswalk & Mini Roundabout

Greenwood Cemetery
Safety – Complete Street Redesign

Street designs that include protected bike lanes increase safety for all users

- **15%** drop in all crashes with injuries
- **21%** drop in pedestrian injuries

*on streets where protected bike lanes were installed 2007-2017*

Injuries to cyclists increase only 3%, despite a **61% bike volume increase**

### Protected Bike Lanes
**Before and After Crash Data, 2007 - 2017**

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<tr>
<td>Total Injuries</td>
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<td>MV Occupant Injuries</td>
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<td>Pedestrian Injuries</td>
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<td>Cyclist Injuries</td>
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<td>231</td>
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</table>

- **15%** drop
- **21%** drop

Data from 25 separate protected bicycle lane projects installed from 2007-2014 with 3 years of after data. Includes portions of 1 Ave, 2 Ave, 8 Ave, 9 Ave, Broadway, Columbus Ave, Hudson St, Lafayette St / 4 Ave, Sands St, Allen/Pike St, Kent Ave, Prospect Park West, Flushing Ave, Bruckner Blvd & Longfellow Ave, Imlay St / Conover St, Paerdegat Ave. Only sections of projects that included protected bike lanes were analyzed.

Source: NYPD AIS/TAMS Crash Database
Summary
Design

20th Street

- One-way westbound conversion on 20th St btwn 3rd Ave to 10th Ave
- Allows upgrade to standard lane width for trucks, and addresses property damage and sideswipe issues without creating negative traffic effects for the community
- Protected bike path and shared-use path on 20th St
- Improved pedestrian safety with LPIs and extend neck downs to shorten crosswalks where possible

21st Street

- Convert corridor from a OpenStreet treatment to a Bike Boulevard
- Connecting bicycle facilities on 4th Ave, 5th Ave, 7th Ave, and future Gowanus Connector greenway on 3rd Ave
- Add pedestrian improvements & bike parking along corridor
Existing Westbound Prevalence

- 58-76% of all peak hour traffic was heading westbound, and 48-76% of trucks, showing a clear prevailing westbound pattern
- Vehicles are more likely to travel the entire corridor going WB; EB trips typically begin when a vehicle turns from a numbered avenue
- Predominant westbound pattern attributable to nearby eastbound on-ramps to the Prospect Expressway to accommodate local deliveries:
  - 17th St & 4th Av
  - 19th St & 7th Av
OVERVIEW OF STREET DESIGN

Parking-Protected Bike Lane

Bike Boulevard

Bollard-Protected Path & Shared Use Path Markings

Making It Work

APPENDIX