WALK THIS WAY

Exclusive Pedestrian Signal Phase Treatments Study

September 2017

Prepared in response to
Local Law 92 (2017)

VISION ZERO
nyc.gov/visionzero

NEW YORK CITY DOT

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EXECUTIVE SUMMARY

Exclusive Pedestrian Phases in New York City

- There are 635 locations with Exclusive Pedestrian Phases in New York City, including 86 All Pedestrian Phases (“Barnes Dances”), 386 Signalized “T-Away” intersections, and 163 Midblock signals

Literature Review

- Studies show that All Pedestrian Phases can increase safety for pedestrians crossing, however the context of the intersection should be considered due to the following potential negative impacts:
  - Increased waiting time for all roadway users; reduced crossing time for pedestrians; interrupted pedestrian walking flow and sidewalk overcrowding; increased vehicle delay, including buses and bicycles, with spillover effects on adjacent intersections

NYC DOT Study

- In 2015, NYC DOT studied 5 high pedestrian volume intersections to determine the feasibility of All Pedestrian Phases with diagonal crossings were feasible.
- The results showed increased average delay and wait times for all roadway users.

Recommendations

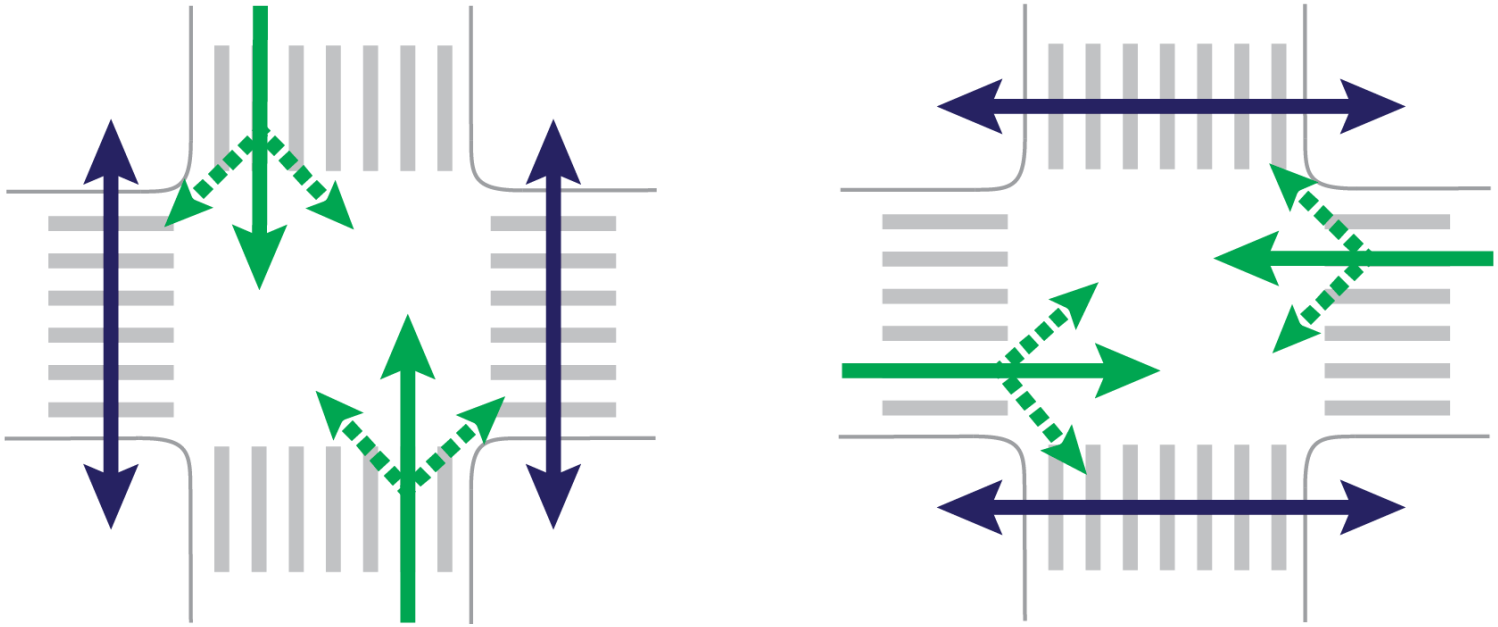
- NYC DOT will consider All Pedestrian Phases at intersections with the following criteria:
  - Atypical geometry; dominant traffic movement is turning vehicles; head-on intersections; low vehicular volumes; “T” intersections; and/or ability to provide a safe and accessible configuration for people with disabilities
- In addition to the All Pedestrian Phase, NYC DOT will continue to utilize a variety of signal timing treatments to reduce pedestrian-vehicle conflicts, including:
  - Leading Pedestrian Intervals; Split-Phase Leading Pedestrian Intervals; Split-Phases
- All locations will be evaluated on a case-by-case basis to determine the most appropriate tool, which can be used in combination with geometric and traffic network improvements.

Signal Timing Overview

1

SIGNAL TIMING IN NYC

NYC DOT typically utilizes concurrent pedestrian phases, when pedestrians walk with parallel traffic and turning traffic must yield to pedestrians.



At many intersections, concurrent phasing provides safe movements while maximizing the efficiency of intersections for all roadway users.

SIGNAL TIMING IN NYC

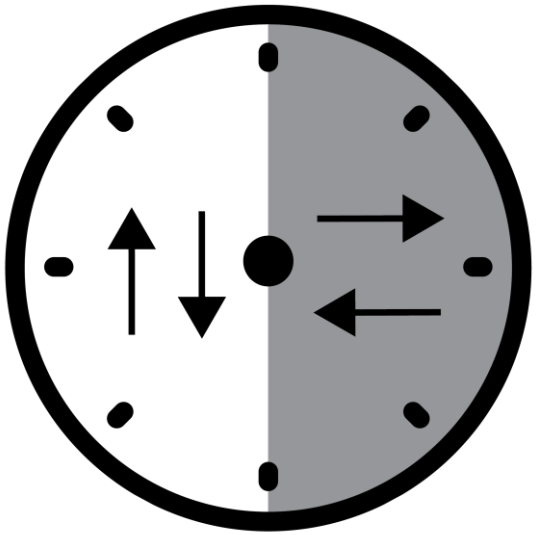
Signal time is a scarce resource in New York City, particularly in heavily trafficked areas

Traffic signals are coordinated to efficiently move vehicles, pedestrians, and cyclists. To best coordinate signals, adjacent intersections have the same signal cycle length, typically 60, 90, or 120 seconds. Each traffic movement is allotted a certain percentage of time in the cycle, known as a phase, based on the number of vehicles, pedestrians, and cyclists moving in each direction.

SIGNAL TIMING IN NYC

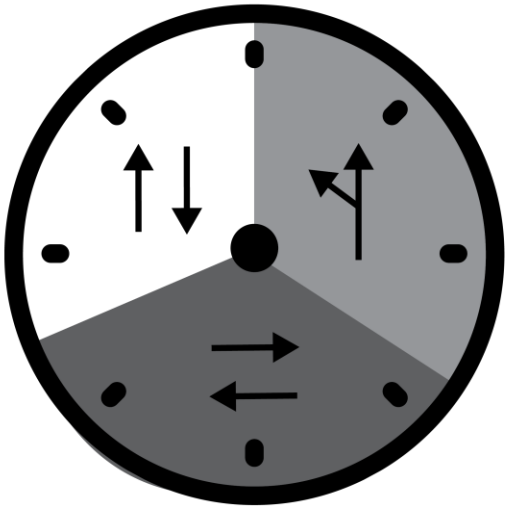
In order to increase the time allocated to a specific phase, or to create a new phase, time must be taken away from the other phases in the signal cycle, which can impact the coordination of intersections.

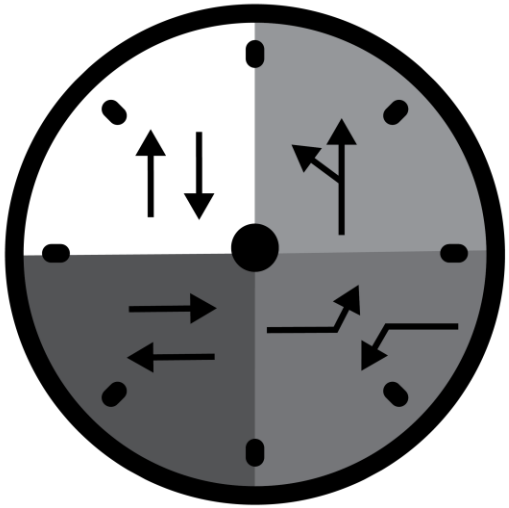
2 Phases



At typical 4-leg intersections with one phase for each direction of traffic (e.g. north-south, east-west)

3+ Phases





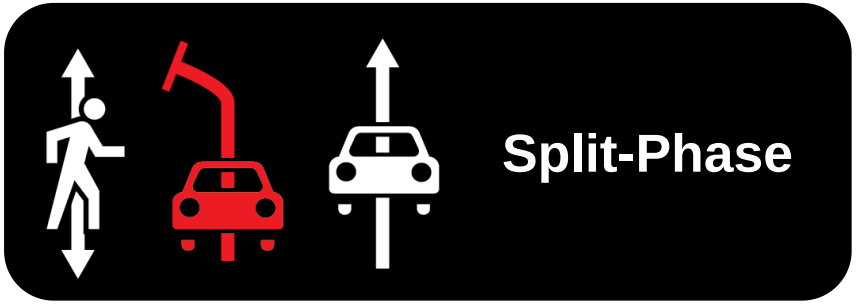
At intersections with complex geometry, “protected” turn phases (green arrows), leading pedestrian intervals, and all pedestrian phases

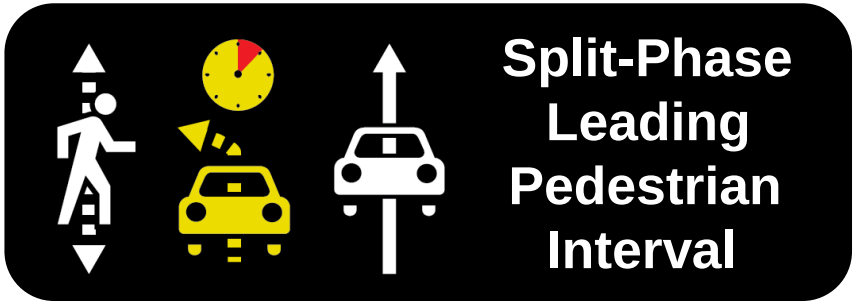
SIGNAL TIMING IN NYC

Signal timing in congested corridors must balance safety and mobility needs for pedestrians, cyclists, and vehicles, including buses

SIGNAL TIMING IN NYC

NYC DOT has a number of alternative signal timing tools that address conflicts between pedestrians and turning vehicles





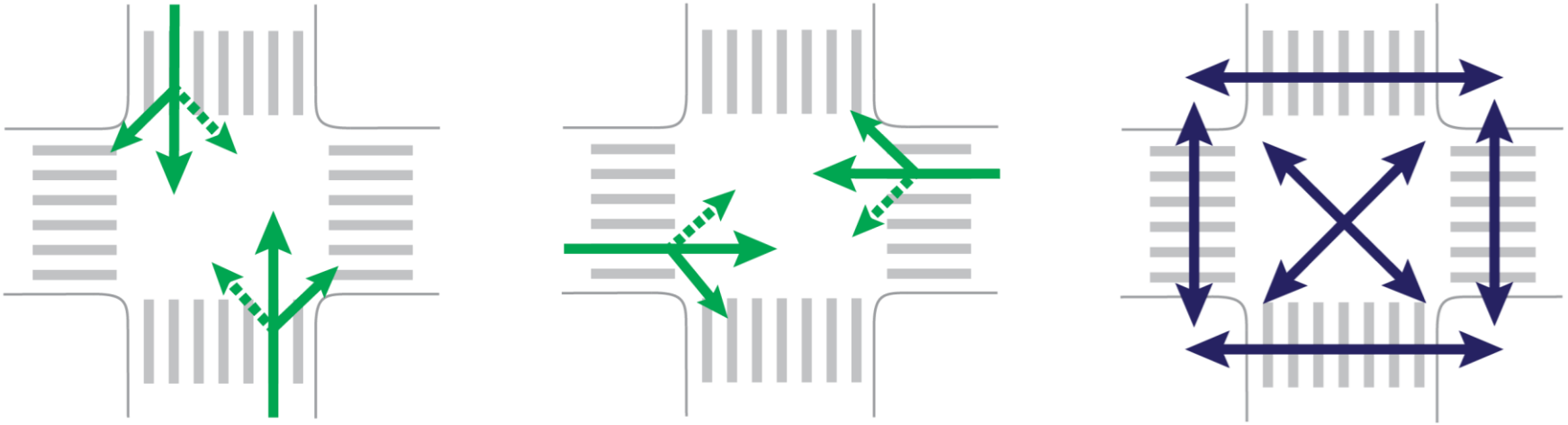
These tools are utilized based on the context of an intersection, including geometry, pedestrian, bicycle, and traffic volumes, and crash history.

A more detailed description of Leading Pedestrian Intervals, Split-Phases, and Split-Phase Leading Pedestrian Intervals can be found on pages 44-46

The Barnes Dance in New York City

2

WHAT IS A BARNES DANCE?



Vehicle Phases

Pedestrian Phase

A Barnes Dance is a signal phase devoted exclusively to pedestrians during a traffic signal cycle. No vehicular traffic moves during this phase and pedestrians may cross in any direction with enough time to cross diagonally.

HISTORY

The Barnes Dance was popularized in NYC by Traffic Commissioner Henry Barnes beginning in 1962.

Today a Barnes Dance is commonly thought of as an intersection with diagonal crosswalks and pedestrian signals. However, the original Barnes Dance locations did not provide these diagonal crossings. Barnes implemented a number of "All Red Light" phasing at intersections throughout New York City, which allowed pedestrians to "scramble" across intersections in all directions.

The New York Times

DOWNTOWN SCRAMBLE: The scene at Broadway and Wall Street, right, yesterday as all vehicular traffic halted, according to plan of Traffic Commissioner Henry A. Barnes.

WALL STREET DOES THE BARNES DANCE

All-Red Light System Tried Out at Broadway Corner

By BERNARD STENGREN

The long-standing pedestrian practice of scrambling across Broadway at Wall Street received official sanction yesterday.

Traffic light cycles were changed to provide an all-red phase at Broadway and Wall and Broadway at Rector Streets, and signs prohibiting left turns from Rector Street into Broadway were uncovered.

Traffic Commissioner Henry A. Barnes and other officials were on hand when the change-overs were made shortly before 8:30 A. M.

Mr. Barnes said some snarls had developed because the lights did not give enough time for pedestrians to cross Broadway during the peak morning, noontime and evening rush hours, but added that the cycle would soon be changed

Brooklyn Stumbles During Its First Barnes Dance

By BERNARD STENGREN

Brooklyn and the Barnes dance met on Fulton Street yesterday, and if the vehicles had cooperated, it would have been a waltz.

However, there were two minor mishaps—an automobile breakdown and a collision between a bus and a taxicab—during the ceremonies at the northeast corner of Fulton, Smith and Jay Streets, in the downtown shopping center.

Traffic Commissioner Henry A. Barnes and other city and civic officials observed conditions as traffic-light timing was changed to permit a 25.2-second pedestrian-crossing period in all directions.

For the balance of each ninety-second traffic light cycle, only vehicles may travel through the intersection.

The Barnes dance will be extended to eight other intersections along Fulton Street as soon as the retiming of traffic-light cycles can be completed.

Earlier yesterday, Mr. Barnes reiterated his advocacy of bus operations on city parkways. His position had caused Robert Moses to denounce the Traffic Commissioner for "ignorance" of the city and its parkway problems.

Mr. Barnes agreed that he did not know what "can't be done," but he said that "I did things in Baltimore that I was told could not be done and that is one reason why traffic is moving today in Baltimore, although it did not move eight years ago when I became traffic commissioner there."

He added that those who chose to leave their cars home and ride on buses "should not be second-class citizens compared to the man who drives all alone in his Cadillac or Volkswagen on the parkway and then asks the city to build him a garage downtown to park it in."

