Amsterdam Avenue
Proposed Northbound Bike Route
• Background
• Design Discussion
• Making it Work
• Alternatives
• Summary
• Next Steps
Background

Network History

2010
• Columbus Avenue Parking Protected Bicycle Lane (96th St to 77th St)

2013
• Columbus Avenue Parking Protected Bicycle Lane (110th St to 96th St and 77th St to 69th St)

2015
• Lincoln Center Bowtie / Columbus Avenue Parking Protected Bicycle Lane (69th St to 59th St)

Northbound Route
• No corresponding northbound protected route serves the community
• CB 7 and electeds asked DOT to study Amsterdam Avenue
• DOT has looked at several NB possibilities
• Logical northbound pairing for Columbus Avenue

• Plaza at the 72nd Street subway station forces Broadway traffic to Amsterdam

• High traffic volumes, bus route, local truck route, active curbside loading
• **North of 72nd Street**
  - Amsterdam carries traffic from 10<sup>th</sup> Ave and Broadway
  - Connected to network via CPW and 77<sup>th</sup>/78<sup>th</sup>

• **South of 72<sup>nd</sup> Street**
  - Network connections
  - Bowtie considerations
In October 2015, 29% of Citi Bike trips that started in CB 7 also ended in CB 7.

In October 2015, 45% of Citi Bike trips that started in Midtown ended in CB7 (CB 4, 5, or 6).

Citi Bike expanded to W 86th Street in the fall of 2015.

Citi Bike will expand to 130th St by 2018.

Source: Citi Bike trip data between September 1st and September 30th, 2015.
## Background

### Bike Volumes

<table>
<thead>
<tr>
<th>Amsterdam Ave</th>
<th>12-hour Bike Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>W 85th to W 86th St</td>
<td></td>
</tr>
<tr>
<td>October 2007</td>
<td>217</td>
</tr>
<tr>
<td>October 2011</td>
<td>515</td>
</tr>
<tr>
<td>October 2015</td>
<td>609</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Columbus Ave</th>
<th>12-hour Bike Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>W 87th to W 86th St</td>
<td></td>
</tr>
<tr>
<td>October 2007</td>
<td>486</td>
</tr>
<tr>
<td>October 2011</td>
<td>594</td>
</tr>
<tr>
<td>October 2015</td>
<td>724</td>
</tr>
</tbody>
</table>

- A three fold increase in cycling on Amsterdam since 2007 and almost double on Columbus.

Source: ATI Data, Bicycles btw. W 85th St and W 86th St on Amsterdam Ave and btw. W 87th St and W 86th St on Columbus Ave in October 2007, 2011, and 2015. 7am-7pm.
Amsterdam Ave has a KSI (killed or severely injured) of 8.9 per mile for pedestrians (KSI of 19.7 for all).

Amsterdam Avenue
W 72nd St to W 110th St

Injury Summary 2009-2013 (5 years)

<table>
<thead>
<tr>
<th></th>
<th>Injuries</th>
<th>Severe Injuries</th>
<th>Fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrian</td>
<td>157</td>
<td>16</td>
<td>1</td>
</tr>
<tr>
<td>Cyclist</td>
<td>62</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Motorist</td>
<td>294</td>
<td>17</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>513</td>
<td>36</td>
<td>2</td>
</tr>
</tbody>
</table>

Indicates the number of injuries
Indicates that a fatality occurred at this location

Source: NYPD AIS/TAMS Crash Database
**Design**

**Existing Issues**

- 59% of vehicles are speeding at off-peak times
- Long crossing distances
- High peak vehicle volumes
- Current design encourages bad driver behavior
- Not designed to a neighborhood scale

Source: Radar speed study taken on October 6, 2015 btw. W 81th St and W 82th St on Amsterdam Avenue
Design Proposal

Existing

Proposed

Curbside parking protected lane

Pedestrian safety islands

Lane reduction with turn lanes

Updated curb regulations

10"
- Bicycle lane protected from traffic
- Off-peak traffic calming
- New trees
- Reduced crossing distances
- Neighborhood scale design

Columbus Avenue at W 107th St
In general protected bike lanes in Manhattan improve safety for all users:

- Crashes with injuries have been reduced by 17%
- Pedestrian injuries are down by 22%
- Cyclist injuries show a minor improvement even as bicycle volumes have dramatically increased
- Total injuries have dropped by 20%

Protected bicycle lane projects with 3 years of after data include the following: 9th Ave (16th-31st), 8th Ave (Bank-23rd, 23rd-34th), Broadway (59th-47th, 33rd-26th, 23rd-18th), 1st Avenue (Houston to 34th), 2nd Ave (Houston-34th), Columbus Ave (96th-77th) Note: Only sections of projects that included protected bicycle lanes were analyzed

Source: NYPD AIS/TAMS Crash Database
The volume-to-capacity ratio is a measure of how “full” a roadway feels and is calculated as a ratio between the measured traffic volume and calculated capacity of the roadway. The result is expressed as a number between 0 and 1. A value of “1” would indicate that the roadway is “full.”

