



NEW YORK CITY DEPARTMENT OF TRANSPORTATION

SAFE STREETS NYC

DEPT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS
IN NEW YORK CITY



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APRIL 2006



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COMMISSIONER

SAFE STREETS NYC:

Traffic Safety Improvements In New York City

April 2006

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Note:

All new content since the last publication of this report (December 2004) is identified by ***red italicized and bold fonts***.



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MANHATTAN



PARK AVENUE/ EAST 33RD STREET

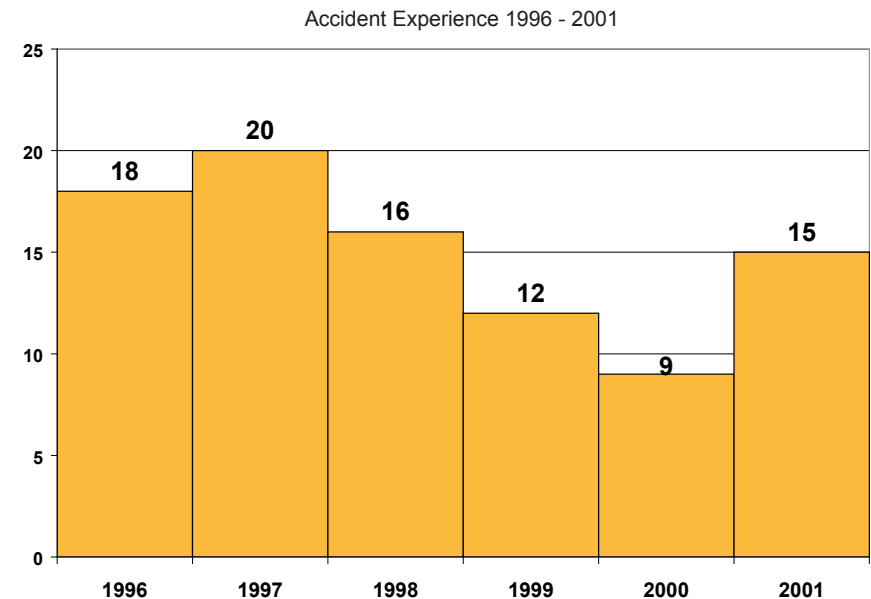
Description

The intersection of Park Avenue and East 33rd Street had consistently been ranked number one in the number of pedestrian crashes in the City, holding this position from 1996 through 1998, and again in 2001. This trend is directly attributed to the unusual configuration of the intersection and its location at the terminus or “mouth” of the Park Avenue Tunnel, which runs under Park Avenue between East 33rd and East 40th Streets. The tunnel serves two-way traffic with one lane in each direction. There is a posted height clearance of 8’–11” and trucks are prohibited in the tunnel. At the north leg of the intersection, the Park Avenue Tunnel emerges, severely limiting visibility for southbound Park Avenue traffic exiting the tunnel. Additionally, the merging of southbound Park Avenue surface traffic and southbound tunnel traffic exiting at East 33rd Street created unsafe pedestrian and vehicular conditions. Overall, pedestrians crossing on the north leg of the intersection were at the most risk due to the limited visibility.

Based upon these known factors, DOT has been actively working at this location to improve overall safety, especially for pedestrians. A central component of this initiative was the prohibition of pedestrians from using the north leg to cross Park Avenue directly at the mouth of the tunnel. This was accomplished through the use of signs and an iron fence at the northeast and northwest corners. Nevertheless, non-compliance of these regulations remains high.

In terms of the accident history at this location, this intersection has consistently ranked first in the City with the highest number of pedestrian accidents (18 in 1996, 20 in 1997, 16 in 1998 and 15 in 2001.) Pedestrian accidents peaked in 1997 with 20, and continued to decline with

16 accidents in 1998 and 12 accidents in 1999, the year the Department implemented its improvements. In 2000, the first full year for which post-implementation information is available, accidents declined to 9, which is 55% less than the accident experience in 1997. The Department believes the decline since 1999 can be attributed to the improvements and changes to pedestrian movements through this intersection. However, in 2001, pedestrian accidents increased substantially by 67% to 15. Given the decline in accidents at this location between 1997 and 2000 and the unusual increase that took place in 2001, the Department took a closer look at the contributing factors for accidents that took place at this intersection. A detailed analysis of each of the 15 accidents indicated that most of these accidents were attributed to pedestrians crossing against the signal and occurred in the southbound direction where vehicles exit the tunnel.



Although accident information for 2002 through 2005 is not available from the NYSDOT database at this time, the Department utilized the New York City Police Department Accident Database, which is not generally used in this report, to supplement this investigation with available information for the 2002 through 2005 accident experience. According to this database, pedestrian accidents decreased by 56% to only six in 2002. In 2003, pedestrian accidents increased slightly to eight. In 2004, pedestrian accidents increased slightly to nine. However, in 2005, pedestrian declined to six. There were no fatalities in 2001 or 2002, one fatality in 2003 and none in 2004 or 2005.

Based upon the additional information, the Department believes the accident experience in 2001 was an anomaly. Overall, pedestrian accidents have declined significantly at this location since the safety improvements were implemented in October 1999 and have made this intersection

significantly safer for pedestrians and motorists alike.

Improvements Implemented in October 1999

As part of the 1999 Mayor's Holiday Traffic Program, the Department implemented several measures to separate Park Avenue Tunnel traffic from pedestrians. This was accomplished by the installation of barriers extending from the mouth of the tunnel at the north leg of the intersection to near the south leg. Now pedestrians are physically able to cross Park Avenue only at the south leg (in conformance with the existing regulation). Furthermore, westbound traffic on East 33rd Street is no longer allowed to continue across Park Avenue, but is required to turn right (northbound) at Park Avenue. Green right arrow signals have been installed for westbound East 33rd Street. The improvements resulted in an overall reduction in conflicts between pedestrians and turning vehicles at all crosswalks in the intersection. Wayfinding signs were installed throughout the area to

direct truckers to appropriate truck routes (e.g., East 31st Street) and avoid unnecessary travel on East 33rd Street or Park Avenue. Specifically, the following improvements were implemented:

- A Jersey barrier separating the southbound tunnel exit from southbound Park Avenue surface traffic.
- Flexible delineators along the centerline of Park Avenue between the mouth of the tunnel and the south leg crosswalk.
- Signs prohibiting through traffic on westbound East 33rd Street and requiring all traffic to turn right to proceed northbound on Park Avenue surface road or into the tunnel (except trucks, which are prohibited in the tunnel).
- Wayfinding signs to direct motorists primarily to East 31st Street to access East 33rd Street west of Park Avenue and points west.



Pedestrian signage, iron pedestrian fences and other roadway improvements discourage pedestrians to cross at this location and provide for safer vehicular movements

- Signal face with right green arrow for traffic on westbound East 33rd Street approach to Park Avenue.
- Daylighting of the south curb of East 33rd Street at the approach to Park Avenue to facilitate turning movements for trucks.
- Remove alternate side “No Standing” regulations on East 33rd Street between Lexington and Park Avenues since the additional capacity created by making the curb lane a travel lane is no longer needed (East 33rd Street experiences reduced volume as a result of the improvements).
- Provide continuous “WALK” signal for pedestrians crossing west leg of intersection across East 33rd Street, including the signal phase when Park Avenue traffic is stopped since no conflicts can occur from westbound traffic.