However, he returned a compliment Mr. Moses had paid him for his "courage and energy."

"I say Mr. Moses and I will clash many times," he said. "But it's just like being married. You may quarrel with your wife but you still love her. If I differ with Mr. Moses' philosophy there is nothing personal about it.

"I have said before and I say again that I have the greatest admiration for Mr. Moses, and the people of this city are very fortunate in having this man who has done so much for the city and who has done it so well."

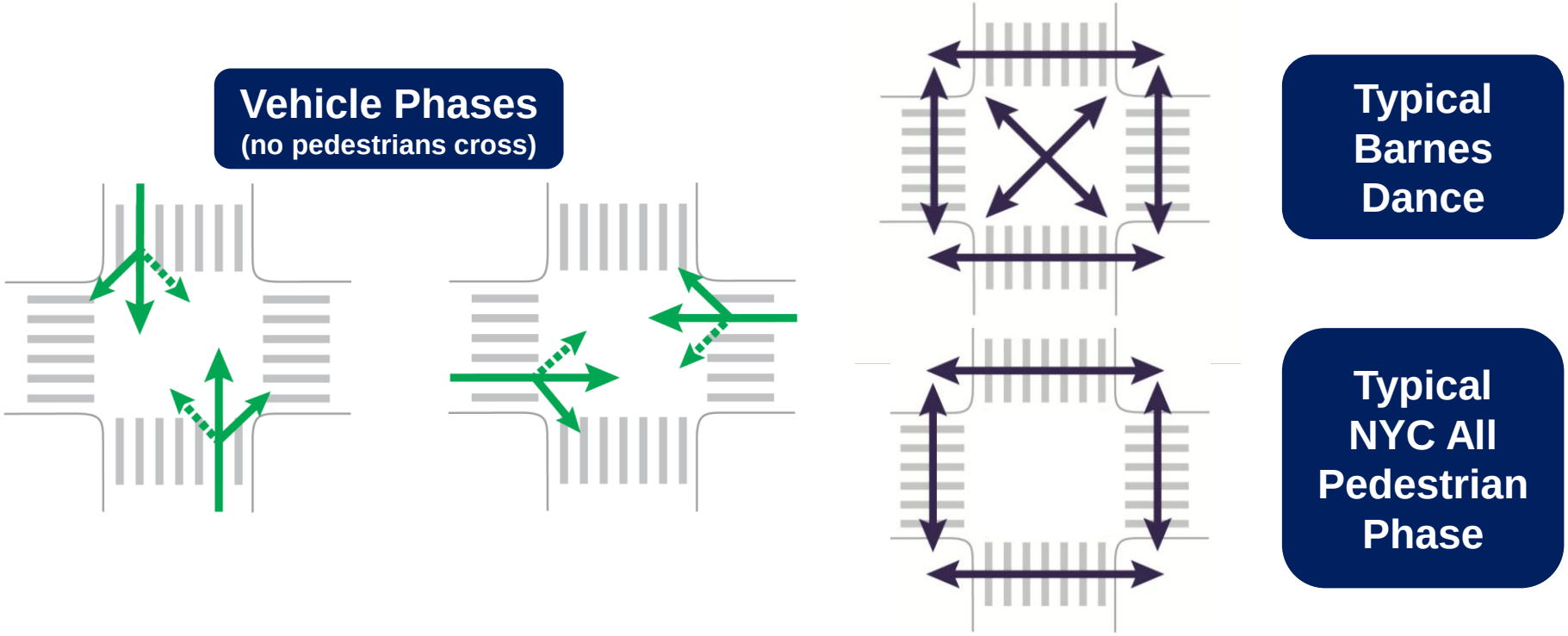
Fifth and Madison At 42d St. to Try Barnes Scramble

Images Courtesy of the New York Times (1962)

ALL PEDESTRIAN PHASES

NYC DOT utilizes the term *All Pedestrian Phase* to encompass various applications of the Barnes Dance.

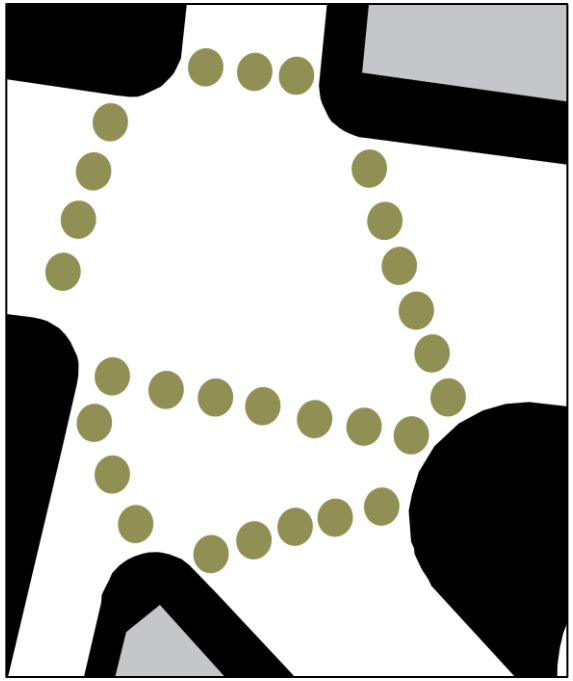
While NYC DOT does not necessarily time the signal specifically for the diagonal crossing, pedestrians may cross without any conflicts with vehicular traffic.



ALL PEDESTRIAN PHASES

New York City has many intersections that do not align with the traditional street grid. These locations with skewed geometry create unique circumstances that require alternative signal timing to efficiently and safely move pedestrians.

The All Pedestrian Phase is utilized at many of these intersections to clarify vehicular and pedestrian movements. Pedestrians can cross in any crosswalk without conflicts with vehicles.

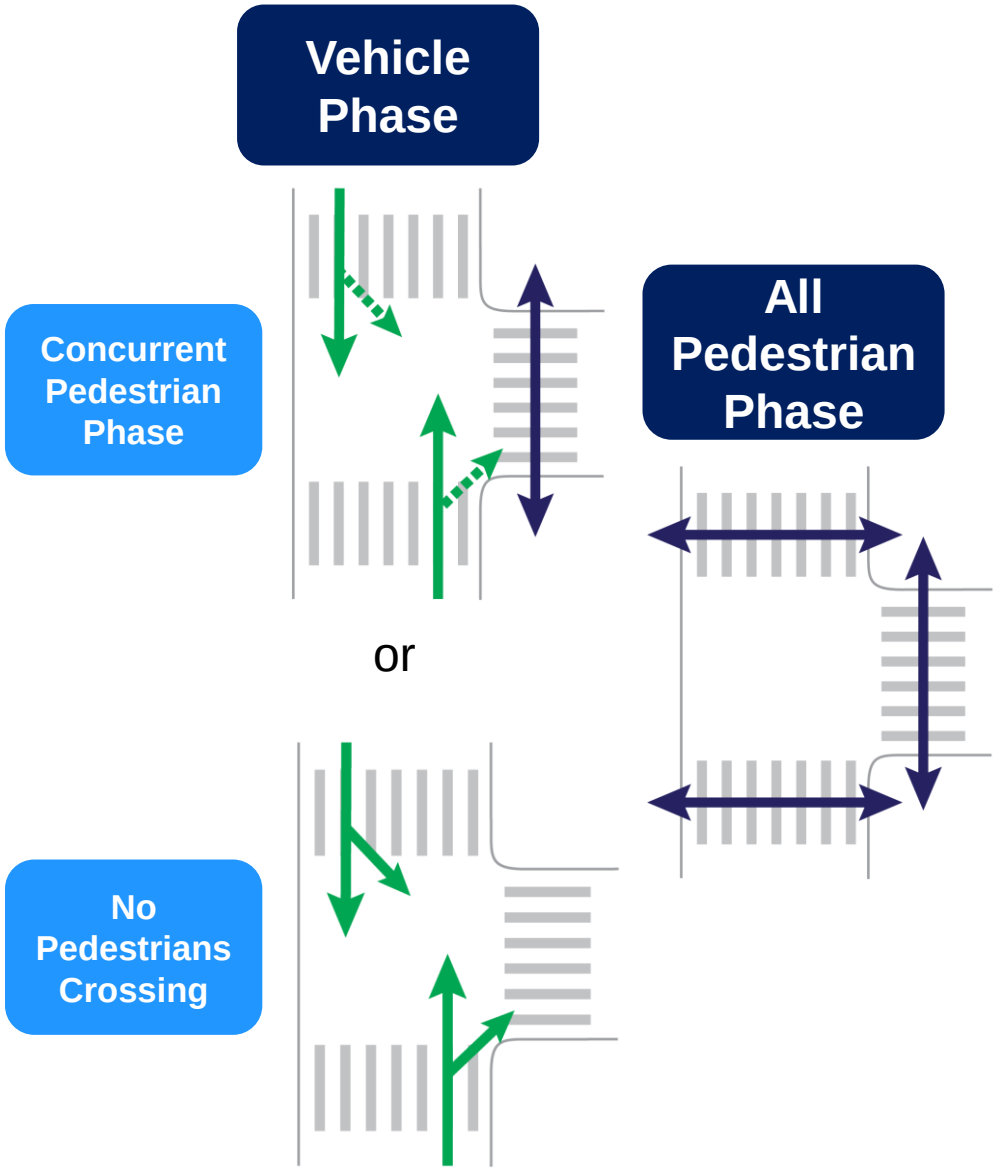


Example: Park Row, Broadway, Vesey St, and Ann St

T-AWAY INTERSECTIONS

At signalized intersections with three legs, often called “T” intersections, where the direction of the cross street goes away from the intersection (“T-Away”), a de-facto All Pedestrian Phase is created.

7 Av and 32 St



ALL PEDESTRIAN PHASE APPLICATIONS

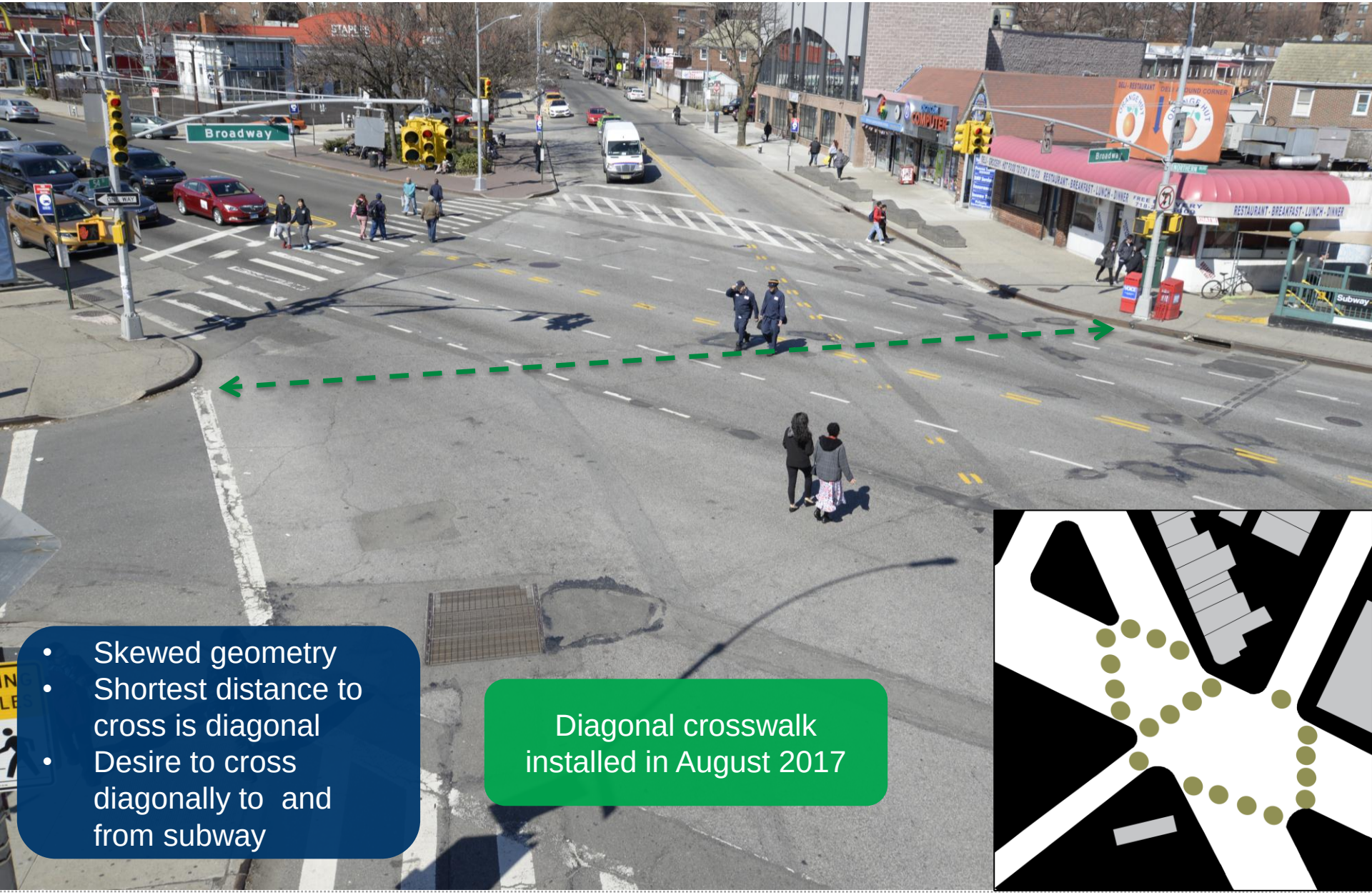
New York City currently has 86 All Pedestrian Phase locations, in addition to 386 “T-away” intersections with de-facto All Pedestrian Phases. The phasing at these locations replicate the original Barnes Dance signal timing, however they are not timed specifically for the diagonal crossing. New York City also has 163 signalized mid-block pedestrian crossings, which, technically, are also All Pedestrian Phase locations.

While an All Pedestrian Phase can be an effective tool to reduce conflicts between vehicles and pedestrians, there are a number of potential trade-offs to be considered, including:

- Reduced total pedestrian crossing time in the signal cycle
- Increased sidewalk crowding
- Increased pedestrian and vehicular delay
- Pedestrian and vehicular non-compliance

These factors are incorporated into NYC DOT’s feasibility analysis of an All Pedestrian Phase for a specific intersection. Diagonal crossings are provided in locations where they are beneficial for pedestrians and feasible.