Delay is a measure of the average time a vehicle will spend processing through an intersection.
Amsterdam Avenue Daily Vehicle Volumes
Between W 95th St and W 96th St

Source: ATI Data, Vehicles btw. W 95 St and W 96 St, May 2014
Amsterdam Avenue Daily Vehicle Volumes
Between W 78th St and W 79th St

Source: ATI Data, Vehicles btw. W 78 St and W 79 St, October 2014
Making it Work

Taxi Usage

- From 4pm to 7pm on weekdays there are approximately 16,065 yellow cab trips that start or end in CB 7
- 50% of trips (8,090) are 1.5 miles or less
- 44% of trips (7,000) are wholly within CB 7 (both start and end)
- 32% of afternoon traffic on Amsterdam Ave is taxis (approximately 400 per hour)
- Large potential for a protected lane to shift trips from taxi to Citi Bike

Note: Study period occurred from 4pm to 7pm on weekdays in April 2015.
Making it Work
Left Turns

Mixing zones at all non-two way left turns

Improves visibility of cyclists
Provides space to negotiate conflict
Removes left turns from through lanes
Creates left turn vehicle storage
Making it Work

Left Turns

Left-turn bays at 79th, 86th, 96th

Turning vehicles queue for turn phase

Bike lane continues the length of the block

Split phase allows through traffic to move while holding left turns, up to 23% more green time given to through

Pedestrians and cyclists have a leading phase to get a head start
Install a paid commercial parking regulation along the east curb of Amsterdam Ave from W. 72\textsuperscript{nd} to W. 96\textsuperscript{th} between 7am and 7pm on weekdays, plus at select locations on west curb

- Maximizes curb space available for trucks loading or unloading on busy commercial corridor
- Reduces the likelihood of trucks double-parking during peak travel times
- Clear through lanes process traffic more efficiently
Making it Work

Overall

Existing

- 3 through lanes
- process efficiently

Proposed

- Traffic is organized into through, turns, and proper loading zones
- Efficient signal progression
### Making it Work

**Expected Outcome**

<table>
<thead>
<tr>
<th>Cross Street</th>
<th>Amsterdam 6-7 PM Peak Volumes (veh/hr)</th>
<th>Delay (s)</th>
<th>Volume-to-Capacity Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>W 96&lt;sup&gt;th&lt;/sup&gt;</td>
<td>1,687</td>
<td>12.8</td>
<td>0.91</td>
</tr>
<tr>
<td>W 86&lt;sup&gt;th&lt;/sup&gt;</td>
<td>1,704</td>
<td>6.5</td>
<td>0.81</td>
</tr>
<tr>
<td>W 82&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>1,545</td>
<td>3.0</td>
<td>0.66</td>
</tr>
<tr>
<td>W 79&lt;sup&gt;th&lt;/sup&gt;</td>
<td>1,330</td>
<td>40.9</td>
<td>0.85</td>
</tr>
<tr>
<td>W 77&lt;sup&gt;th&lt;/sup&gt;</td>
<td>1,377</td>
<td>4.8</td>
<td>0.62</td>
</tr>
</tbody>
</table>

### Proposed

<table>
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<tr>
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<td>1,670</td>
<td>5.0</td>
<td>0.78</td>
</tr>
<tr>
<td>W 86&lt;sup&gt;th&lt;/sup&gt;</td>
<td>1,687</td>
<td>12.7</td>
<td>0.91</td>
</tr>
<tr>
<td>W 82&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>1,530</td>
<td>5.9</td>
<td>0.83</td>
</tr>
<tr>
<td>* W 79&lt;sup&gt;th&lt;/sup&gt;</td>
<td>1,317</td>
<td>35.5</td>
<td>0.72</td>
</tr>
<tr>
<td>W 77&lt;sup&gt;th&lt;/sup&gt;</td>
<td>1,363</td>
<td>4.5</td>
<td>0.69</td>
</tr>
</tbody>
</table>

* Benefit from conversion from LPI to Split LPI
Making it Work
Parking Consideration

25% of the parking space on the corridor will be repurposed for left turn treatments and pedestrian safety islands.

East curb will be converted to daytime (7am-7pm) commercial loading zones between W 72\textsuperscript{nd} St and W 96\textsuperscript{th} St, plus targeted loading on the west curb.

Columbus Avenue at W 106\textsuperscript{th} St
Alternates Studied

DOT has studied potential alternatives on nearby Broadway and Columbus Avenue. Amsterdam Avenue is the preferred northbound route, however it comes with parking loss and some vehicular capacity reduction.

Note: Any alternative bike route will be paired with pedestrian improvements on Amsterdam to create a safer corridor without bike facilities.
Buffered bicycle lane against the median in the northbound direction

Existing

Proposed

Minor traffic impact

Design challenges between 95th and 97th

Requires new left turn design
Columbus Ave Route

Convert southbound lane to a two way path
No changes to vehicular capacity
Learning curve for users, heavy pedestrian access
Requires infrastructure upgrades
Summary

Phase I – Amsterdam Avenue Preferred Route

- Protected bicycle lane provides northbound route for cyclists
- Reduced pedestrian crossing distances with islands
- Design for neighborhood street with safety benefits expected for all users
- Lane reduction with left turn treatments
- High peak hour traffic volumes require some adjustments
- Left turn treatments and paid commercial spaces reduce parkable area
- Traffic flow will be maintained
- Connections to new route via CPW at 77th/78th and 90th/91st
**Phase 1 – 72nd – 110th**
- Incorporate feedback into plan and present to board for support
- Implement in Spring 2016, nearly two miles of protected lanes and new infrastructure

**Phase 2 – South of 72nd**
- Gather feedback & develop proposals
- Consider network connections
- Coordinate with 2016 capital project at 71st/Amsterdam/Broadway
- Complete improvements at Columbus/65th Street/Broadway
- Any route will require careful planning through complex intersection of 71st/Amsterdam/Broadway