Maintenance of all special items is continuing. In June 2000, several damaged sections of the iron fencing were repaired and re-installed. In March 2003, 18 linear feet of fencing was repaired and re-installed. Pavement markings were refurbished in June 2003. ***In February 2005, two fence sections at the northeast corner of Park Avenue and 33rd Street and one section on the center median were repaired.***

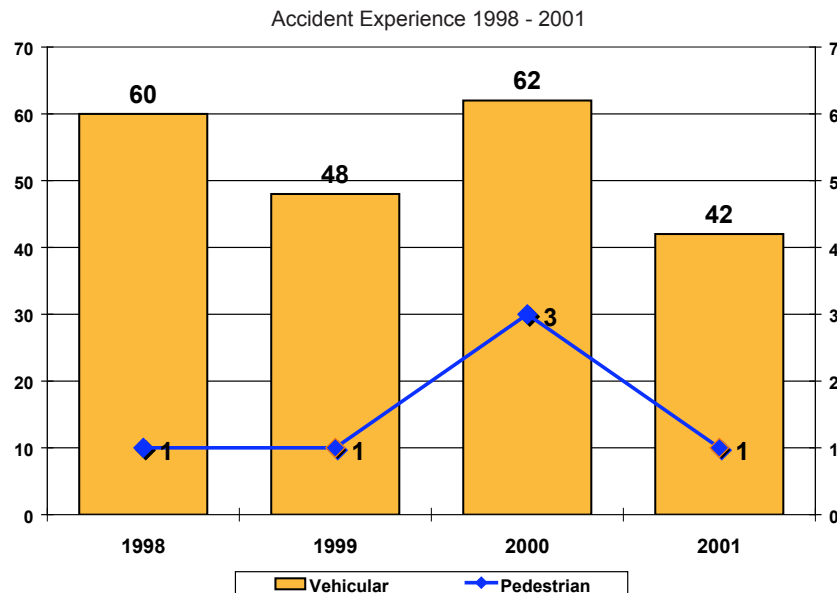


Oversized signage advised pedestrians to cross with care and wait for the walk signal

EDGECOMBE AVENUE

Description

Along the section of Edgecombe Avenue between West 155th Street and Amsterdam Avenue there are three schools (IS 90/PS 79, IS 164, and PS 8), a new police precinct (33rd Precinct) and a playground. The community raised concerns regarding the traffic safety of the school children in the area, limited parking and congestion. The Department, in coordination with Community Board 12 convened a task force to address these concerns. Members included the Department of Parks and Recreation, the Department of Sanitation, the Fire Department, the Community League and the Board of Education. As a result, the Department identified specific problems and in July 2002 implemented a series of improvements to ensure that the needs of the community were met.



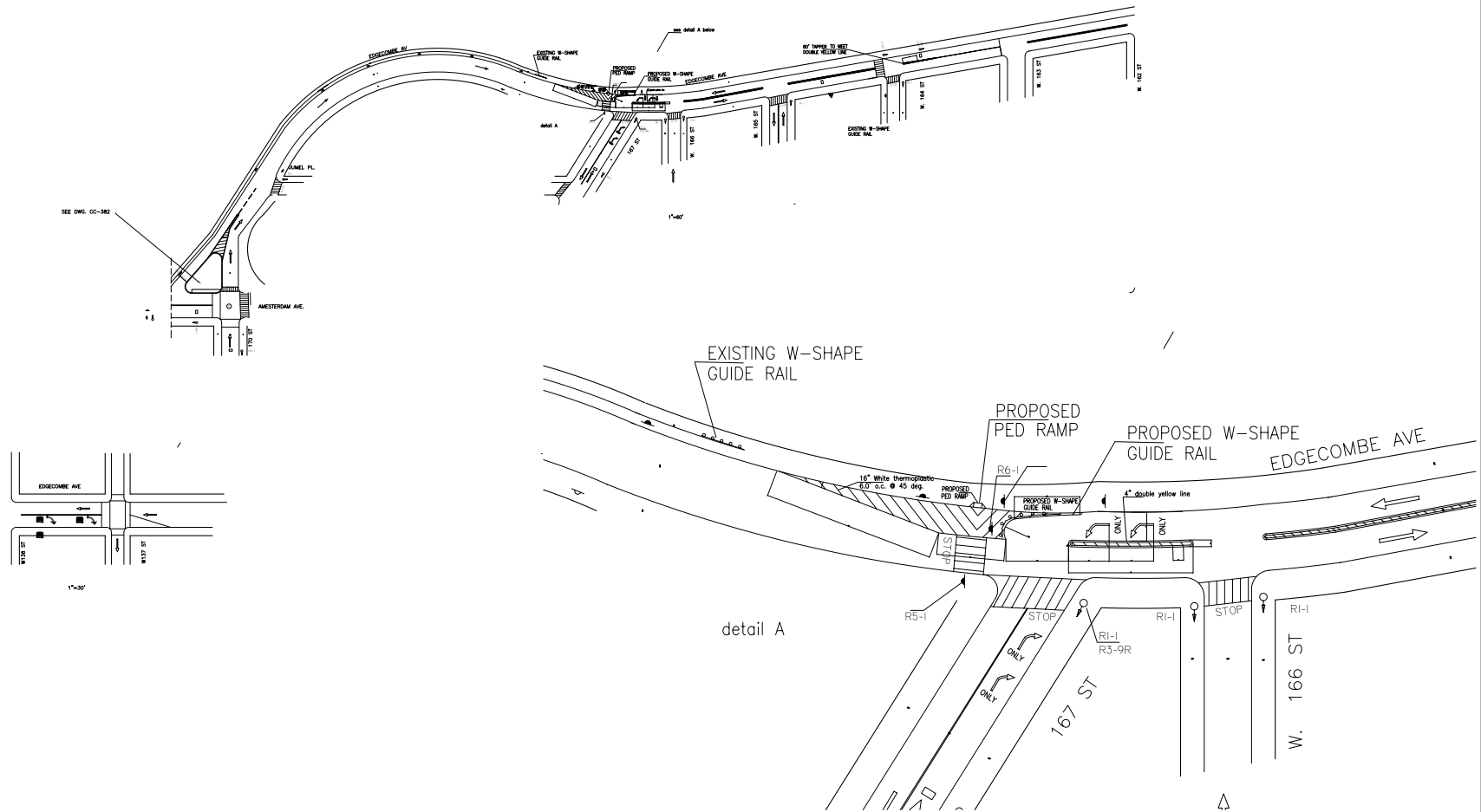
As part of the review of the corridor, the Department examined the accident history for Edgecombe Avenue between West 155th Street and Amsterdam Avenue. In 1998, there were a total of 61 accidents, of which one involved a pedestrian. In 1999, total accidents decreased 20% to 49 with one pedestrian accident. In 2000, total accidents increased 33% to 65 with three pedestrian accidents. In 2001, total accidents declined significantly by 33% to 43 with one pedestrian accident. This decline follows the trend citywide of decreasing accidents and the Department anticipates an additional decline in accidents as a result of the improvements implemented in July 2002.

Improvements Implemented In July 2002

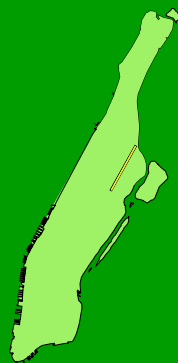
- Converted Edgecombe Avenue to one-way southbound (from two-way operation) from Jumel Place to West 167th Street.
- Converted Jumel Place to one-way northbound (from two-way operation) from West 167th Street to Edgecombe Avenue.
- Converted West 168th Street to one-way eastbound (from two-way operation) from Amsterdam Avenue to Jumel Place.
- Installed angle parking on West 168th Street between Amsterdam Avenue and Jumel Place.
- Narrowed Edgecombe Avenue with pavement markings between West 167th Street and West 164th Street.
- Installed additional school crosswalks and appropriate signage around PS 8 and IS 90.
- Installed curve warning signs on Edgecombe Avenue.

The implemented improvements are shown on the following page.