EXAMPLE – NORTHERN BLVD AND BROADWAY



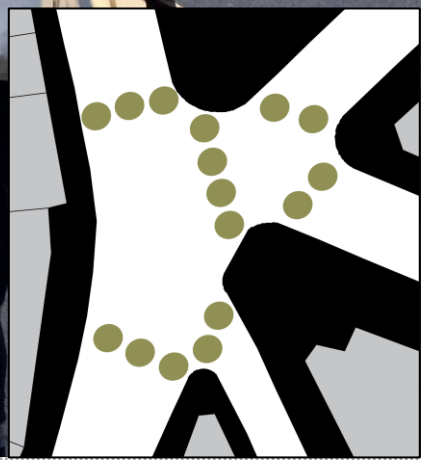
- Skewed geometry
- Shortest distance to cross is diagonal
- Desire to cross diagonally to and from subway

Diagonal crosswalk installed in August 2017

EXAMPLE – LEFFERTS BLVD AND GRENFELL ST

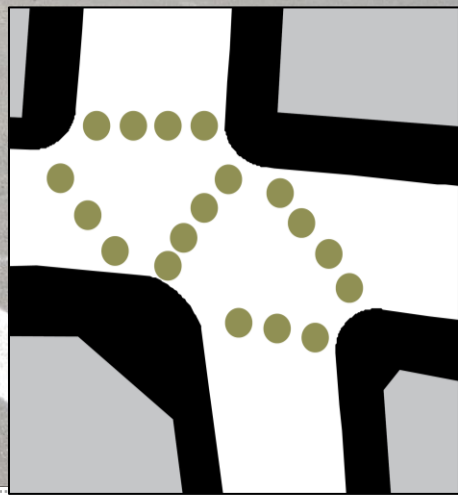
- Skewed geometry
- Low traffic volumes
- Desire to cross diagonally to and from LIRR station

Pedestrian signals and diagonal crosswalk to be added in 2017



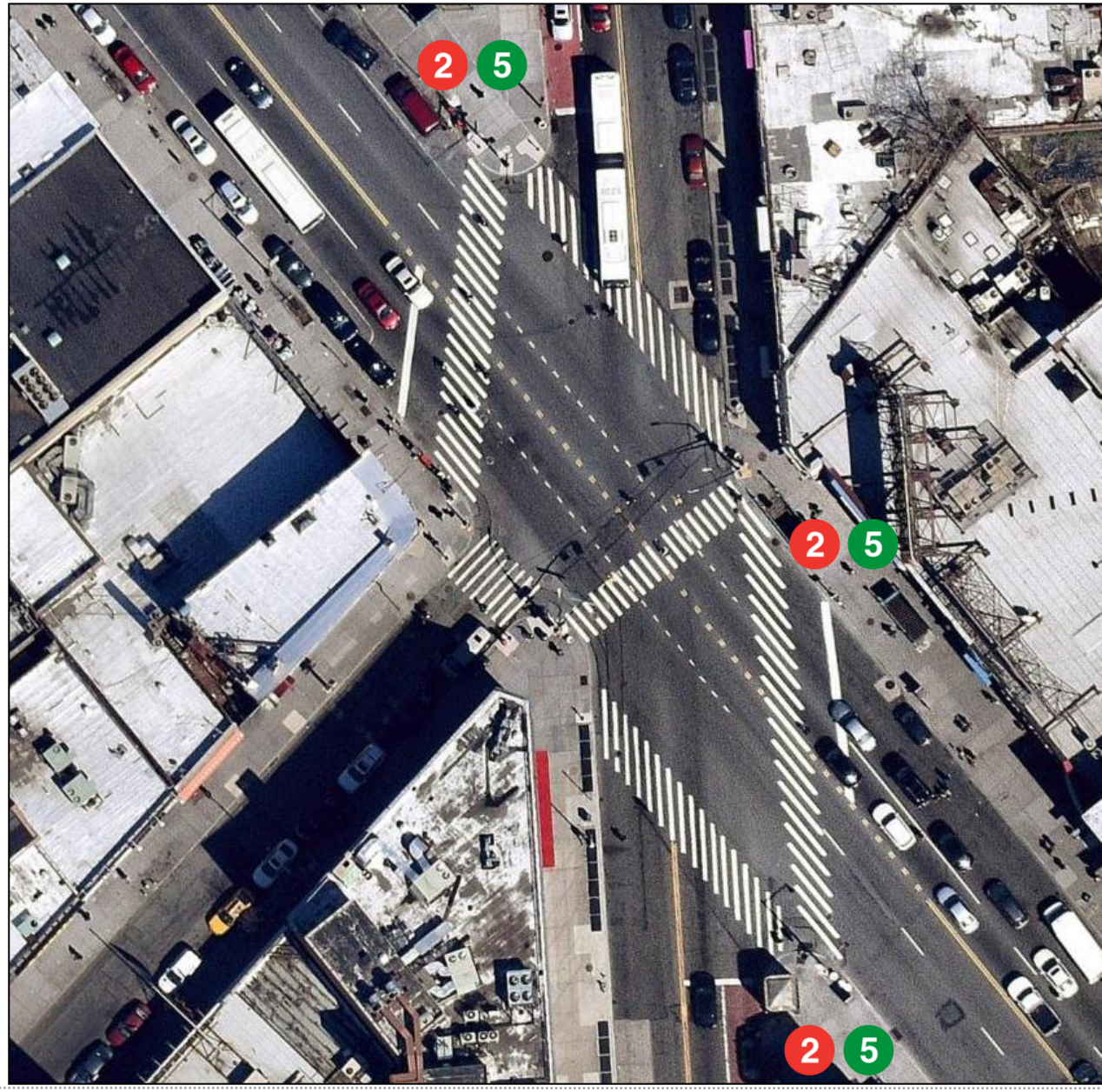
EXAMPLE – BROAD ST AND BEAVER ST

- Skewed geometry
- No thru movements – all vehicles turning
- Both legs of Beaver St go “away” from intersection
- Low traffic volumes

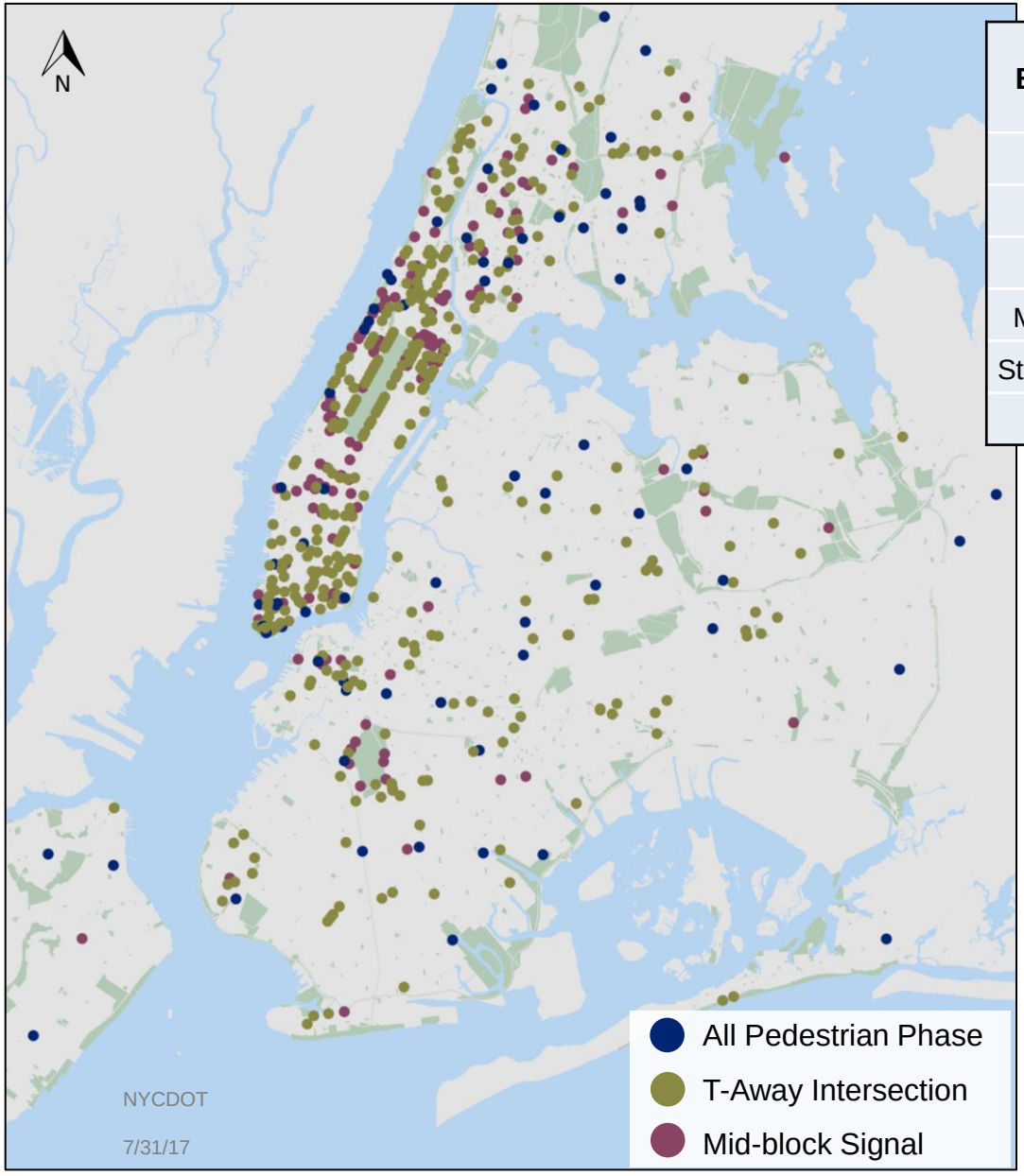


EXAMPLE – FLATBUSH AV AND NOSTRAND AV

- Skewed geometry
- Desire to cross diagonally to and from subway stations, bus stops
- Major commercial destinations on all corners



ALL PEDESTRIAN PHASE LOCATIONS



Borough	All Pedestrian Phases	Signalized T – Away Intersections	Mid-block Signals	Total
Bronx	22	56	31	109
Brooklyn	16	71	31	118
Queens	16	42	9	67
Manhattan	29	216	91	335
Staten Island	3	1	1	5
Total	86	386	163	635

86 All Pedestrian Phases

386 Signalized T-Away Intersections

163 Midblock Signals

See Appendix B for full list of locations

Information current as of 7/31/17

All Pedestrian Phase Research

3

RESEARCH

By removing all conflicts with vehicles, All Pedestrian Phases can increase safety for pedestrians crossing. However, depending on intersection context, research shows that people often are unwilling to wait for an exclusive pedestrian phase. This lack of compliance can negate safety benefits.*

One study showed that, while pedestrian crashes overall were reduced, collisions at intersections with exclusive pedestrian phases tended to be more severe than those with concurrent phases.^

*

Abrams, Charles M., and S A Smith. *Selection of pedestrian signal phasing*. Transportation Research Board 629. 1977

Bechtel, Allyson, Kara MacLeod, and David Ragland. *Pedestrian scramble signal in Chinatown neighborhood of Oakland, California: an evaluation*. Transportation Research Board 1878. 2004.

Gårder, Per. *Pedestrian safety at traffic signals: a study carried out with the help of a traffic conflicts technique.* Accident Analysis & Prevention (Elsevier) . 1989.

Kattan, Lina, Shanti Acharjee, and Richard Tay. *Pedestrian Scramble Operations: Pilot Study in Calgary, Alberta, Canada.* Transportation Research Board 2140. 2009.

Kothuri, Sirisha, Christopher Monsere, and Edward Smaglik. *Improving Walkability Through Control Strategies at Signalized Intersections*. National Institute for Transportation and Communities. 2016.

Ivan, John N., Kevin Mckernan, Yaohua Zhang, Nalini Ravishanker, Sha A. Mamun. *A study of pedestrian compliance with traffic signals for exclusive and concurrent phasing.* Accident Analysis & Prevention (Elsevier) 2016.

Zaidel, David M., and Irit Hocherman. *Safety of pedestrian crossings at signalized intersections*. Transportation Research Record 1141. 1987.

Zegeer, Charles V., Kenneth S. Opiela, and Michael J. Cynecki. *Pedestrian Signalization Alternatives. Final Report*. No. FHWA-RD-83-102. 1985.

^

Zhang, Yaohua, Sha A. Mamun, John N. Ivan, Nalini Ravishanker, and Khademul Haque. *Safety effects of exclusive and concurrent signal phasing for pedestrian crossing.* Accident Analysis & Prevention (Elsevier) . 2015.

RESEARCH

A 2012 study evaluated the effectiveness of exclusive signal timing treatments in New York City, comparing treatment sites to control group sites.*

- **Pedestrian crashes decreased** at All Pedestrian Phase locations at a rate higher than the control group (51% v. 9%)
- **Vehicle crashes increased** at All Pedestrian Phase locations at a rate higher than the control group (10% v. -12%)

Type of Crash	Group	Average Crashes (per intersection per year)		
		Before (5 year)	After (2 year)	% Change
Pedestrian	Treatment	0.54	0.26	-51%
	Control	0.35	0.32	-9%
Vehicle	Treatment	1.93	2.13	10%
	Control	1.46	1.27	-12%

However, the study did not conduct a before/after analysis to see the impacts of the installation of a Barnes Dance. In addition, the study did not consider impacts to delay and compliance.

Note: Of the 36 All Pedestrian Phase locations studied, 10 (25%) were T intersections, 27 (64%) had 4 legs, and 5 (12%) had 5 or more legs. NYC DOT has requested a list of the study site location to determine whether the intersections studied were typical, t-away, or have skewed geometry. The authors have not yet shared the locations.

* Chen, Li, Cynthia Chen, and Reid Ewing. *The Relative Effectiveness of Pedestrian Safety Countermeasures at Urban Intersections – Lessons from a New York City Experience.* Transportation Research Board. 2012

CASE STUDY: TORONTO

In 2007, the Toronto City Council approved the introduction of the Barnes Dance with diagonal crossings at 4 intersections with high pedestrian volumes in the downtown area. 3 locations were installed in subsequent years (2008-2010) by the City's Transportation Services division. The 4th location was not implemented due to the expected negative impact to traffic, including buses and streetcars.

Intersection of Yonge St and Dundas St. Image courtesy of the Toronto Star

Intersection of Bay St and Bloor St. Image courtesy of the Toronto Star

Source: City of Toronto. "Evaluation and Changes to Pedestrian Priority Phase Signal (Scramble Crossing) at Bay St and Bloor St." February 2015

CASE STUDY: TORONTO

In response to complaints related to traffic delays, the Toronto City Council voted to evaluate the effectiveness of the treatment in August 2014. The study showed the following results for the intersection of Bay St and Bloor St:

- 16% of pedestrians utilized the diagonal crossings on weekdays (12% on weekends)
- Overall average intersection delay for vehicles more than tripled in the PM peak hour (40 seconds to 2.5 minutes)
- Vehicle crashes increased 64%
- Pedestrian crashes stayed constant

Image courtesy of the Toronto Star

Source: City of Toronto. "Evaluation and Changes to Pedestrian Priority Phase Signal (Scramble Crossing) at Bay St and Bloor St." February 2015

CASE STUDY: TORONTO

The evaluation showed that, of the 3 implemented Barnes Dance locations, Bay St and Bloor St had:

- The longest diagonal crossing distance, leading to the longest Barnes Dance phase
- The lowest percentage of diagonal crossings by pedestrians
- The lowest pedestrian volumes as a percentage of total traffic in the intersection

As a result, the City Transportation Services division recommended the removal of the Bay St and Bloor St Barnes Dance.

The other 2 locations are still in operation due to the high volumes of pedestrian traffic, shorter diagonal crossing distances, and high volumes of pedestrians crossing diagonally. Impacts to vehicle delay were minimal compared to Bay St and Bloor St.

City of Toronto. "Evaluation and Changes to Pedestrian Priority Phase Signal (Scramble Crossing) at Bay St and Bloor St." February 2015

CASE STUDY: BRIGHTON BEACH SENIOR PEDESTRIAN SAFETY AREA

In 2008, NYC DOT investigated safety improvements in the Bright Beach Senior Pedestrian Safety Area

- As part of the project, DOT evaluated two existing locations with All Pedestrian Phases:
  - Brighton Beach Av and Coney Island Av
  - Neptune Av and W 5 St
    - The study determined that since the installation of the All Pedestrian Phase timings, crashes increased
    - Field observations indicated significant issues with pedestrian compliance
- The Barnes Dance timing was replaced with LPIs for both directions in addition to other safety improvements such as pedestrian islands

2015 NYC DOT STUDY

4

2015 STUDY

In Summer 2015, NYC DOT conducted a Barnes Dance study of 5 intersections with high pedestrian volumes to determine if diagonal crossings were feasible. The sites were selected because of their proximity to major transportation hubs and relatively simple signal timing (2-3 phases).

Sites Selected for Study

- 8 Av and W 42 St*
- 7 Av and W 34 St*
- 8 Av and W 34 St
- Lexington Av and E 42 St
- Water St and Whitehall St

*Vision Zero Priority Intersection

These sites are representative of high crash locations requested for study by the City Council in Local Law 92 (2017). The results of this study can be applied to other similar locations.

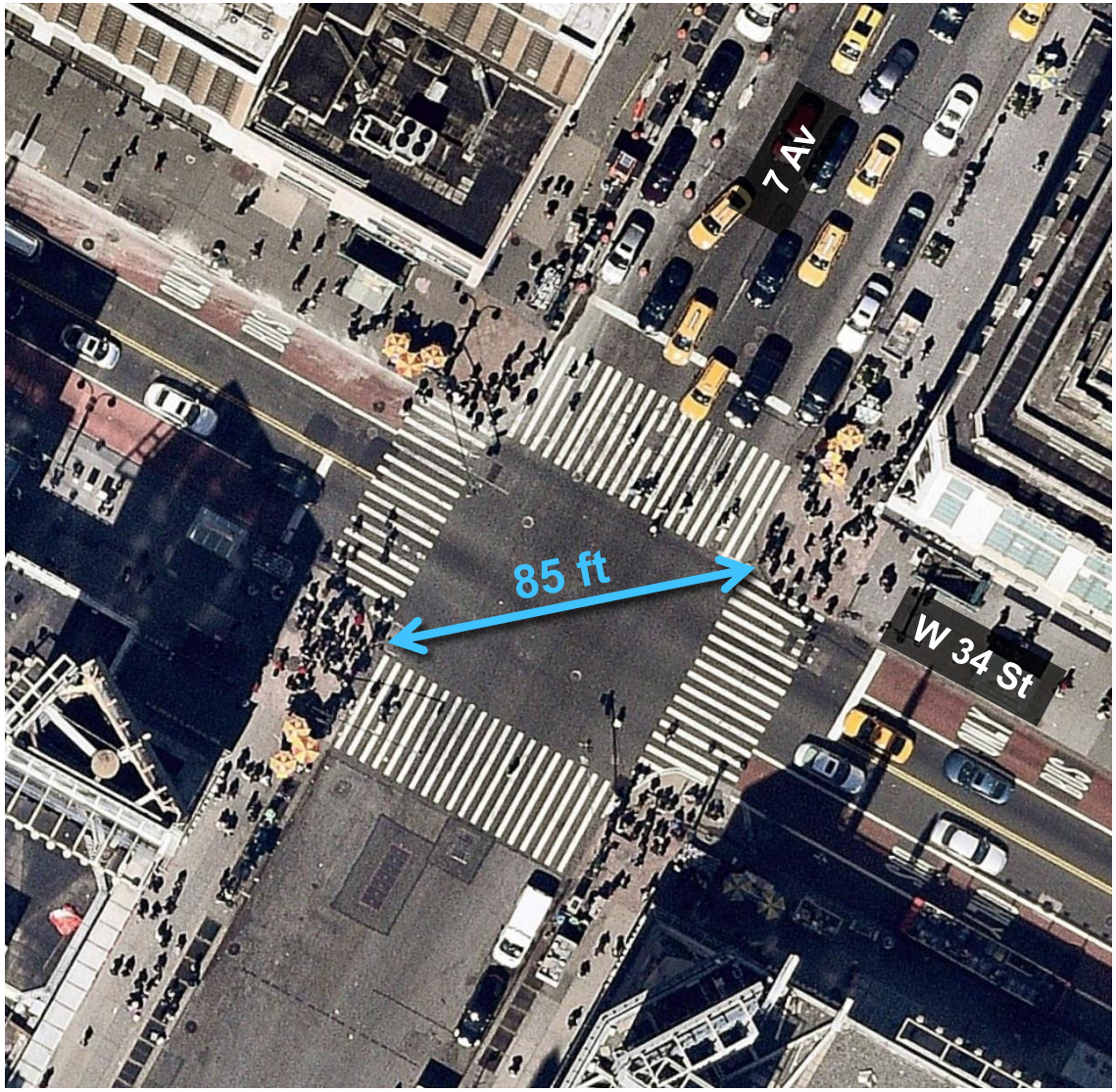
2015 STUDY

The length of any signal phase with pedestrians crossing is determined by the size of intersection

- 2009 MUTCD walking design speed is 3.5 ft/second Clearance Phase (“Flashing Don’t Walk”) must allow pedestrians to cross entire length of street

Example: 7 Av and W 34 St

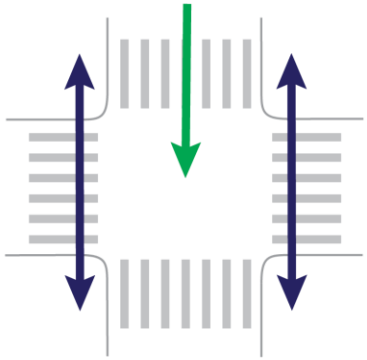
- Diagonal crossing distance is 85’
- Minimum Pedestrian Phase Time:
  85 ft / 3.5 ft/s = 25 seconds
  “Flashing Don’t Walk”
  + 7 seconds of “Walk”
  = 32 seconds



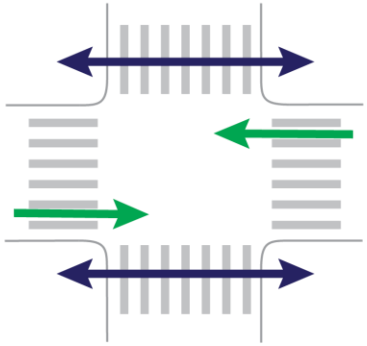
INCREASED WAIT TIME

Example: 7 Av and W 34 St
90-Second Signal Cycle

Existing Signal Timing

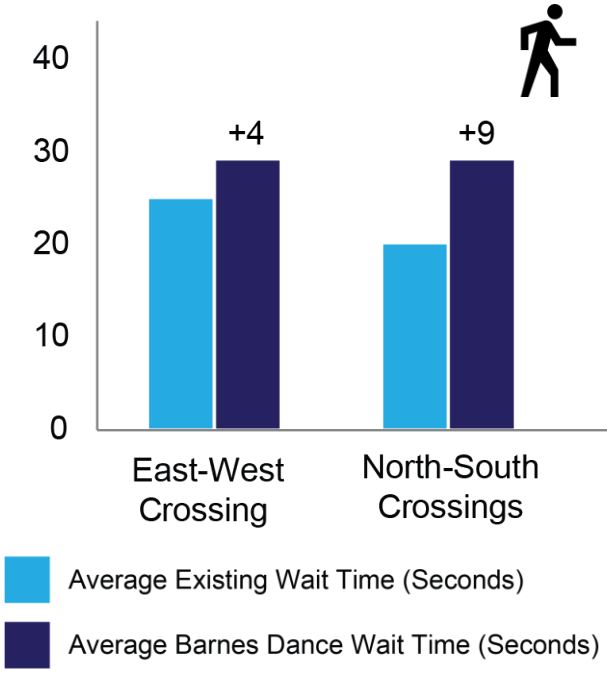


50 seconds

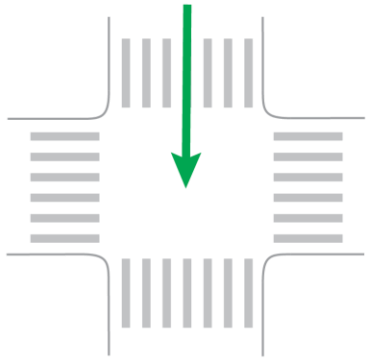


40 seconds

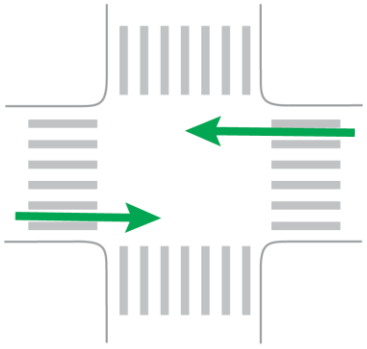
Average wait time increases significantly for all roadway users



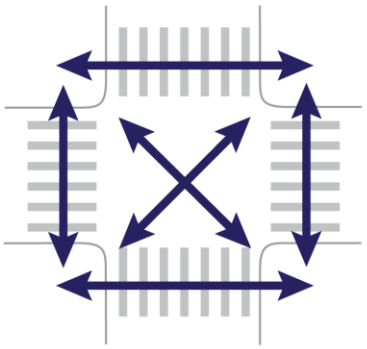
Barnes Dance Signal Timing (with Diagonal Crossing)



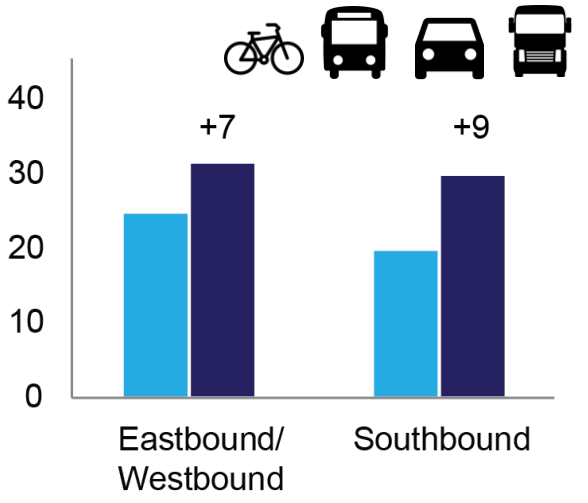
32 seconds



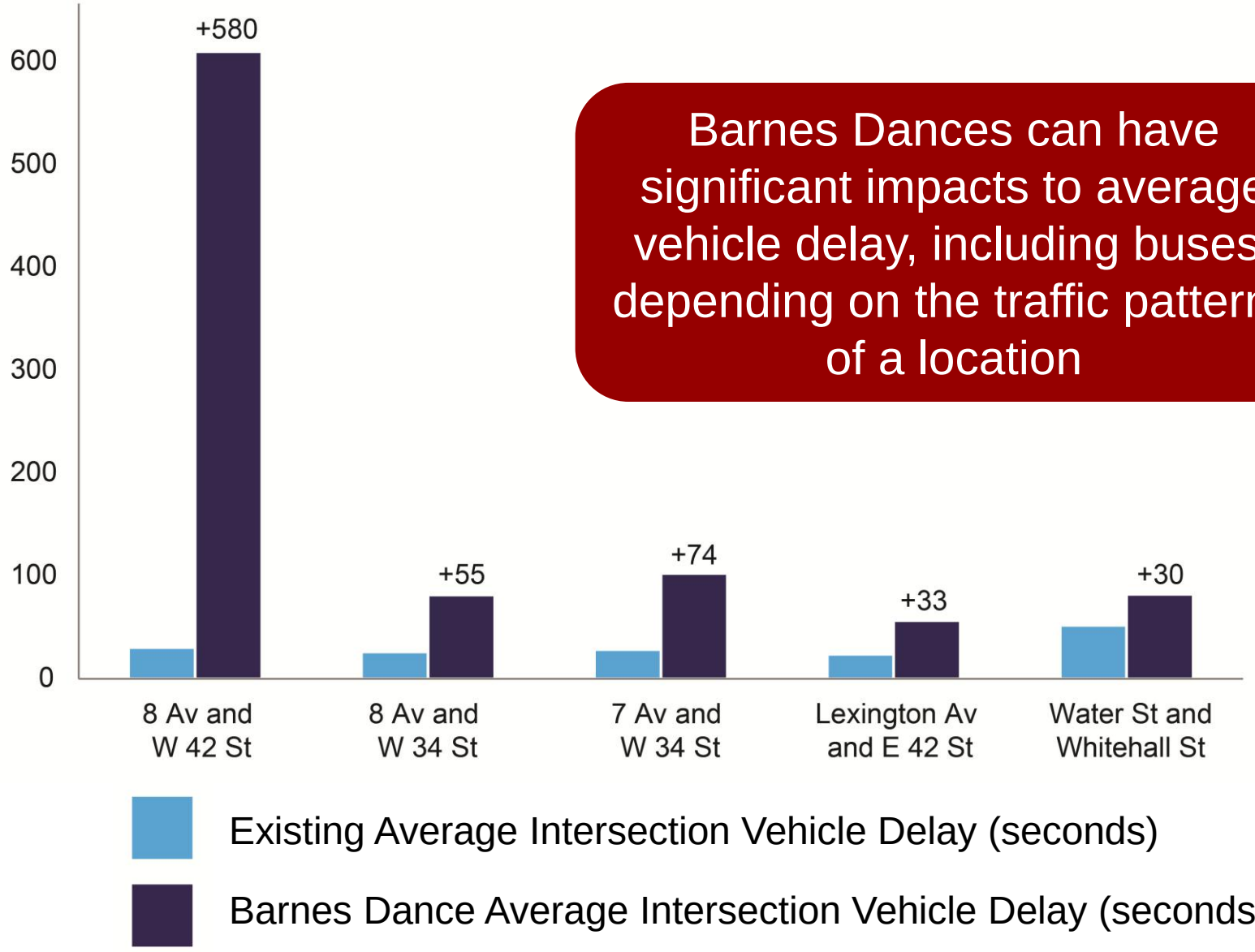
26 seconds



32 seconds



INCREASED DELAYS



Barnes Dances can have significant impacts to average vehicle delay, including buses, depending on the traffic patterns of a location

2015 STUDY SUMMARY

All Pedestrian Phases with diagonal crossings can be an effective tool at certain intersections to reduce pedestrian-vehicle conflicts, however the context of the location should be considered due to the following potential negative impacts:

- Increased waiting time for all roadway users
- Interrupted pedestrian walking flow and sidewalk overcrowding
- Increased vehicle delay, including buses and bicycles, with spillover effects on adjacent intersections
- Potentially reduced crossing time for pedestrians

In addition to the All Pedestrian Phase, NYC DOT has numerous tools to reduce pedestrian-vehicle conflicts.

Considerations for All Pedestrian Phase Implementation

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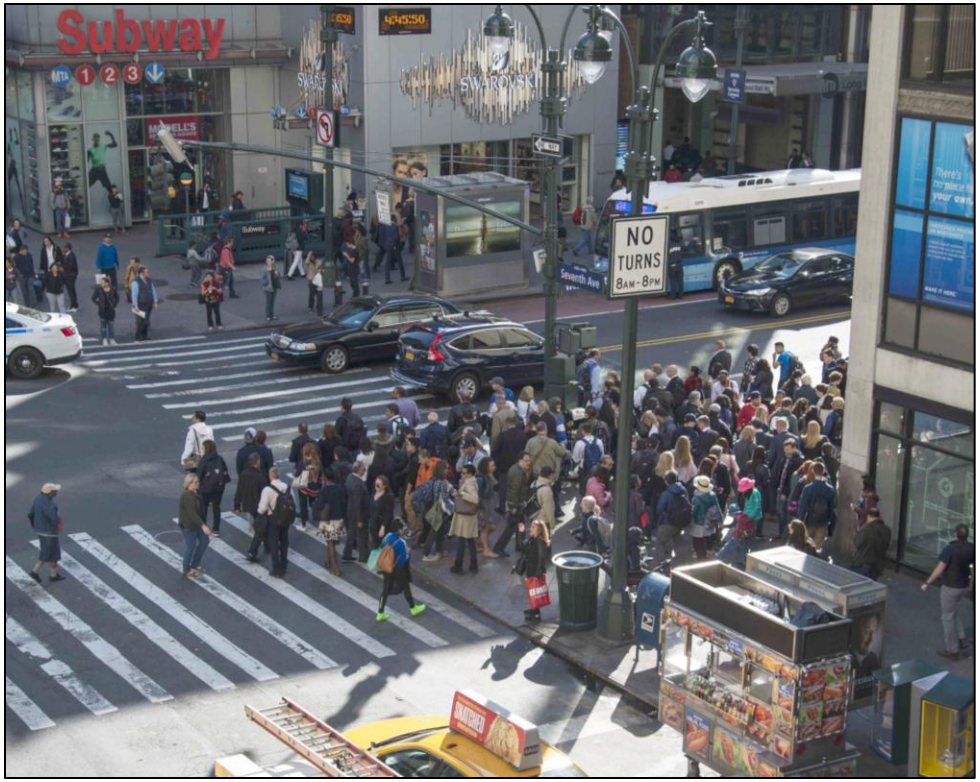
SIDEWALK CROWDING

Increased waiting time for pedestrians could worsen existing sidewalk overcrowding