REVISIONS		
DATE	APPD	DESCRIPTION



CITY OF NEW YORK		DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC OPERATIONS		
28-11 Queens Plaza North		L.I.C., N.Y. 11101
EDGECOMBE AVENUE		
FROM AMSTERDAM AV. TO 163 ST		
APPROVED	Drawn by <u>SB</u>	DRAWING NO. <u>MD-488</u>
BY <u>SAM BARKHO, P.E.</u>	Checked by <u>SM</u>	
	Borough <u>MANHATTAN</u> Scale <u>AS SHOWN</u> Date <u>7/05/02</u>	

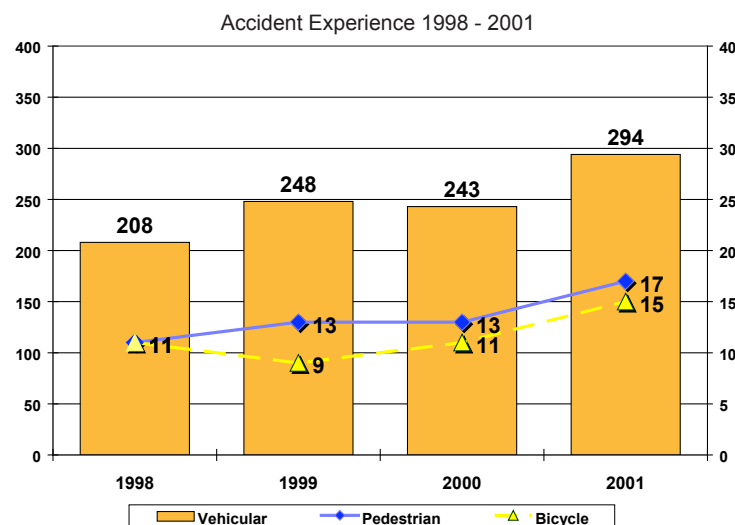


UPPER PARK AVENUE

Description

Beginning at East 96th Street, the Park Avenue roadway is divided by the Metro-North Viaduct which runs above the roadway from East 96th Street to East 132nd Street. The viaduct splits the Park Avenue roadway into separate northbound and southbound corridors with a typical width of 24 to 26 feet and vehicles often use it as a two-lane roadway. Along the entire corridor, a stone fascia is closely aligned to the curb line, and along a ten-block portion between East 101st Street and East 111th Street, the fascia of the viaduct is aligned approximately one foot from the curb line. This contributes to limited sight distances as motorists are not able to clearly view or react to a pedestrian's presence as they emerge from behind the stone fascia. Motorists also have a difficult time seeing other vehicles emerging from underneath the viaduct. The impacts in pedestrian and traffic flow on the roadway from these characteristics is most evident between East 101st and East 111th Street and in the vicinity of the Metro-North station at East 125th Street.

The Metro-North station at East 125th Street is a highly congested area with both high volumes of pedestrians and passengers discharging and loading. Additionally, the roadway narrows at this intersection to 19 feet due to the elevated columns supporting the rail station and tracks above. Much of the street below the station is leased from the City for vehicle parking by private entities.



The accident experience for this corridor indicates a rising trend in accidents along the length of the corridor between 1998 and 2001. In 1998, total accidents on Park Avenue between East 96th and East 132nd Streets were 230 including 11 involving pedestrians and 11 involving bicycles. In 1999, total accidents increased 17% to 270 of which 13 involved pedestrians and nine involved bicycles. In 2000, total accidents remained relatively unchanged at 267 with 13 involving pedestrians and 11 involving bicycles. In 2001, total accidents increased an additional 22% to 326 with 17 involving pedestrians and 15 involving bicycles. The rising accident trends predate the improvements that were

implemented in September 2002. The treatments that were implemented reflect the Department's concern for the increase in accidents along this corridor.



Aerial view of the Park Avenue corridor with improved markings and buffer zone

Improvements Implemented in September 2002

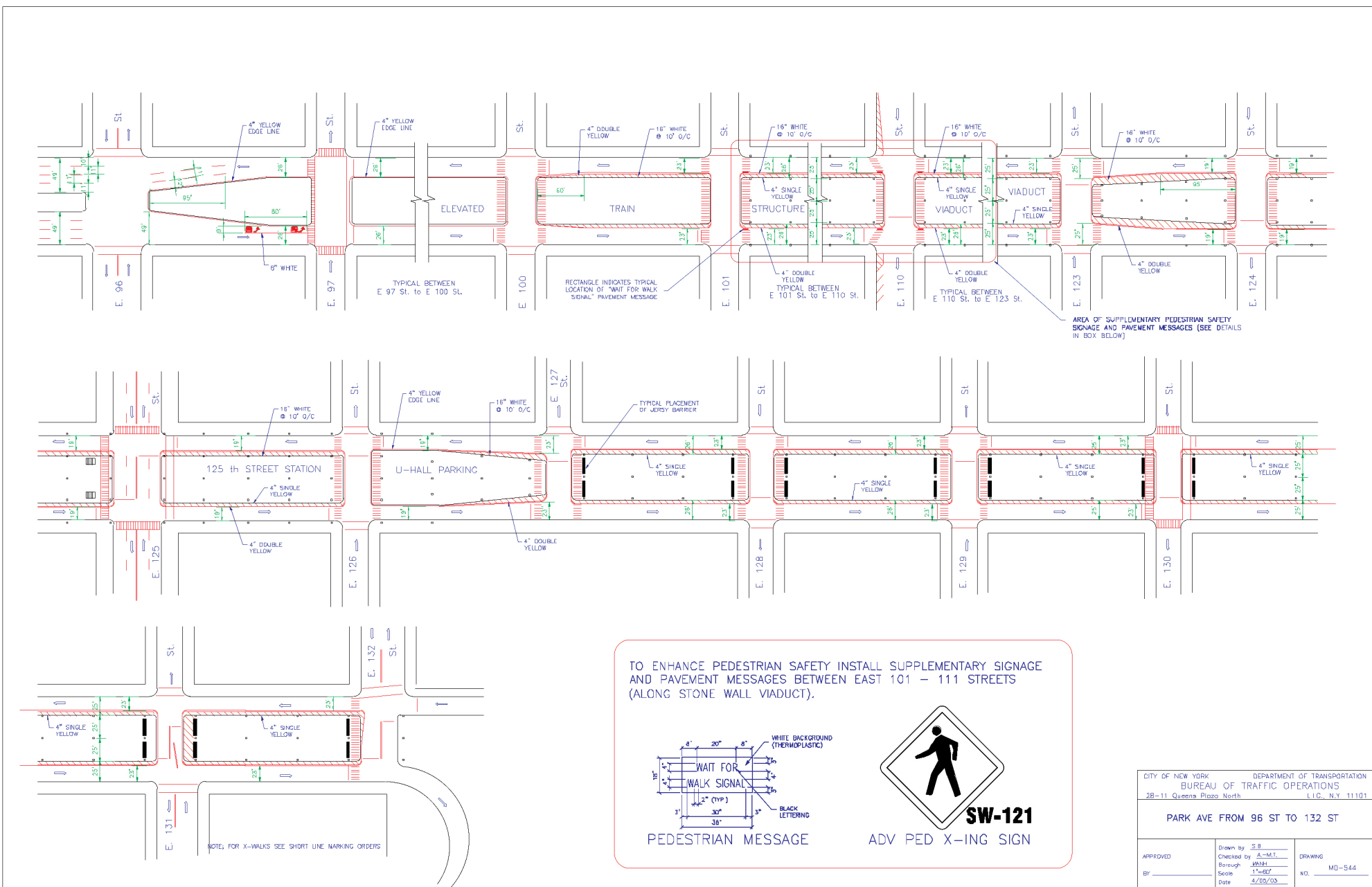
In conjunction with a DDC Engineering Resurfacing project between East 96th and East 132nd Streets, the following improvements were implemented in September 2002:

- Installed a three-foot wide thermoplastic 'buffer' (flush channelization) using pavement markings between East 101st and East 132nd Streets. The buffer is intended to realign the single travel lane away from the pedestrian refuge area in the center of Park Avenue's north and south roadways. The buffer markings improve the line of sight between motorist and pedestrian as well as cause motorists to reduce speed by creating the appearance of a narrowed roadway.
- Installed edge lines between East 97th and East 100th Streets south of the new bus terminal.
- Installed "Wait for Walk Signal" pavement messages to advise

pedestrians to wait for a fresh walk signal between East 101st and East 111th Streets where the stone walls of the viaduct severely limit visibility for both pedestrians and motorists.