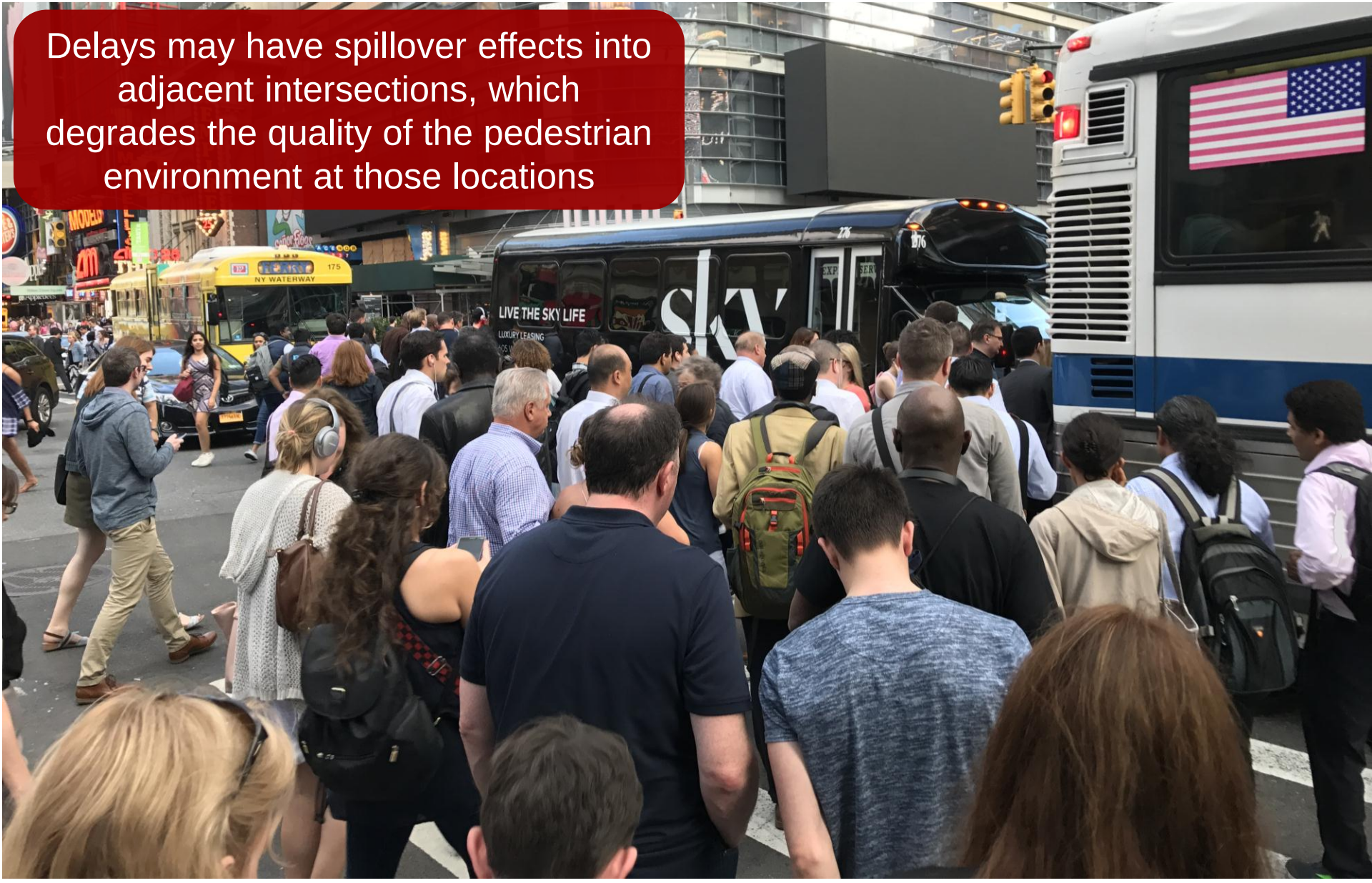


7 Av and W 34 St

8 Av and W 42 St

INCREASED DELAYS

Delays may have spillover effects into adjacent intersections, which degrades the quality of the pedestrian environment at those locations



Delays have an impact on buses, increasing commute times

BICYCLES

Bicyclists are also potentially delayed as a result of All Pedestrian Phases

PEDESTRIAN RAMPS

All marked crossings require pedestrian ramps for pedestrians in wheelchairs, walkers, strollers, and carts.

- Pedestrian ramps for new diagonal crossings could be difficult to construct, particularly in locations with existing pedestrian ramps for perpendicular crossings
- DOT has an extensive program to provide pedestrian ramps citywide, and must ensure that any new crossing is matched with ADA accessible pedestrian ramps. Designing and implementing complicated ramps could reduce capacity in our ongoing effort to upgrade existing ramps.

ACCESSIBLE PEDESTRIAN SIGNALS

All Pedestrian Phases are also challenging for those who rely on audible queues to cross the street

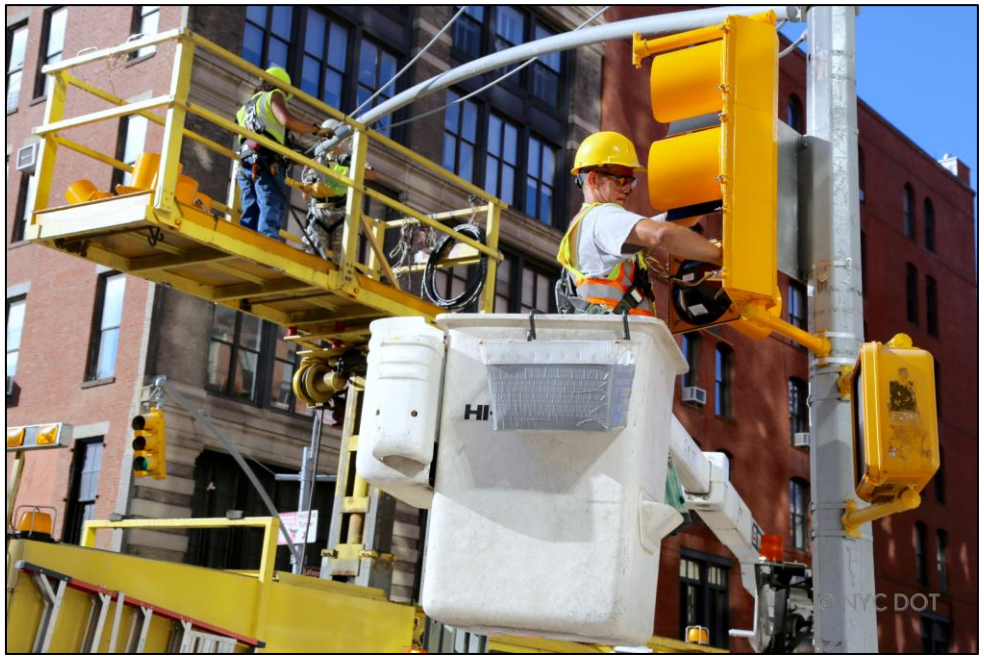
- Difficult for those with visual impairments to differentiate between parallel and diagonal crossings because they cannot utilize the sound of parallel-moving cars as a cue. In addition, there is no indication that a specific intersection operates differently.

- Accessible Pedestrian Signals (APS) should accompany installation of All Pedestrian Phases, however it is not recommended for diagonal crossings due to the potential noise interference with nearby APS units that could disorient or confuse the user.

SIGNAL INFRASTRUCTURE

Diagonal crossings require additional signal faces and new poles

- Additional costs for signal hardware and labor
- Can add clutter and obstructions to already crowded sidewalks



NONCOMPLIANCE

New Yorkers are accustomed to walking with concurrent phases along with the vehicular green, especially at intersections with typical street grid geometry

- Benefits of Barnes Dance can be negated if roadway users do not comply with signals

Additional Tools for Reducing Conflicts at Crossings

6

LEADING PEDESTRIAN INTERVALS

Treatment Description

- Allows pedestrians to get a 7+ second head start in the crosswalk before vehicles begin to move

Applications

- Long pedestrian crossing distances
- High vehicular turning volumes
- Low vehicular thru-movement volumes
- Vision Zero priority locations
- School areas
- Senior areas
- Locations where buses turn

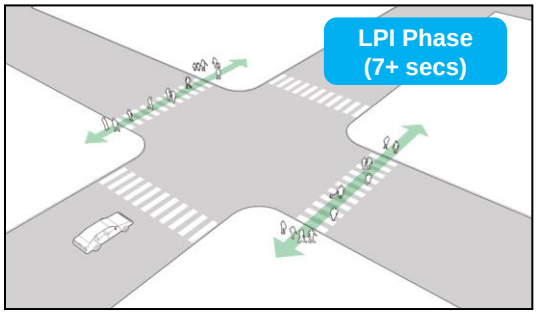
Benefits

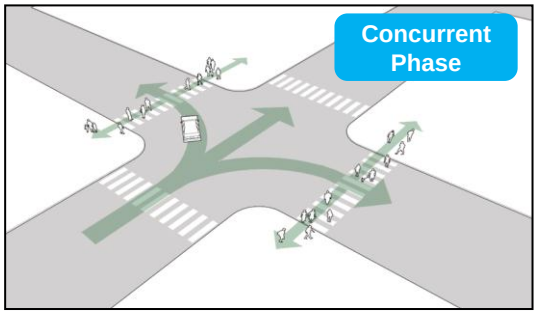
- Pedestrians can establish right-of-way
- Increases pedestrian visibility in crosswalk
- Reduces pedestrian-vehicle conflicts

Considerations

- Increases vehicular delays

2,173 LPIs installed
(as of 7/31/2017)





Images courtesy of NACTO

SPLIT-PHASE LEADING PEDESTRIAN INTERVALS (SPLIT-LPIS OR DELAYED TURNS)

Treatment Description

- Allows pedestrians (and bicyclists on bike routes) to get a 7+ second head start before turning vehicles begin to move
- Only turns are held during LPI phase. Thru vehicles permitted to move.
- Requires turn bay or lane

Applications

- High vehicular thru volumes
- Low vehicular turning movement volumes and/or short storage lengths

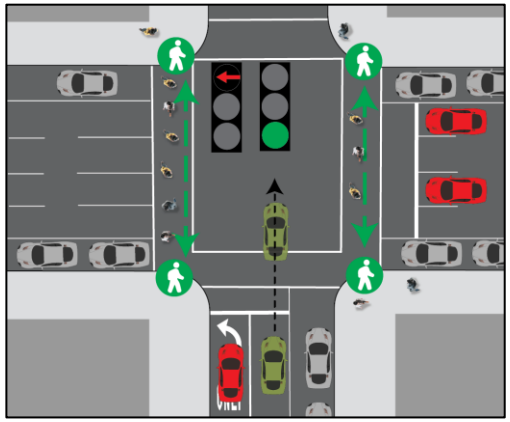
Benefits

- Same benefits for pedestrians as LPI
- No impact to thru vehicle delay

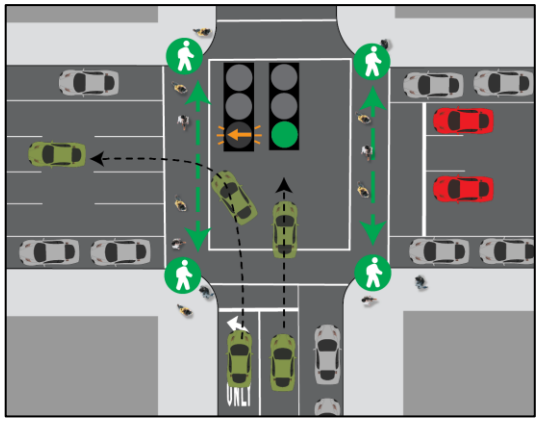
Considerations

- Increases delay for turning vehicles
- Potential loss of parking for turn lane

66 Split-LPIs installed
(as of 7/28/2017)



Leading Pedestrian Interval Phase



Flashing Yellow Turn Phase

SPLIT-PHASE

Treatment Description

- Fully splits crossing pedestrians from turning vehicles
- Permits non-conflicting thru movements during pedestrian phases
- Turns only allowed during green arrow phase
- Requires turn bay or lane

Applications

- High pedestrian volumes
- High turning volumes
- High speed roadways
- Multiple turn lanes

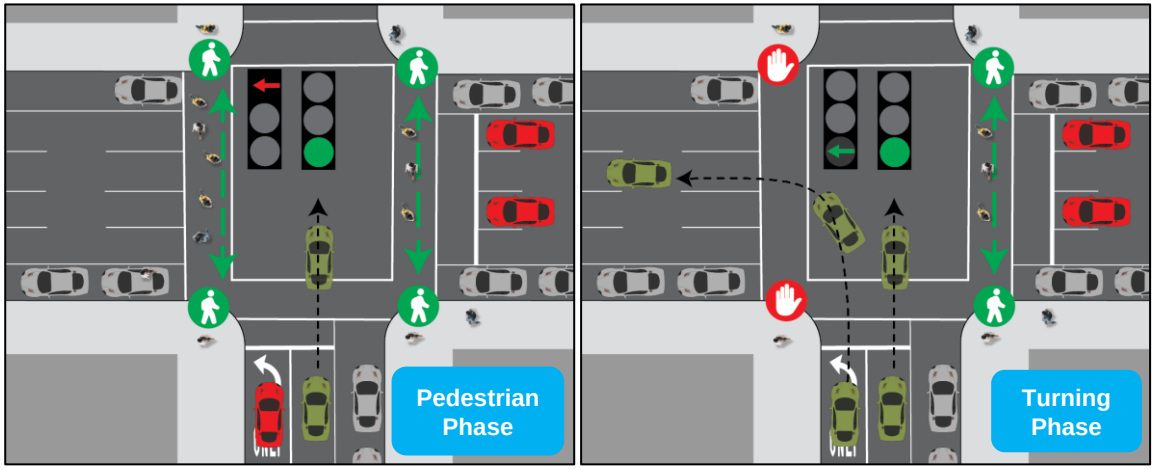
Benefits

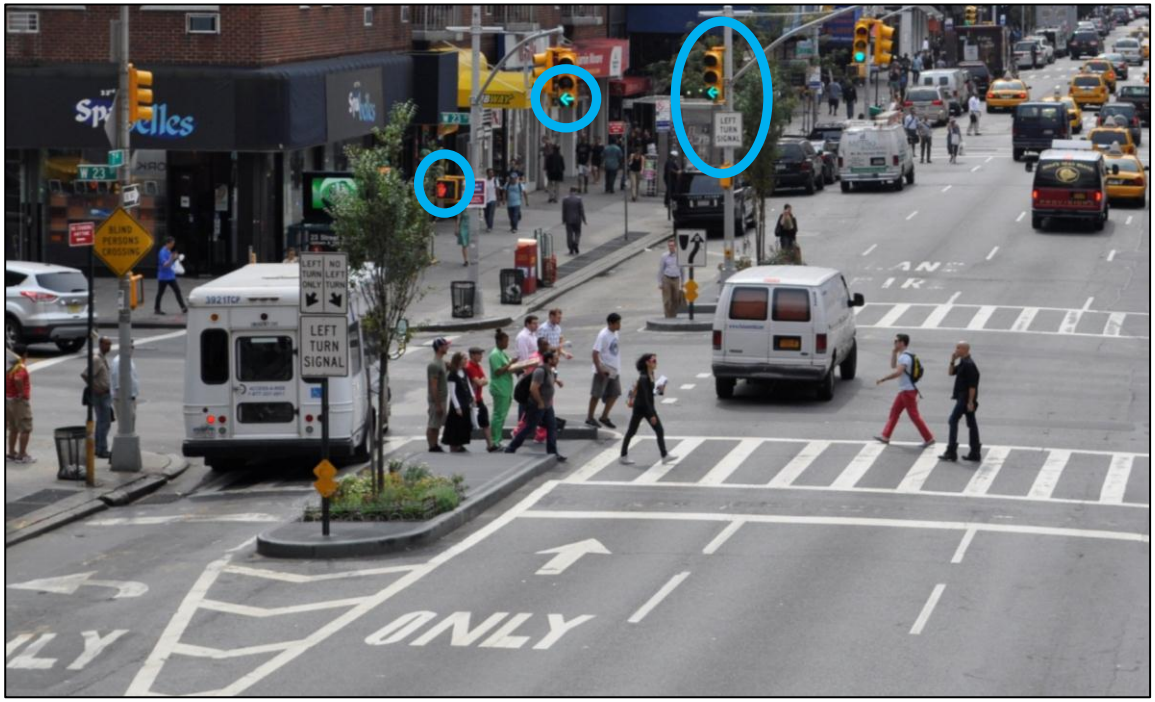
- Removes all turning vehicle-pedestrian conflicts
- Allows turning vehicles to proceed without having to find gaps
- No impact to thru vehicle delay

Considerations

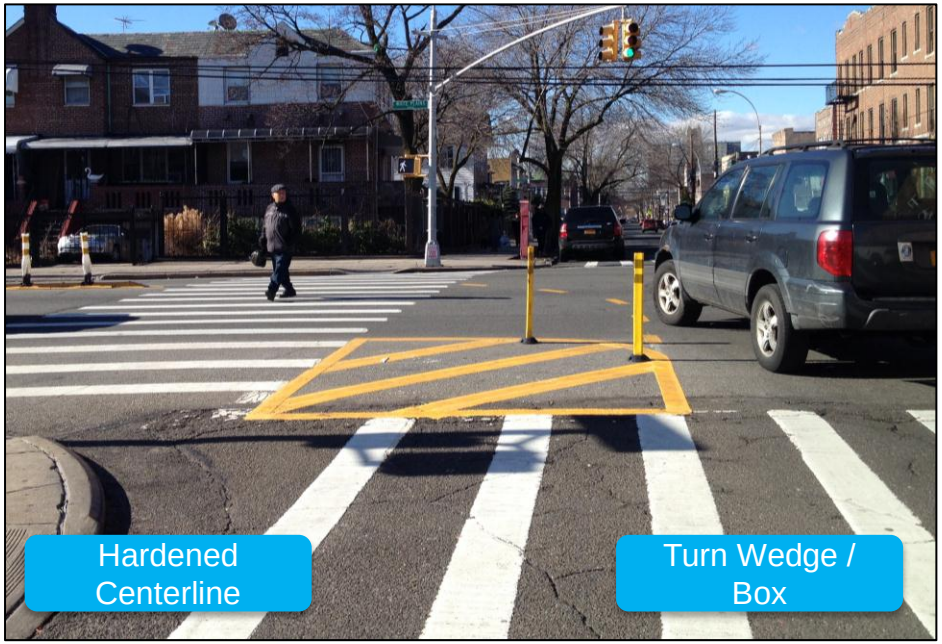
- Reduces pedestrian crossing time
- Pedestrian non-compliance
- Potential parking loss for turn lane

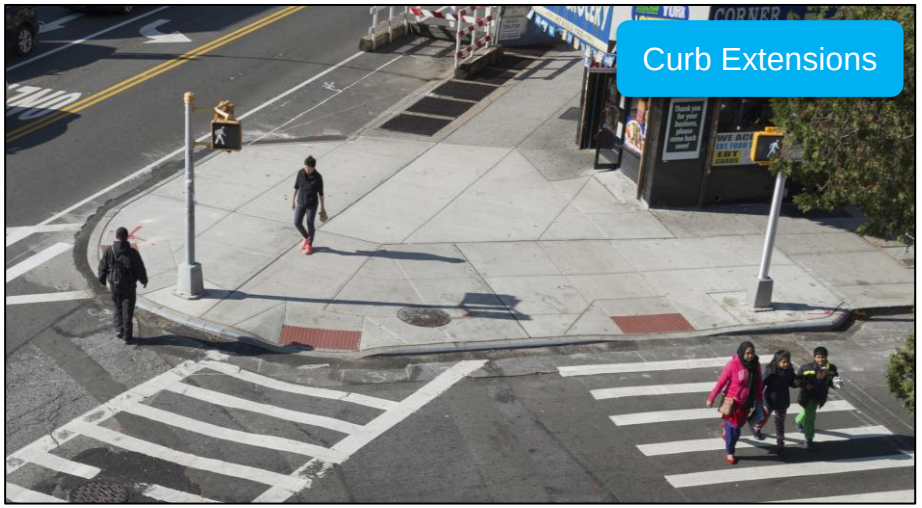
111 Split Phases installed
(as of 7/28/2017)





GEOMETRY AND SIGNAGE





Turn Restrictions

Turn Lanes

These tools can accompany signal timing changes or be implemented as standalone treatments

Recommendations

7

RECOMMENDATIONS

Based on research and previous work, NYC DOT will consider the implementation of All Pedestrian Phases / Barnes Dances at intersections with the following characteristics:

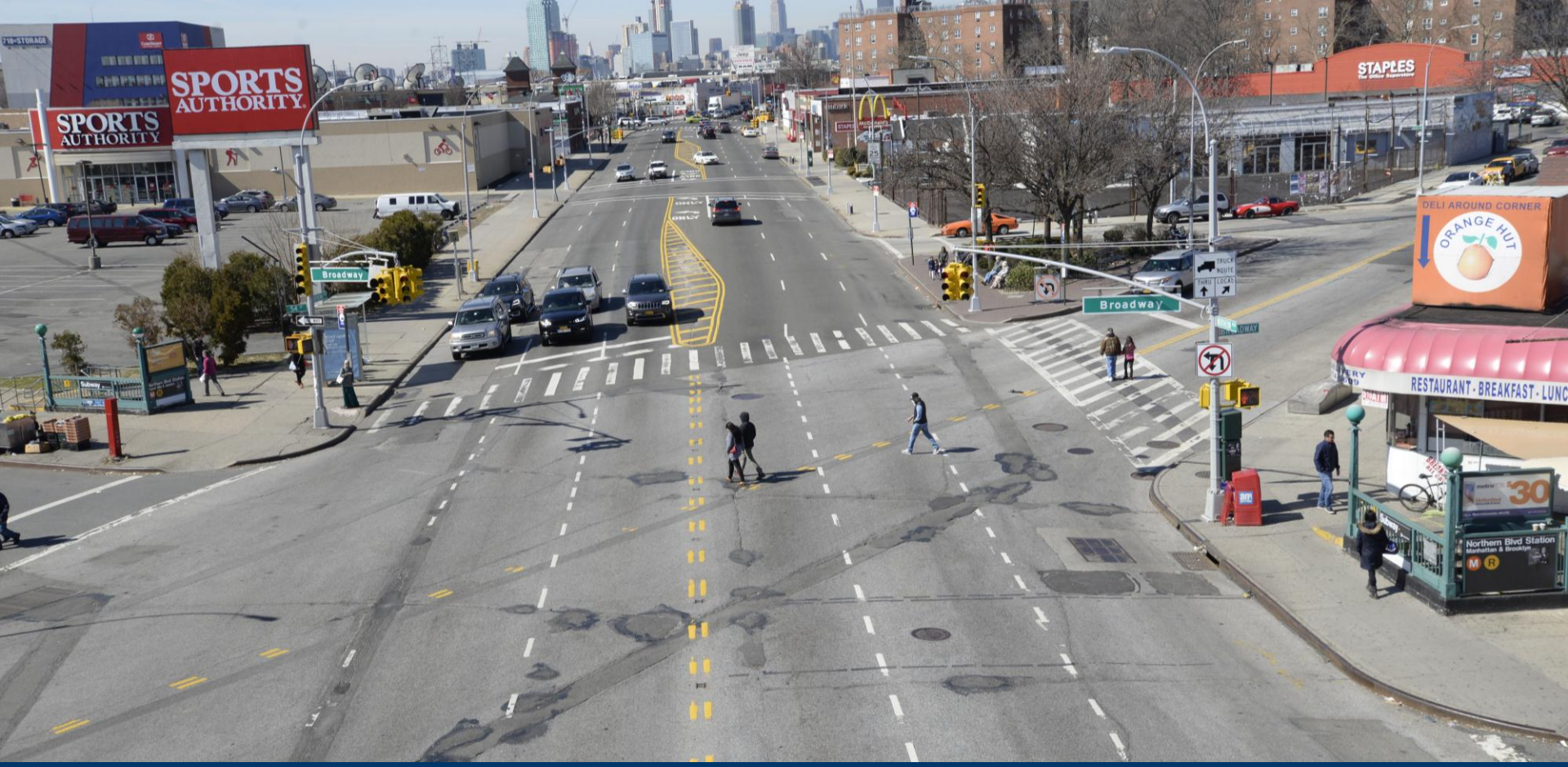
- Atypical geometry, particularly with corners where the diagonal crossing is the shortest crossing distance in the intersection;
- Dominant traffic movement is turning vehicles;
- Head-on intersections, where all vehicles are turning;
- Low vehicular volumes;
- High demand for diagonal crossing;
- “T” intersections; and/or
- Ability to provide a safe and accessible configuration for people with disabilities

RECOMMENDATIONS

In addition to the All Pedestrian Phase, NYC DOT will continue to utilize a variety of signal timing treatments to reduce pedestrian-vehicle conflicts, including:

- Leading Pedestrian Intervals (LPIs)
- Split-Phase Leading Pedestrian Intervals (Split-LPIs/Delayed Turns)
- Split-Phases

Locations will be evaluated on a case-by-case basis to determine the most appropriate tool, which can be used in combination with geometric and traffic network improvements.



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NEW YORK CITY DOT

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APPENDIX A: LEFT TURN TRAFFIC CALMING UPDATE

Treatment	2016	2017
LPIs	776	800+ planned
Left Turn Traffic Calming (intersections)	107	100+ planned
Split LPIs (delayed turn)	9	8 (as of July 28)
Split LPIs (delayed turn) w/ bike signals	4	3 (as of July 28)
Left Turn Signals	19	10 (as of July 20)
Left Turn Restrictions	Not tracked formally	Not tracked formally
Protected Bicycle Lanes (miles)	18.5	15+
Public Information Campaign	see below	see below

Public Information Campaign Update:
In 2016, DOT continued to deploy the public information campaign, "Your Choices Matter". This campaign utilizes graphic imagery to get the attention of New Yorkers and emphasize the serious consequences of dangerous driving choices. The content of these ads focuses on the most prevalent causes of pedestrian injuries and fatalities – namely speeding and failure to yield. To emphasize the importance of safe turns, DOT committed to developing "Turn Speed" iconography as a sub-brand to the "Your Choices Matter" campaign.

Fall 2016:
1. Revised the DOT/NYPD Street Team Year 3 postcard to incorporate "Turn Speed" iconography
2. In addition to Street Team weekly deployments, distributed postcards in a coordinated Citywide Day of Awareness.
3. Revised the "Your Choices Matter" landing page to incorporate animated icons.

Spring 2017:
1. Revised DOT/NYPD Street Team Year 4 postcard to provide greater emphasis on Failure to Yield compliance and safe turning behaviors.
2. Deployed an online advertising plan that utilizes "Turn Speed" animations.

Fall 2017:
1. DOT will continue to deploy public information campaign content based upon allocation of FY18 funding.

APPENDIX B: LIST OF ALL PEDESTRIAN PHASE LOCATIONS - BRONX

All Pedestrian Phases

1. 3 AVENUE & EAST 161 STREET
2. BOSTON ROAD & MACE AVENUE
3. BOSTON ROAD & SOUTHERN BOULEVARD
4. CASTLE HILL AVENUE & METROPOLITAN AVENUE
5. EAST 149 STREET & CORTLANDT AVENUE
6. EAST 157 STREET & RUPPERT PLAZA GARAGE
7. EAST 168 STREET & FRANKLIN AVENUE
8. EAST 174 STREET & EAST 173 STREET
9. EAST 233 STREET & DIGNEY AVE
10. EAST TREMONT AVENUE & CASTLE HILL AVENUE
11. HENRY HUDSON PARKWAY & WEST 236 STREET
12. HENRY HUDSON PARKWAY & WEST 239 STREET
13. HUGH GRANT CIRCLE & METROPOLITAN AVENUE
14. JEROME AVENUE & EAST 162 STREET
15. KAPPOCK STREET & NETHERLAND AVENUE
16. MORRIS AVENUE & EAST 156 STREET
17. MORRIS PARK AVENUE & UNIONPORT ROAD
18. RESERVOIR AVENUE & UNIVERSITY AVENUE
19. SOUNDVIEW AVENUE & THERIOT AVENUE
20. UNIVERSITY AVENUE & BURNSIDE AVENUE
21. VAN CORTLANDT PARK EAST & EAST 242 STREET
22. WEST TREMONT AVENUE & SEDGWICK AVENUE

Signalized T – Away Intersections

1. 3 AVENUE & EAST 155 STREET
2. 3 AVENUE & EAST 162 STREET
3. 3 AVENUE & EAST 165 STREET
4. ASTOR AVENUE & COLDEN AVENUE
5. BAILEY AVENUE & WEST 234 STREET
6. BAINBRIDGE AVE & EAST 210 STREET
7. BAYCHESTER AVENUE & CRAWFORD AVENUE
8. BAYCHESTER AVENUE & NEW ENGLAND THRUWAY ENTRANCE RAMP
9. BRONX BOULEVARD & MAGENTA STREET
10. BROOK AVENUE & EAST 143 STREET
11. CITY ISLAND ROAD & CITY ISLAND AVENUE
12. EAST 149 STREET & TRINITY AVENUE
13. EAST 168 STREET & BROOK AVENUE
14. EAST 170 STREET & TOWNSEND AVENUE
15. EAST FORDHAM ROAD & ARTHUR AVENUE
16. EAST FORDHAM ROAD & LORILLARD PLACE
17. EAST FORDHAM ROAD & WASHINGTON AVENUE
18. EAST GUN HILL ROAD & SEYMOUR AVENUE
19. EAST TREMONT AVENUE & BRYANT AVENUE
20. EAST TREMONT AVENUE & MONTEREY AVENUE
21. EDGWATER ROAD & HUNTS POINT AVENUE
22. GRAND CONCOURSE & EAST 156 STREET
23. GRAND CONCOURSE & EAST 162 STREET
24. GRAND CONCOURSE & EAST 163 STREET
25. GRAND CONCOURSE & EAST 175 STREET
26. GRAND CONCOURSE & EAST 202 STREET
27. HUGH GRANT CIRCLE & CROSS BRONX EXPRESSWAY
28. JEROME AVENUE & NORTH STREET
29. JEROME AVENUE & EAST 171 STREET
30. JEROME AVENUE & EAST 179 STREET
31. JEROME AVENUE & EAST 182 STREET
32. JEROME AVENUE & WEST 182 STREET
33. PARK AVENUE & SAINT PAULS PLACE
34. PARK AVENUE EAST & EAST 178 STREET
35. PELHAM PARKWAY SOUTH & NARRAGANSETT AVE
36. PELHAM PARKWAY NORTH & SEYMOUR AVENUE
37. PELHAM PARKWAY NORTH & BRONXWOOD AVENUE
38. PELHAM PARKWAY N & WALLACE AVENUE
39. PELHAM PARKWAY N & STILLWELL AVENUE
40. PELHAM PARKWAY S & SEYMOUR AVENUE
41. PELHAM PARKWAY N & THROOP AVE
42. PROSPECT AVENUE & RITTER PLACE
43. SOUTHERN BOULEVARD & ALDUS STREET
44. SOUTHERN BOULEVARD & CROTONA PARK EAST
45. SOUTHERN BOULEVARD & SAINT MARYS STREET
46. SOUTHERN BOULEVARD & EAST 183 STREET
47. ST ANNS AVENUE & EAST 159 STREET
48. UNIVERSITY AVENUE & MACOMBS ROAD
49. WEBSTER AVENUE & EAST 170 STREET
50. WEBSTER AVENUE & EAST 205 STREET
51. WEST FORDHAM ROAD & ANDREWS AVENUE
52. WEST TREMONT AVENUE & DAVIDSON AVENUE
53. WILLIS AVENUE & EAST 136 STREET
54. WILLIS AVENUE & EAST 140 STREET
55. WILLIS AVENUE & EAST 142 STREET
56. ZEREGA AVENUE & POWELL AVENUE