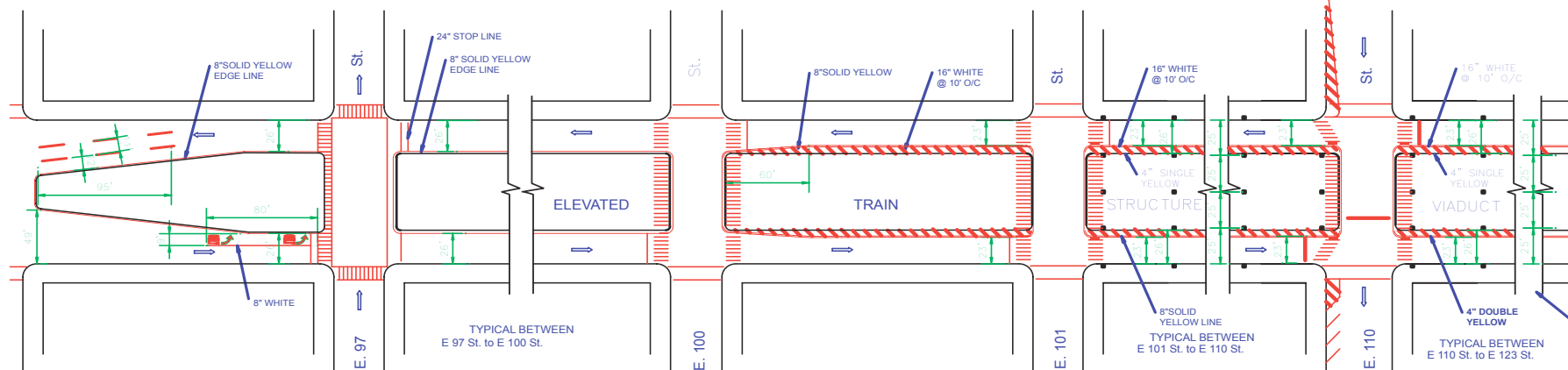
- Installed 20-foot jersey barriers at the north and south ends of each block in advance of the crosswalks between East 127th and East 132nd Streets to prevent motorists from traveling beneath the elevated structure. Some of these barriers have been removed as space beneath the tracks has been leased for parking purposes.
- Installed “No Standing 7-10AM Mon-Fri” regulations on the west curb (southbound) from East 132nd Street to East 130th Street to provide a second travel lane during the morning peak period.
- Removed signal faces (for northbound and southbound traffic) within the area beneath the elevated structure north of East 127th Street.
- Upgraded crosswalk markings to high visibility at all signalized intersections.
- Installed advance pedestrian crossing warning signs in the section of the stone viaduct between East 101st and East 111th Streets.

The improvements are shown on the following pages.



REVISIONS

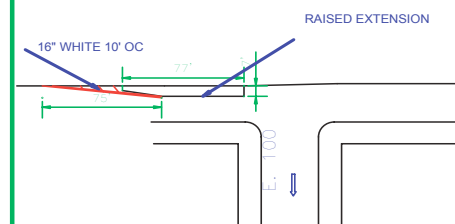
DATE	APPD	DESCRIPTION



ON S/B PARK AV @ 98 STREET TAPER FROM 30 FT. IN ADVANCE OF EXTENDED E. CURB EDGE LINE AROUND THE EXPOSED CURBLINE

OFFSET X-WALKS ON PARK AVE. BETWEEN E. 101-111 STREETS SO THAT X-WALKS LEAD TO OPENING PROVIDED IN STONE WALL FOR PED. PASSAGE.

SOUTH OF 100 ST. EXISTING RAISED EXTENSION TO BE REMOVED BY OTHERS
IN CONJUNCTION WITH MTA TERMINAL CONSTRUCTION
INSTALL MARKINGS AS SHOWN BELOW



CITY OF NEW YORK DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC OPERATIONS
28-11 Queens Plaza North L.I.C., N.Y. 11101

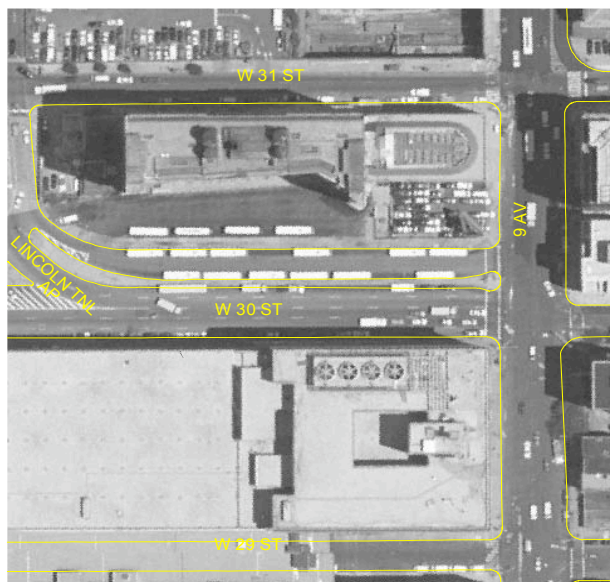
PARK AVE. FROM 97 ST. TO 110 ST.

Drawn by: A. PARKIN
Checked by: B.M.
Borough: MANHATTAN
Scale: 1\"/>

DRAWING
NO. CC-812



WEST 30TH STREET/ 9TH AVENUE

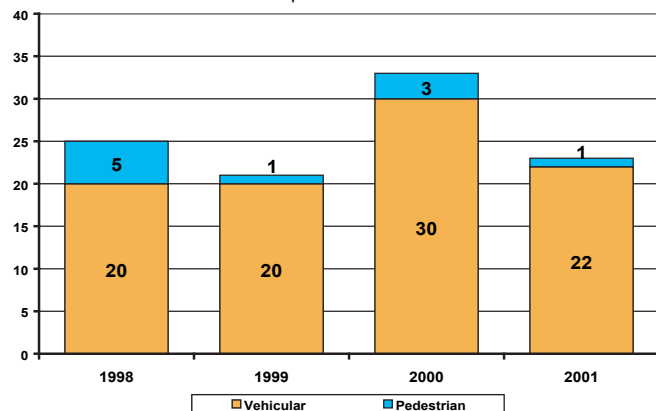


Aerial view of the West 30th Street and Ninth Avenue

Description

The intersection of West 30th Street and 9th Avenue is a complex intersection. At this location, traffic travels southbound along 9th Avenue while Lincoln Tunnel traffic travels eastbound along West 30th Street. Midblock, between 9th and 10th Avenues is the approach and exit ramps to and from the Lincoln Tunnel which contribute to most of the traffic on West 30th Street. Traffic on West 30th Street is separated by striping on the western end and a raised median east of the Tunnel roadway, generally known as Dyer Avenue. At certain times of the day, the Port Authority allows buses to layover on the northern portion of the roadway separated by the median. Additionally, a large number of United States Postal Service vehicles utilize this roadway, as there are postal facilities on both sides of West 30th Street.

Accident Experience 1998 - 2001



With the high amount of vehicular traffic associated with the Lincoln Tunnel, there are pedestrian/vehicle conflicts at this location, especially during peak hours when post office employees cross West 30th Street while vehicles enter and exit the Lincoln Tunnel.

Between 1998 and 2001, the accident experience at this location indicated a relatively high accident occurrence. In 1998, there were a total of 25 accidents, five of which involved pedestrians. In 1999, there were a total of 21 accidents,