APPENDIX B: LIST OF ALL PEDESTRIAN PHASE LOCATIONS - BRONX

Signalized Mid-block Crossings

1. 3 AVENUE B/N E. 169 ST & E. 170 ST
2. 3 AVENUE & EAST 140 STREET
3. 3 AVENUE & EAST 144 STREET
4. 3 AVENUE, 185 STREET, & BATHGATE AVENUE
5. BAYCHESTER AVENUE & 200’ SOUTH OF DONIZETTI PLACE
6. CITY ISLAND ROAD & 1300’ WEST OF CITY ISLAND AVENUE
7. EAST 161 STREET & GRANT AVENUE
8. EAST 161 STREET & 400' WEST OF RIVER AVE
9. EAST 161 STREET & WASHINGTON STREET
10. EAST 163 STREET at TRINITY AVE & TINTON
11. EAST 170 STREET & 150' WEST OF GRAND CONCOURSE
12. EAST 170 STREET & GRAND CONCOURSE
13. EAST TREMONT AVENUE & LEHMAN COLLEGE HS
14. GRAND CONCOURSE & CLIFFORD PLACE
15. JEROME AVENUE & 166 STREET
16. MORRIS PARK AVENUE & 340' WEST OF EASTCHESTER ROAD
17. SEDGWICK AVENUE & 300 WEST OF 197 STREET
18. SEDGWICK AVENUE & 200 SOUTH OF 231 STREET
19. SOUTHERN BOULEVARD & UNION AVENUE
20. SOUTHERN BOULEVARD & EAST 189 STREET
21. UNIONPORT ROAD & METROPOLITAN OVAL
22. UNIVERSITY AVENUE & FEATHERBED LANE
23. UNIVERSITY AVENUE & 260' SOUTH OF 181 STREET
24. VALENTINE AVENUE B/N EAST TREMONT AVE & E. 178 ST
25. VAN CORTLANDT PARK EAST B/N E. 239 ST & ONEIDA AVENUE
26. WEBSTER AVENUE B/N TREMONT AVE & E. 178 ST
27. WEBSTER AVENUE & 300' NO. OF E. 168 ST.
28. WEBSTER AVENUE & SOUTH OF EAST 170 STREET
29. WEBSTER AVENUE & SOUTH OF EAST 171 STREET
30. PELHAM PKWY S (EB) & NARRAGANSETT AVE
31. PELHAM PKWY N (WB) B/N PEARSALL AVE & THROOP AVE

APPENDIX B: LIST OF ALL PEDESTRIAN PHASE LOCATIONS - BROOKLYN

All Pedestrian Phases

1. 3 AVENUE & SCHERMERHORN STREET
2. 4 AVENUE & PACIFIC STREET
3. 92 STREET & DAHLGREN PLACE
4. AVENUE U & BURNETT STREET
5. BARTEL PRITCHARD SQUARE & PROSPECT PARK SOUTHWEST
6. BARTEL PRITCHARD SQUARE SOUTH & PROSPECT PARK WEST
7. COURT STREET & REMSEN STREET
8. EAST 98 STREET & RALPH AVE
9. EAST NEW YORK AVENUE & JUNIUS AVENUE
10. FLATBUSH AVENUE & NOSTRAND AVENUE
11. FLATLANDS AVENUE & AVENUE I
12. FORT HAMILTON PARKWAY & 78 STREET
13. GRAND AVENUE & PUTNAM AVENUE
14. KINGSLAND AVENUE & FROST STREET
15. OCEAN PKWY & LAWRENCE AVENUE
16. SEAVIEW AVENUE & REMSEN STREET

Signalized T – Away Intersections

1. 3 AVENUE & 71 STREET
2. 4 AVENUE & 16 STREET
3. 4 AVENUE & 67 STREET
4. 4 AVENUE & 89 STREET
5. 4 AVENUE & 96 STREET
6. 7 AVENUE & 72 STREET
7. 86 STREET & 5 AVENUE
8. ADAMS STREET & JOHNSON STREET
9. ASHLAND PLACE & WILLOUGHBY STREET
10. ATLANTIC AVENUE & DEWEY PLACE
11. AVENUE M & EAST 16 STREET
12. AVENUE N & EAST 34 STREET
13. AVENUE T & EAST 71 STREET
14. BARTEL PRITCHARD SQUARE & 15 STREET
15. BAY PARKWAY & WEST 7 STREET
16. BAY PARKWAY & 70 STREET
17. BAY PARKWAY & 72 STREET
18. BAY PARKWAY & 74 STREET
19. BEDFORD AVENUE & ERASMUS STREET
20. BROADWAY & ABERDEEN STREET
21. CADMAN PLAZA W & MONTAGUE STREET
22. CATON AVENUE & OCEAN PARKWAY
23. CHURCH AVENUE & EAST 17 STREET
24. CONEY ISLAND AVENUE & RODER AVE
25. COURT STREET & KANE STREET
26. COURT STREET & WARREN STREET
27. DAHILL ROAD & 41 STREET
28. GRAHAM AVENUE & DEBEVOISE STREET
29. FLATBUSH AVENUE & MARTENSE STREET
30. FLATBUSH AVENUE & 4 AVENUE
31. FLATBUSH AVENUE & LENOX ROAD
32. FLATBUSH AVENUE & LINDEN BOULEVARD
33. FLATBUSH AVENUE & MARTENSE STREET
34. FLUSHING AVENUE & BEAVER STREET
35. FLUSHING AVENUE & WARSOFF PLACE
36. FRANKLIN STREET & CALYER STREET
37. FULTON STREET & ALBANY AVENUE
38. FULTON STREET & CUMBERLAND STREET
39. FULTON STREET & HUDSON AVENUE
40. FULTON STREET & SCHENECTADY AVENUE
41. FULTON STREET & SOUTH ELLIOTT PLACE
42. HICKS STREET & SUMMIT STREET
43. KENT AVENUE & SOUTH 3 STREET
44. LENOX ROAD & BROOKLYN AVENUE
45. LENOX ROAD & EAST 34 STREET
46. LIVINGSTON STREET & GALLATIN PLACE
47. LIVINGSTON STREET & HANOVER PLACE
48. MARCY AVENUE & ELLERY STREET
49. MARCY AVENUE & STOCKTON STREET
50. MERMAID AVENUE & WEST 29 STREET
51. MOTHER GASTON BOULEVARD & GLENMORE AVENUE
52. MYRTLE AVENUE & WASHINGTON PARK
53. NORTH CONDUIT BOULEVARD & CRESCENT STREET
54. NORTH CONDUIT BOULEVARD & GRANT AVENUE
55. NEPTUNE AVENUE & WEST 19 STREET
56. NEPTUNE AVENUE & WEST 25 STREET
57. NEWKIRK AVENUE & EAST 31 STREET
58. NOSTRAND AVE & PULASKI ST
59. PAERDEGAT AVE NORTH & EAST 77 STREET
60. PARKSIDE AVENUE & PARADE PLACE
61. PATCHEN AVENUE & MARION STREET
62. PENNSYLVANIA AVENUE & FREEPORT LOOP
63. 19 STREET & 10 AVE
64. PROSPECT PARK WEST & 11 STREET
65. RUTLAND ROAD & EAST 96 STREET
66. SHEEPSHEAD BAY & EAST 15 STREET
67. SOUTH CONDUIT BOULEVARD & CRESCENT STREET
68. SUTTER AVENUE & BRISTOL STREET
69. UNION AVENUE & SOUTH 2 STREET
70. WASHINGTON AVENUE & PRESIDENT STREET
71. WYCKOFF AVENUE & NORMAN STREET

APPENDIX B: LIST OF ALL PEDESTRIAN PHASE LOCATIONS - BROOKLYN

Signalized Mid-block Crossings

1. 4 AVENUE & 4 STREET (240' S OF 3 STREET)
2. 86 STREET B/N 4 AVENUE AND 5 AVENUE
3. ADAMS STREET & FULTON STREET/JOHNSON STREET
4. BEDFORD AVENUE & BROOKLYN COLLEGE
5. FLATBUSH AVENUE & PROSPECT PARK ZOO
6. FURMAN STREET & CLARK STREET (TA EMERGENCY EXIT)
7. GRAHAM AVENUE, 500' SOUTH OF MAUJER STREET
8. GRAND ARMY PLAZA & CIRCLE NORTH
9. JAY STREET & MYRTLE AVENUE
10. LAFAYETTE AVENUE & EMERSON PLACE
11. LINDEN BLVD & CHRISTOPHER AVE
12. MYRTLE AVENUE & HUDSON WALK
13. OCEAN AVENUE & PROSPECT PARK N ENTR.
14. OCEAN AVENUE & PROSPECT PARK S ENTR.
15. PROSPECT PARK & POST # 1
16. PROSPECT PARK & POST # 2
17. PROSPECT PARK & POST # 4
18. PROSPECT PARK & POST # 5
19. PROSPECT PARK & POST # 6
20. PROSPECT PARK & POST # 7
21. PROSPECT PARK & POST # 8
22. PROSPECT PARK & POST # 9
23. PROSPECT PARK & POST # 10
24. PROSPECT PARK & POST # 11
25. PROSPECT PARK & POST # 12
26. PROSPECT PARK & POST # 13
27. PROSPECT PARK & POST # 16
28. PROSPECT PARK & POST # 17
29. PROSPECT PARK & POST # 17A
30. PROSPECT PARK & POST # 18
31. ROCKAWAY PARKWAY & AVENUE A (BROOKDALE HOSPITAL)
32. W 12 STREET B/N NEPTUNE AVE AND SURF AVENUE

APPENDIX B: LIST OF ALL PEDESTRIAN PHASE LOCATIONS - MANHATTAN

All Pedestrian Phases

1. 11 AVENUE & WEST 24 STREET
2. 5 AVENUE & WASHINGTON SQUARE NORTH
3. 6 AVENUE & W 33 STREET
4. 6 AVENUE & LISPENARD STREET
5. AMSTERDAM AVENUE & WEST 162 STREET
6. BROAD STREET & BEAVER STREET
7. BROADWAY & BARCLAY STREET
8. BROADWAY & BATTERY PLACE
9. BROADWAY & ANN STREET
10. CANAL STREET & GREENWICH STREET
11. CENTRAL PARK WEST & FREDEDICK DOUGLASS CIRCLE
12. EAST 34 STREET & QUEENS MIDTOWN TUNNEL ENTRANCE
13. EAST 57 STREET & QUEENS BORO BRIDGE EXIT
14. FREDERICK DOUGLASS BOULEVARD & FREDERICK DOUGLASS CIRCLE
15. FREDERICK DOUGLASS CIRCLE & CATHEDRAL PARKWAY
16. FREDERICK DOUGLASS CIRCLE & CENTRAL PARK NORTH
17. GRAND STREET & MADISON STREET
18. LIBERTY STREET & SOUTH END AVENUE
19. MANHATTAN AVENUE & WEST 122 STREET
20. MARGINAL STREET & WEST 125 STREET
21. RIVERSIDE DRIVE & WEST 104 STREET
22. RIVERSIDE DRIVE & WEST 108 STREET
23. RIVERSIDE DRIVE & WEST 114 STREET
24. RIVERSIDE DRIVE & WEST 72 STREET
25. STATE STREET & PETER MINUIT PLAZA
26. SOUTH STREET & CATHERINE SLIP
27. SOUTH STREET & WALL STREET
28. WEST 125 STREET & WEST 129 ST
29. WATER STREET & WHITEHALL STREET

Signalized T – Away Intersections

1. 3 AVENUE & EAST 127 STREET
2. 5 AVENUE & EAST 25 STREET
3. 5 AVENUE & EAST 41 STREET
4. 5 AVENUE & EAST 62 STREET
5. 5 AVENUE & EAST 64 STREET
6. 5 AVENUE & EAST 68 STREET
7. 5 AVENUE & EAST 70 STREET
8. 5 AVENUE & EAST 74 STREET
9. 5 AVENUE & EAST 76 STREET
10. 5 AVENUE & EAST 78 STREET
11. 5 AVENUE & EAST 80 STREET
12. 5 AVENUE & EAST 82 STREET
13. 5 AVENUE & EAST 88 STREET
14. 5 AVENUE & EAST 92 STREET
15. 5 AVENUE & EAST 94 STREET
16. 5 AVENUE & EAST 98 STREET
17. 5 AVENUE & EAST 104 STREET
18. 5 AVENUE & EAST 108 STREET
19. 5 AVENUE & EAST 124 STREET
20. 5 AVENUE & WASHINGTON SQUARE NORTH
21. 6 AVENUE & W 33 STREET
22. 6 AVENUE & VAN DAM STREET
23. 6 AVENUE & WEST 41 STREET
24. 6 AVENUE & LISPENARD STREET
25. 7 AVENUE & WEST 32 STREET
26. 7 AVENUE & WEST 128 STREET
27. 7 AVENUE & WEST 130 STREET
28. 7 AVENUE & WEST 149 STREET
29. 7 AVENUE & WEST 151 STREET
30. 7 AVENUE & WEST 153 STREET
31. 8 AVENUE & EAST 129 STREET
32. 8 AVENUE & EAST 132 STREET
33. 8 AVENUE & EAST 144 STREET
34. COLUMBUS AVENUE & WEST 59 STREET
35. AMSTERDAM AVENUE & WEST 68 STREET
36. AMSTERDAM AVENUE & WEST 81 STREET
37. AMSTERDAM AVENUE & WEST 99 STREET
38. AMSTERDAM AVENUE & WEST 101 STREET
39. AMSTERDAM AVENUE & WEST 103 STREET
40. AMSTERDAM AVENUE & WEST 111 STREET
41. AMSTERDAM AVENUE & WEST 115 STREET
42. AMSTERDAM AVENUE & WEST 117 STREET
43. AMSTERDAM AVENUE & WEST 118 STREET
44. AMSTERDAM AVENUE & WEST 139 STREET
45. AMSTERDAM AVENUE & WEST 162 STREET
46. AMSTERDAM AVENUE & WEST 169 STREET
47. AMSTERDAM AVENUE & WEST 171 STREET
48. AMSTERDAM AVENUE & WEST 171 STREET
49. AMSTERDAM AVENUE & WEST 173 STREET
50. AMSTERDAM AVENUE & WEST 182 STREET
51. AVENUE A & EAST 9 STREET
52. AVENUE B & EAST 5 STREET
53. AVENUE B & EAST 8 STREET
54. AVENUE C & EAST 11 STREET
55. AVENUE D & EAST 3 STREET
56. AVENUE D & EAST 12 STREET
57. BATTERY PLACE & GREENWICH STREET

APPENDIX B: LIST OF ALL PEDESTRIAN PHASE LOCATIONS - MANHATTAN

Signalized T – Away Intersections (cont'd)