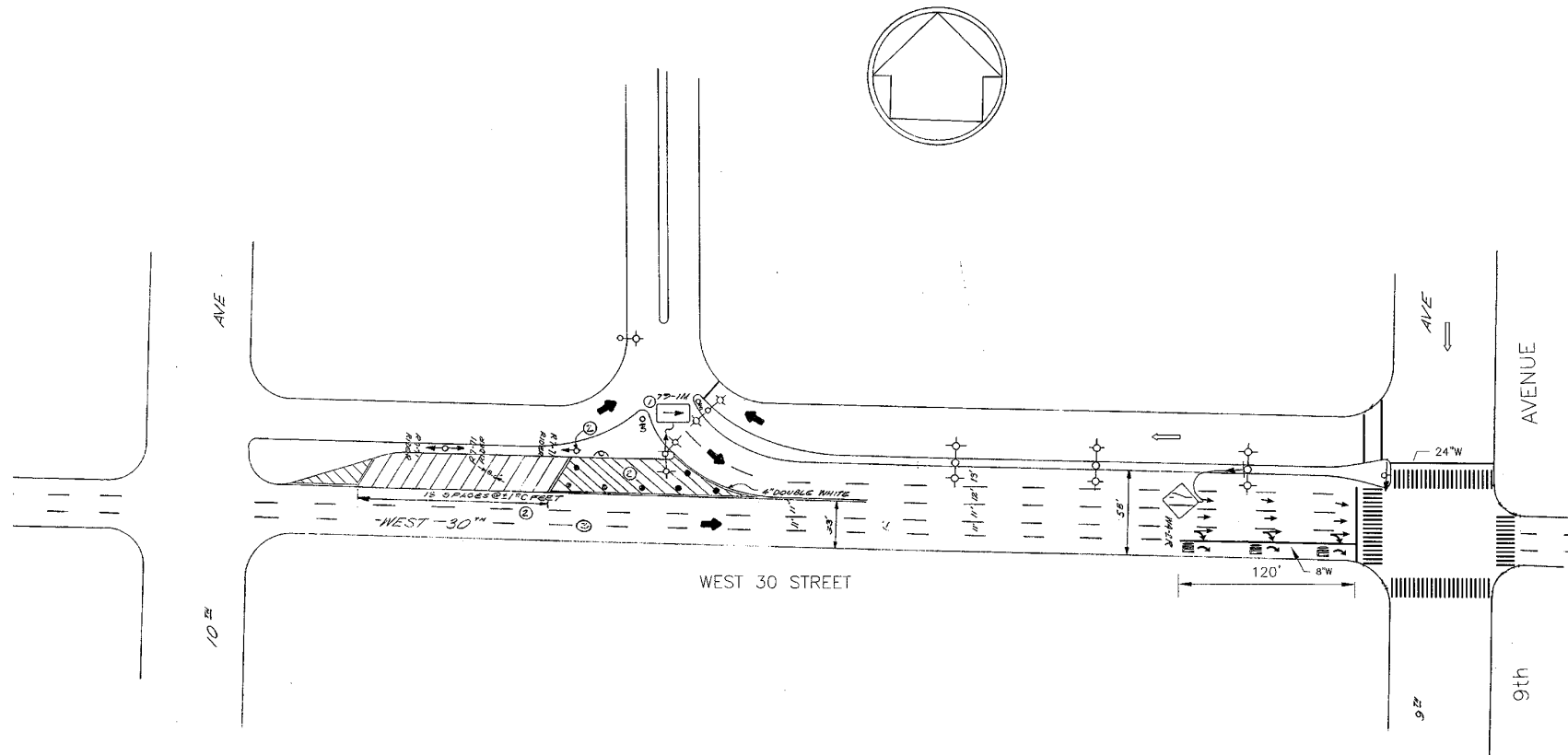
one of which was a pedestrian accident. In 2000, there were a total of 33 accidents, three of which involved pedestrians. In 2001, there were a total of 23 accidents, one of which involved a pedestrian. These accidents predate the implementation of the safety improvements in September 2002.

Implemented Improvements

- Old pedestrian crossing signs were repositioned for improved visibility in September 2002.
- “Yield to Pedestrian” signs were installed on the southeast and southwest corners in September 2002.
- Lane assignment markings were installed in November 2002 to improve vehicular movements and decrease conflicts.
- All crosswalks were upgraded to high visibility to improve pedestrian safety in November 2002.
- A Leading Pedestrian Interval (LPI) was installed on the south leg of the intersection in December 2002.
- Two new pedestrian signals for the westerly crossing of West 30th Street were installed and signal timing modifications were completed in December 2002.

The improvements are shown on the following page.

REVISIONS		
DATE	APPD	DESCRIPTION
1. 9/02	B.M.	Right Turn Bay and Arrows



CITY OF NEW YORK		DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC OPERATIONS		
28-11 Queens Plaza North		L.I.C., N.Y. 11101
CHANNELIZATION		
WEST 30TH ST.; BET 9TH AND 10TH AVE		
APPROVED	Drawn by J. Ahsan	DRAWING NO. CC-515
BY: [Signature]	Checked by B. Morgenbesser	
	Borough Manhattan	
	Scale 1" = 50'	
	Date 08-07-02	



TRIANGLE @ CANAL, LAIGHT AND VARICK STREETS

Description

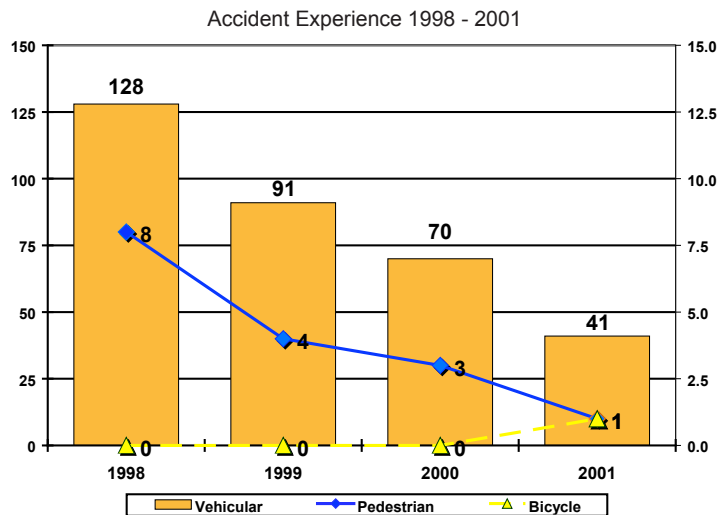
The triangle formed by Canal, Laight and Varick Streets has become a key gateway into the growing neighborhood of Tribeca and Lower Manhattan. Its status as an ungraded cobble-stoned parking area with no usable sidewalk or curb was aesthetically unpleasant for both pedestrians and vehicles. In its original configuration, there was no separation between the cobblestoned pedestrian area and the roadway, leaving pedestrians without a defined sidewalk and unprotected from vehicles. In addition, the sidewalk on the western curb of Varick Street was substandard.



In its original configuration, the triangle was used as a temporary parking lot and did not provide adequate pedestrian space

The triangle lies due east of the Holland Tunnel Exit Rotary and experiences significant traffic exiting from the Tunnel and heading onto Canal Street and into Lower Manhattan. Currently, traffic signals and street lights within the triangle are on concrete cylinders. There is no curb or graded sidewalk separating the non-roadway portion of the area with the marked street. Parking within the triangle was largely unregulated and the area was frequently used as a storage area for disabled vehicles from the Holland Tunnel.

For pedestrians, both the 8th Avenue Subway Line (A,C,E) and the 7th Avenue Line (1,9) have exits/entrances on corners directly adjacent to the triangle. As the neighborhood around it has grown, pedestrian traffic crossing the triangle and the area around it has increased noticeably.



New bars, restaurants, and shops have opened and complemented the growing residential population.

In terms of the accident experience, the number of both vehicular and pedestrian accidents have been declining since 1998 when there were a total of 136 accidents, of which eight involved pedestrian. In 1999, accidents declined significantly to 95, four of which involved a pedestrian. In 2000, total accidents continued to decline to 73, of which three involved a pedestrian. However, two fatalities occurred during this year. In 2001, total accidents decreased 45% to 43, of which one involved a pedestrian and one bicyclist. This dramatic decline over the time period can be attributed to changes in the flow of traffic to and from the Holland Tunnel. In 2001, the dramatic decline can also be attributed to the resulting traffic patterns in Lower Manhattan after September 11th and the restrictions placed on trucks traveling through the Holland Tunnel. The downward trend also parallels the overall decline in accidents citywide over this period.

The Department's safety improvement plan for this location involved several key partners:

- Port Authority of NY and NJ - partial owners of the triangle and operators of the Holland Tunnel
- Department of Design and Construction – water main project on Varick Street
- Parks Department
- Police Department – First Precinct and Transit Police
- Community Board 1

Central to these efforts to improve the safety and aesthetic values of the triangle is the creation

of a pedestrian-friendly park. This park, built under the Parks Department GreenStreets Program would serve several key purposes:

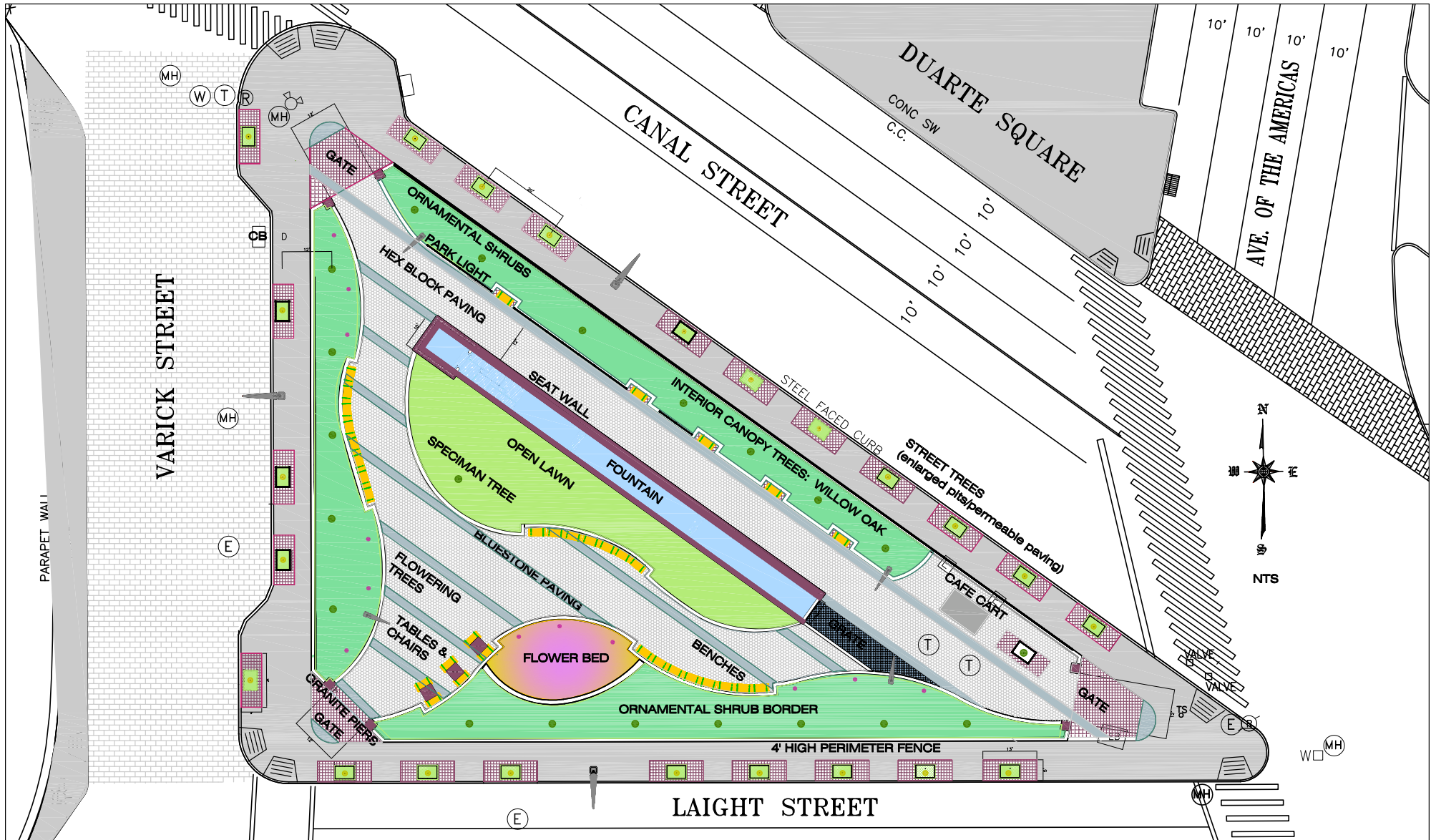
- Create a welcoming and safe environment for pedestrians crossing the area in and around the triangle.
- Provide the growing residential and business community with valuable green space.
- Establish clear markings and curb lines to improve vehicle safety.
- Offer regulated parking for Police Department vehicles.
- Act as a visual gateway into Lower Manhattan for vehicles coming from New Jersey (via the Tunnel) and northern Manhattan.

Implemented Improvements

- March 2003
 - DOT – Manhattan Street Maintenance excavated the triangle area and prepared it for construction.
- June 2003
 - Department of Design and Construction – Restoration of Varick Street roadway and replacement of the sidewalk on the western side and the curb on the eastern side.
- Fall 2003
 - DOT - Installed new streetlights on Canal Street, Laight Street and Varrick Street.
- September 2004
 - DOT – Relocated and modified street light and signal poles and traffic and pedestrian signals to accommodate the new street alignment.

- October 2004
 - Port Authority of New York and New Jersey – Construction of the sidewalk around the triangle and installation of curbs on Laight and Canal Street
- *Winter/Spring 2006*
 - *New York City Parks Department – Redesign Park*
- *Spring 2006*
 - *Implementation of interim plan that includes site cleanup and installation of sod lawn*
- *Fall 2006*
 - *Anticipated ground-breaking and construction of park with completion by late Fall 2007*

The improvements and redesigned park are shown on the following two pages.



City of New York
Parks & Recreation
Olmsted Center
Flushing Meadows Corona Park
Flushing, New York 11368

TRIANGLE AT CANAL, VARICK & LAIGHT STREETS

SCHEMATIC SITE PLAN

March 2006
Michael R. Bloomberg, Mayor
Adrian Benepe, Commissioner



IMPROVEMENTS IN THE VICINITY OF THE HENRY HUDSON PARKWAY INTERCHANGE AND WEST 95TH AND 96TH STREETS

Description

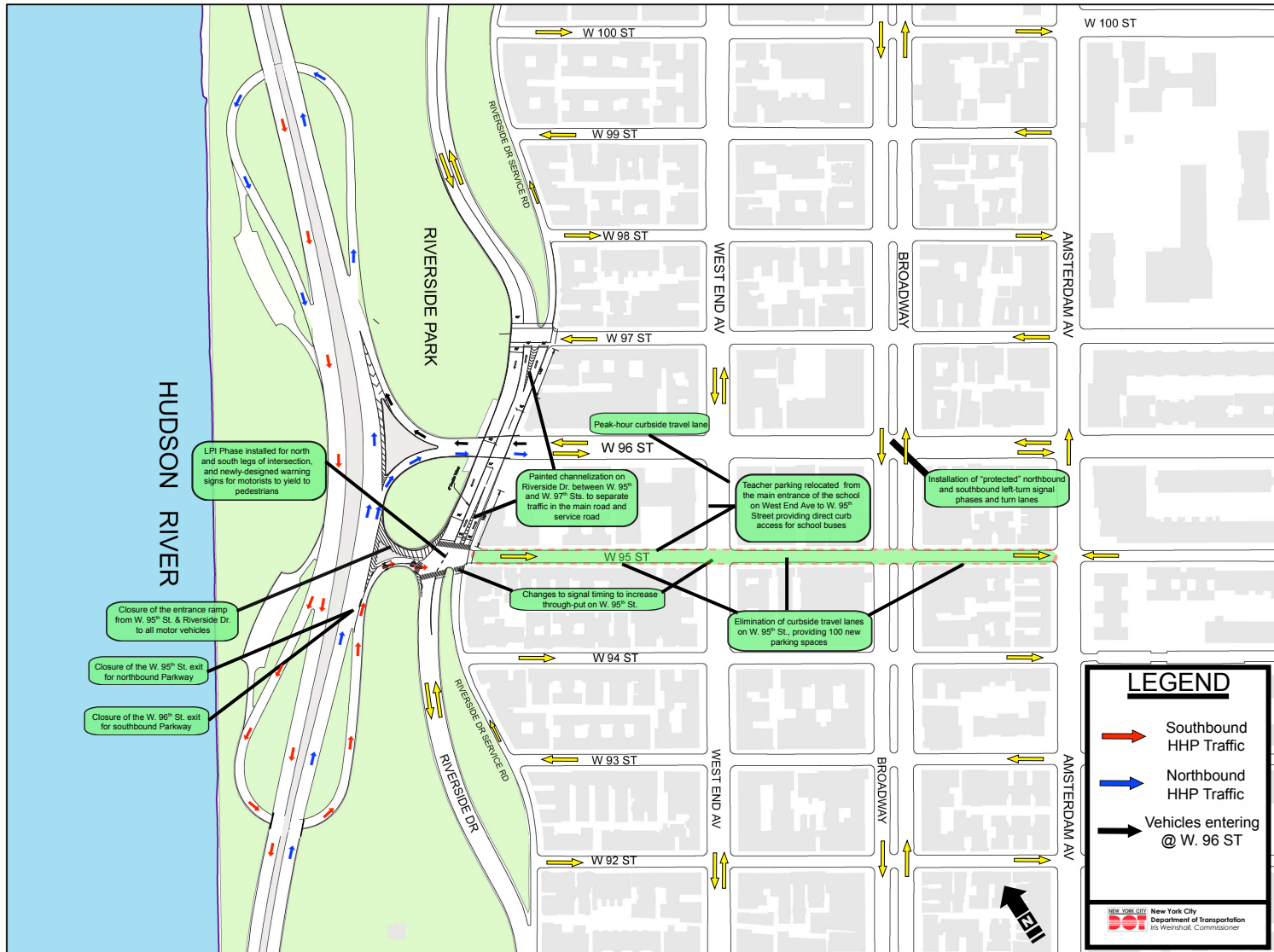
For motorists and pedestrians alike, using the Henry Hudson Parkway (HHP) at the West 95th/96th Street interchange and the area roadways was a challenge, presenting numerous conflicts and safety issues, as well as traffic flow problems. In 2003, the Manhattan Borough President's Office retained a consultant to perform a traffic study on the West 96th Street Corridor. Working with the recommendations of this report, the Department developed a plan to improve traffic and pedestrian safety throughout this corridor.