58. BATTERY PLACE & WEST STREET
59. BOWERY & PRINCE STREET
60. BRADHURST AVENUE & WEST 148 STREET
61. BROADWAY & ARDEN STREET
62. BROADWAY & BARCLAY STREET
63. BROADWAY & BOND STREET
64. BROADWAY & CUMMING STREET
65. BROADWAY & JOHN ST
66. BROADWAY & DONGAN PLACE
67. BROADWAY & ELLWOOD STREET
68. BROADWAY & WEST 60 STREET
69. BROADWAY & WEST 117 STREET
70. BROADWAY & WEST 118 STREET
71. BROADWAY & WEST 189 STREET
72. BROADWAY & WEST 212 STREET
73. BROADWAY & MORRIS STREET
74. BROADWAY & NAGLE AVENUE
75. BROADWAY & BATTERY PLACE
76. BROADWAY & THOMAS STREET
77. BROADWAY & ANN STREET
78. BROADWAY & WALL STREET
79. BROADWAY & WASHINGTON PLACE
80. BROADWAY & EAST 11 STREET
81. BROADWAY & WEST 42 STREET
82. CANAL STREET & GREENWICH STREET
83. CENTRAL PARK WEST & WEST 62 STREET
84. CENTRAL PARK WEST & WEST 63 STREET
85. CENTRAL PARK WEST & WEST 69 STREET
86. CENTRAL PARK WEST & WEST 71 STREET
87. CENTRAL PARK WEST & WEST 73 STREET
88. CENTRAL PARK WEST & WEST 75 STREET
89. CENTRAL PARK WEST & WEST 79 STREET
90. CENTRAL PARK WEST & WEST 83 STREET
91. CENTRAL PARK WEST & WEST 85 STREET
92. CENTRAL PARK WEST & WEST 87 STREET
93. CENTRAL PARK WEST & WEST 89 STREET
95. CENTRAL PARK WEST & WEST 93 STREET
96. CENTRAL PARK WEST & WEST 95 STREET
97. CENTRAL PARK WEST & WEST 101 STREET
98. CENTRAL PARK WEST & WEST 103 STREET
99. CENTRAL PARK WEST & WEST 105 STREET
100. CENTRAL PARK WEST & WEST 107 STREET
101. CENTRAL PARK WEST & WEST 109 STREET
102. CENTRAL PARK WEST & FREDEDICK DOUGLASS CIRCLE
103. CENTRE STREET & WHITE STREET
104. CHRYSTIE STREET & HESTER STREET
105. CHRYSTIE STREET & RIVINGTON STREET
106. COLUMBUS AVE & WEST 61 STREET
107. COLUMBUS AVE & WEST 79 STREET
108. CONVENT AVENUE & WEST 131 STREET
109. COOPER SQUARE & EAST 6 STREET
110. EAST 120 STREET & 5 AVENUE
111. EAST 120 STREET & 5 AVENUE
112. EAST 20 STREET & EAST 20 ST LOOP ENTRANCE AVENUE B
113. EAST 23 STREET & MADISON AVENUE
114. EAST 34 STREET & QUEENS MIDTOWN TUNNEL ENTRANCE
115. EAST 42 STREET & VANDERBILT AVENUE
116. EAST 57 STREET & QUEENS BORO BRIDGE EXIT
117. EAST BROADWAY & JEFFERSON STREET
118. EAST END AVENUE & EAST 85 STREET
119. EAST HOUSTON ST & BARUCH DRIVE
120. EAST HOUSTON ST & BARUCH PLACE
121. EAST HOUSTON ST & LUDLOW STREET
123. FORSYTH STREET & BROOM STREET
124. FORSYTH STREET & STANTON ST
125. FREDEDICK DOUGLASS BOULEVARD & FREDEDICK DOUGLASS CIRCLE
126. FREDEDICK DOUGLASS CIRCLE & CATHEDRAL PARKWAY
127. FREDEDICK DOUGLASS CIRCLE & CENTRAL PARK NORTH
128. FORT GEORGE AVENUE & FORT GEORGE CROSSWALK
129. FORT WASHINGTON AVENUE & WEST 174 STREET
130. GOLD STREET & BEEKMAN STREET
131. GRAND STREET & COLUMBIA STREET
132. GRAND STREET & EAST BROADWAY
133. GRAND STREET & FORSYTH STREET
134. GRAND STREET & MADISON STREET
135. GRAND STREET & NORFOLK STREET
136. GRAND STREET & RIDGE STREET
137. GREENWICH AVENUE & CHARLES STREET
138. GREENWICH STREET & CORTLAND STREET
139. GREENWICH STREET & FRANKLIN STREET
140. GREENWICH STREET & FULTON STREET
141. GREENWICH STREET & DUANE STREET
142. GREENWICH STREET & PARK PLACE
143. HUDSON STREET & GROVE STREET
144. LENOX AVENUE & WEST 113 STREET
145. LENOX AVENUE & WEST 133 STREET
146. LENOX AVENUE & WEST 137 STREET
147. LENOX AVENUE & WEST 141 STREET
148. LENOX AVENUE & WEST 143 STREET
149. LEXINGTON AVENUE & EAST 25 STREET
150. LEXINGTON AVENUE & EAST 44 STREET
151. LIBERTY STREET & SOUTH END AVENUE
152. MADISON AVENUE & EAST 24 STREET

APPENDIX B: LIST OF ALL PEDESTRIAN PHASE LOCATIONS - MANHATTAN

Signalized T – Away Intersections (cont'd)

154.MADISON AVENUE & EAST 101 STREET
155.MADISON AVENUE & EAST 103 STREET
156.MADISON AVENUE & EAST 105 STREET
157.MADISON AVENUE & EAST 107 STREET
158.MADISON AVENUE & EAST 110 STREET
159.MADISON AVENUE & EAST 122 STREET
160.MADISON STREET & OLIVER STREET
161.MANHATTAN AVENUE & WEST 122 STREET
162.MARGINAL STREET & WEST 125 STREET
163.MONTGOMERY STREET & CHERRY STREET
164.MORNINGSIDE AVENUE & WEST 120 STREET
165.NAGLE AVENUE & THAYER STREET
166.PORT AUTHORITY BUS EXIT & WEST 41 ST
167.PITT STREET & RIVINGTON STREET
168.RIVERSIDE DRIVE & WEST 104 STREET
169.RIVERSIDE DRIVE & WEST 108 STREET
170.RIVERSIDE DRIVE & WEST 114 STREET
171.RIVERSIDE DRIVE & WEST 142 STREET
172.RIVERSIDE DRIVE & WEST 144 STREET
173.RIVERSIDE DRIVE & WEST 72 STREET
174.RIVERSIDE DRIVE & WEST 76 STREET
175.RIVERSIDE DRIVE & WEST 78 STREET
176.RIVERSIDE DRIVE & WEST 82 STREET
177.RIVERSIDE DRIVE & WEST 84 VSTREET
178.RIVERSIDE DRIVE & WEST 88 STREET
179.RIVERSIDE DRIVE & WEST 90 STREET
180.READE STREET & HUDSON STREET
181.SAINT JAMES PLACE & JAMES STREET
182.STATE STREET & BRIDGE STREET
183.STATE STREET & PETER MINUIT PLAZA
184.SOUTH STREET & CATHERINE SLIP
185.SOUTH STREET & RUTGERS SLIP
186.SOUTH STREET & WALL STREET
187.SOUTH STREET & WHITEHALL STREET
190.ST NICHOLAS AVENUE & WEST 134 STREET
191.ST NICHOLAS AVENUE & WEST 138 STREET
192.ST NICHOLAS AVENUE & WEST 140 STREET
193.ST NICHOLAS AVENUE & WEST 147 STREET
194.ST NICHOLAS AVENUE & WEST 149 STREET
195.ST NICHOLAS AVENUE & WEST 170 STREET
196.UNION SQUARE WEST & EAST 15 STREET
197.VARICK ST & DOMINICK STREET
198.VARICK ST & GRAND STREET
199.VESEY ST & WASHINGTON STREET
200.WEST 125 STREET & FREDERICK DOUGLASS BOULEVARD
201.WEST 125 STREET & LENOX AVE
202.WEST 125 STREET & WEST 129 ST
203.WEST 181 STREET & CABRINI BOULEVARD
204.WADSWORTH AVENUE & WEST 186 STREET
205.WASHINGTON SQUARE SO & THOMPSON STREET
206.WATER STREET & COENTIES SLIP
207.WATER STREET & GOUVERNEUR LANE
208.WATER STREET & PINE STREET
209.WATER STREET & WHITEHALL STREET
210.WEST STREET & MORTON STREET
211.WEST STREET & WEST 12 STREET
212.WEST STREET & WATTS STREET
213.WHITEHALL STREET & STONE STREET

APPENDIX B: LIST OF ALL PEDESTRIAN PHASE LOCATIONS - MANHATTAN

Signalized Mid-block Crossings

1. 1 AVENUE & EAST 32 STREET (BET.E 30 ST & E 33)
2. 1 AVENUE & EAST 107 STREET
3. 1 AVENUE & EAST 113 STREET
4. 1 AVENUE & EAST 122 STREET
5. 12 AVENUE & WEST 23 STREET
6. 2 AVENUE & E 16 STREET
7. 2 AVENUE & E 98 STREET
8. 2 AVENUE & E 107 STREET
9. 2 AVENUE & E 114 STREET
10. 3 AVENUE & EAST 113 STREET
11. 5 AVENUE & 60' S OF E 50 STREET
12. 5 AVENUE & EAST 99 STREET
13. 5 AVENUE & EAST 113 STREET
14. 5 AVENUE & E 132 STREET
15. 6 AVENUE & DOMINICK STREET
16. 8 AVENUE & BETW. W31-W33
17. 8 AVENUE & E 130 STREET
18. 9 AVENUE & WEST 27 STREET
19. AMSTERDAM AVENUE & 200' NORTH WEST 62 STREET
20. AMSTERDAM AVENUE & PED X BET. W 123 & LA SALLE ST.
21. AVENUE D & E 11 STREET
22. BROADWAY & ELLWOOD STREET
23. BROADWAY & W 117 STREET
24. BROADWAY & W 118 STREET
25. BROADWAY & WHITEHALL ST/ BOWLING GREEN
26. BROADWAY & 5 AVENUE, 120' N OF 23 ST
27. CENTRAL PARK W & W 79 STREET
28. CENTRE STREET & BROOKLYN BRIDGE ENTRANCE
29. CENTRE STREET & BROOKLYN BRIDGE EXIT
31. CLINTON STREET & BETWEEN E. BROADWAY & GRAND ST
32. COLUMBUS AVE & W 64 STREET
33. COLUMBUS AVE & W 98 STREET
34. COLUMBUS AVE & W 99 STREET
35. COLUMBUS AVE & W 102 STREET
36. COLUMBUS AVE & W 103 STREET
37. CONVENT AVENUE & W 138 STREET
38. CONVENT AVENUE & W 139 STREET
39. EAST 25 STREET B/N LEXINGTON AVE & 3 AVE
40. EAST 42 STREET & PARK AVENUE
41. EAST 42 STREET B/N 7 AVE AND 8 AVE
42. EAST 42 STREET B/N 8 AVE AND 9 AVE
43. EAST 42 STREET B/N 5 AVE AND 6 AVE
44. EAST BROADWAY & BETW. CATHERINE/MARKET STR
45. FDR NB SR & EAST 37 STREET
46. GRAND STREET & RIDGE STREET
47. LAFAYETTE STREET & PEARL STREET
48. LEXINGTON AVENUE & EAST 113 STREET
49. LEXINGTON AVENUE & EAST 114 STREET
50. MADISON AVENUE & E 100 STREET
51. MADISON AVENUE & E 113 STREET
52. MADISON AVENUE & E 114 STREET
53. MADISON AVENUE B/N E 132-133 STREET
54. MADISON AVENUE B/N E 134-135 STREET
55. MADISON STREET & 700' W OFJACKSON STREET
56. MURRAY STREET, 270' WEST OF WEST STREET
57. PARK AVE E & E 113 STREET
58. PARK AVE W & E 113 STREET
62. RIVERSIDE DRIVE & WEST 112 STREET
63. RIVERSIDE DRIVE & WEST 138 STREET
64. RIVERSIDE DRIVE & WEST 151 STREET
65. RIVERSIDE DRIVE & WEST 163 STREET
66. RIVERSIDE DRIVE & 200 NORTH WEST 181 STREET
67. RIVERSIDE DRIVE & GRANTS TOMB
68. RIVERSIDE DRIVE & WEST 94 STREET
69. RIVERSIDE DRIVE & WEST 99 STREET
70. RIVERSIDE DRIVE & WEST 100 STREET
71. ST NICHOLAS AVENUE & WEST 130 STREET
72. ST NICHOLAS AVENUE B/N 130 ST & 133 ST
73. ST NICHOLAS AVENUE & WEST 156 STREET
74. VESEY ST & EAST OF NORTH END AVE
75. W 125 STREET B/N LENOX AV & 5 AVENUE
76. W 23 STREET B/N 6 AVE & 5 AVE
77. W 31 STREET & 275' WEST OF 7 AVENUE
78. W 33 STREET & 275' WEST OF 7 AVENUE
79. W 34 STREET B/N 5 AVE AND 6 AVE
80. W 34 STREET B/N 6 AVE AND 7 AVE
81. W 34 STREET B/N 7 AVE AND 8 AVE
82. W 34 STREET B/N 8 AVE AND 9 AVE
83. W 57 STREET B/N 9 AVE AND 8 AVE (370' E OF 9 AVE)
84. W 57 STREET B/N 5 AVE AND 6 AVE
85. W 57 STREET B/N 6 AVE AND 7 AVE
86. W 65 STREET, EAST OF AMSTERDAM AVE
87. WATER ST & 55 WATER ST
88. WATER ST & COENTIS SLIP
89. WEST END AVENUE & W 67 STREET
90. WEST END AVENUE & W 69 STREET
91. WEST ST S/B & MORRIS ST

APPENDIX B: LIST OF ALL PEDESTRIAN PHASE LOCATIONS - QUEENS

All Pedestrian Phases

1. 108 STREET & OTIS AVENUE
2. 80 STREET & FURMANVILLE AVENUE
3. 86 AVENUE & 249 STREET
4. ASTORIA BOULEVARD & 92 STREET
5. BROADWAY & 72 STREET
6. COLLEGE POINT BOULEVARD & 41 ROAD
7. FOREST AVENUE & MADISON STREET
8. FRANCIS LEWIS BOULEVARD & 120 AVENUE
9. HILLSIDE AVENUE & METROPOLITAN AVENUE
10. LANGDALE STREET & 80 AVENUE
11. LEFFERTS BLVD & GRENFELL STREET
12. MAIN STREET & 78 ROAD
13. MOTT AVENUE & CORNAGA AVENUE
14. NORTHERN BOULEVARD & BROADWAY
15. YELLOWSTONE BOULEVARD & ALDERTON STREET
16. YELLOWSTONE BOULEVARD & AUSTIN STREET

Signalized T – Away Intersections

1. 101 AVENUE & DREW STREET
2. 34 AVENUE & 78 STREET
3. 34 AVENUE & 105 STREET
4. 63 ROAD & 98 STREET
5. ARCHER AVENUE & 153 STREET
6. CLINTONVILLE STREET & LOCK AVENUE
7. SOUTH CONDUIT AVENUE & 89 STREET
8. CORONA AVENUE & 92 STREET
9. GRAND AVENUE & 69 LANE
10. KISSENA BOULEVARD & 71 AVENUE
11. LONG ISLAND EXPRESSWAY & 173 STREET
12. MAIN STREET & PECK AVENUE
13. MAIN STREET & 39 AVENUE
14. MERRICK BOULEVARD & 90 AVENUE
15. METROPLITAN AVENUE & 54 STREET
16. METROPLITAN AVENUE & 61 STREET
17. METROPLITAN AVENUE & 78 STREET
18. METROPLITAN AVENUE & 79 PLACE
19. MYRTLE AVENUE & 71 AVENUE
20. MYRTLE AVENUE & 68 PLACE
21. MYRTLE AVENUE & 68 STREET
22. NORTHERN BOULEVARD & 214 PLACE
23. NORTHERN BOULEVARD & 245 STREET
24. PARSONS BOULEVARD & 87 AVENUE
25. QUEENS BOULEVARD & 69 AVENUE
26. QUEENS BOULEVARD & 70 AVENUE
27. QUEENS PLAZA NORTH & 27 STREET
28. QUEENS PLAZA NORTH & 29 STREET
29. ROCKAWAY BOULEVARD & 97 STREET
30. SHORE FRONT PARKWAY & BEACH 92 STREET
31. SHORE FRONT PARKWAY & BEACH 98 STREET
32. SUTPHIN BOULEVARD & 90 AVENUE
33. SUTPHIN BOULEVARD & 91 AVENUE
34. SUTTER AVENUE & 90 STREET
35. THOMSON AVENUE & 31 STREET
36. UNION STREET & 38 STREET
37. UNION TURNPIKE & 149 STREET
38. UNION TURNPIKE & 184 STREET
39. WOODSIDE AVENUE & BARNETT AVENUE
40. WOODSIDE AVENUE & 61 STREET
41. WOODSIDE AVENUE & 71 STREET
42. WYCKOFF AVENUE & NORMAN STREET

Signalized Mid-block Crossings

1. FRANCIS LEWIS BLVD & 820' NORTH OF 73 AVENUE
2. GUY R BREWER BLVD & JUNIOR HIGH SCHOOL 72
3. MAIN STREET B/N 63 DRIVE & GRAVETT RD
4. MAIN STREET & PEACK AVENUE
5. QUEENS BOULEVARD & 120' E OF 69 AVENUE
6. ROOSEVELT AVENUE & SHEA STADIUM GATE "E"
7. ROOSEVELT AVENUE & 400' W OF UNION STR
8. SUTPHIN BLVD & 150 STREET
9. VAN WYCK EXPWY & 95' E OF ASPHALT PLANT

APPENDIX B: LIST OF ALL PEDESTRIAN PHASE LOCATIONS – STATEN ISLAND

All Pedestrian Phases

1. CANAL STREET & WATER STREET
2. FOREST AVENUE & CITY BOULEVARD
3. NEW DORP LANE & CLAWSON STREET

Signalized T – Away Intersections

1. RICHMOND TERRACE & HAMILTON AVENUE

Signalized Mid-block Crossings

1. TARGEE STREET & NAPLES STREET