There are four primary locations that were addressed as a result of this initiative. These included:

- the Henry Hudson Parkway Interchange at West 95th and West 96th Streets,
- the intersection of Riverside Drive and West 95th Street,
- West 95th Street between Riverside Drive and Amsterdam Avenue and
- the intersection of Broadway and West 96th Street

While the operation of the Henry Hudson Parkway interchange was the central component of this initiative, the safety improvements and changes in regulations on the interchange's supporting intersections provide for a substantial improvement in pedestrian and vehicular safety throughout

the area. Although each component is detailed in the following pages, the illustration below summarizes the overall improvements.





HENRY HUDSON PARKWAY INTERCHANGE

Description

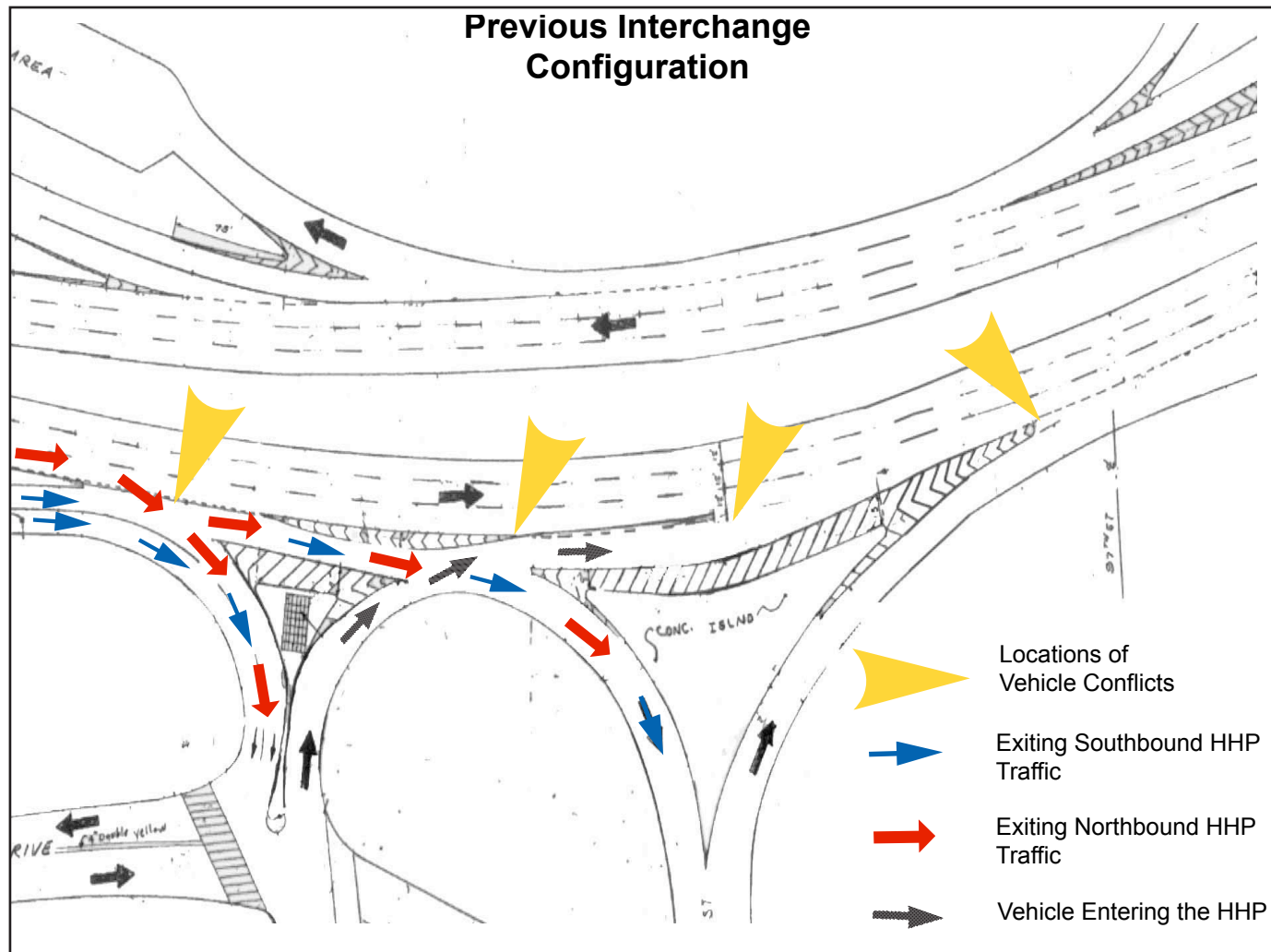
For motorists traveling along the Henry Hudson Parkway, utilizing the West 95th/96th Street interchange had been a challenging event. The interchange, constructed in the mid-1930's, no longer met the safety and operational needs of this intensely-used roadway. The Henry Hudson Parkway is limited to passenger vehicles only, as all trucks, buses and commercial vehicles are prohibited from using the entire corridor. The corridor carries 120,000 vehicles daily with three lanes in each direction.

The interchange had provided two pairs of closely spaced entrance and exit ramps, all with substandard conditions for weaving, accelerating/decelerating and queuing. This design required all vehicles exiting the Parkway from both the northbound and southbound directions to utilize a single ramp. From this ramp, they had the option to exit at either West 95th or West 96th Streets. Additionally, the exit ramp also served as the entrance ramp for vehicles entering the northbound parkway from West 95th Street. The substandard weaving section created chronic vehicle conflicts resulting in frequent overtaking and rear-end crashes. Vehicle merges were made more difficult by the large speed differential in traffic entering and exiting the Parkway. Furthermore, the interchange created undesirable demands on nearby local streets that served the access and egress needs of the Parkway.

The operation of the interchange also affected pedestrians. The intersection is located at a major entrance to the popular 267-acre Riverside Park, which is frequented by users traveling

on foot, skates or bicycles. To access or exit the park, it is necessary for park-goers to cross Riverside Drive, a busy two-way street with a service road at the eastern edge of the park.

The original configuration of the interchange, as well as conflict points is illustrated graphically below:



Improvements Implemented in November 2003

In order to alleviate the conflict between vehicles exiting and entering the highway, the Department minimized the weaving conflicts by:

- Closing the entrance ramp from West 95th Street and Riverside Drive to all traffic,
- Eliminating the West 95th Street exit for exiting northbound HHP traffic and
- Eliminating the West 96th Street exit for southbound traffic.

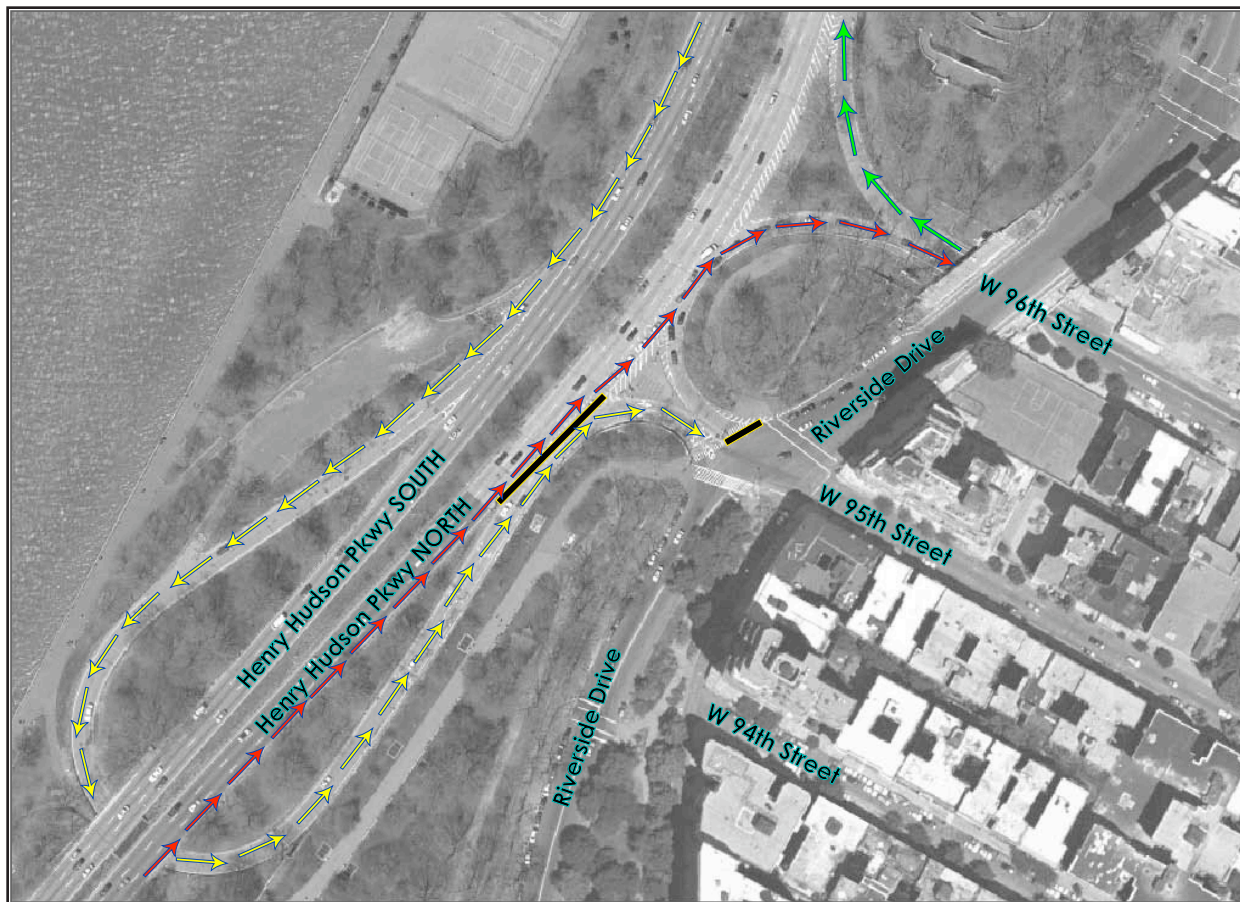
In this configuration, the weaving conflicts between northbound and southbound exiting vehicles are completely eliminated. Southbound vehicles are required to exit at the West 95th Street exit, while northbound vehicles are required to exit at the West 96th Street exit. Additionally, vehicles entering at the West 96th Street entrance are provided with a longer acceleration lane and have fewer conflicts with vehicles on the mainline HHP.

These treatments were implemented through the use of new markings on the roadway, advance signage, and the use of flexible bollards and delineators on all approaches and ramps. ***This represented a highly effective, low cost mitigation strategy that effectively improved vehicular safety at the interchange. A comparison using NYPD data for the nine months prior to implementation versus the nine months after indicates a 50% reduction in the number of crashes at critical locations.***

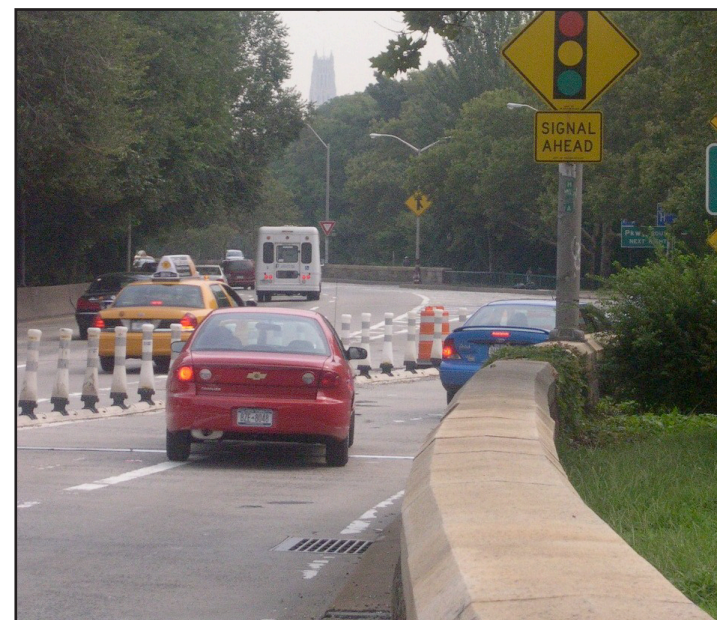
The improvements and resulting changes in traffic flow are shown on the following two pages.

NYPD Accident Data for the Henry Hudson Parkway Interchange - Before and After Implementation

Intersection	Number of Crashes		Percent Change
	Before (11/30/02 - 8/31/03)	After (11/30/03 - 8/31/04)	
Henry Hudson Parkway and West 96 th Street	43	27	-37%
Henry Hudson Parkway and West 95 th Street	21	7	-67%
Riverside Drive and West 95 th Street	12	4	-67%
Total	76	38	-50%

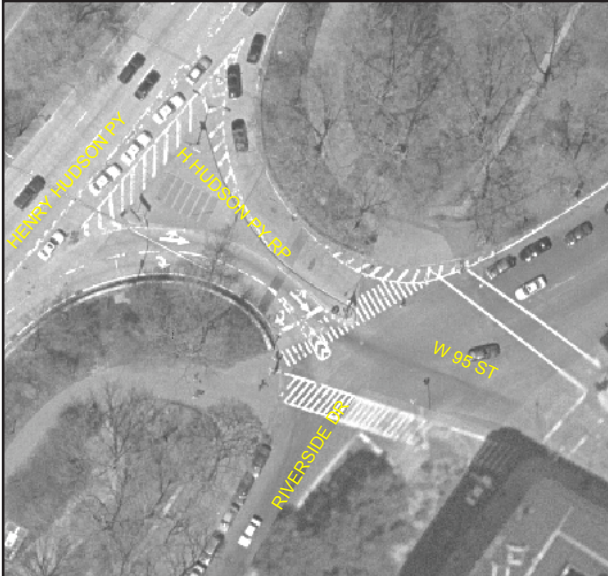


Clockwise from above: The operation of the Henry Hudson Parkway/West 95th/96th Street Interchange under the new configuration. Flexible delineators, traffic barrels and improved markings for southbound vehicles exiting at West 95th Street. Advanced signage advises motorists of approaching signal. Oversized gantry mounted signage advises motorists of approaching exit ramp.





WEST 95TH STREET/ RIVERSIDE DRIVE



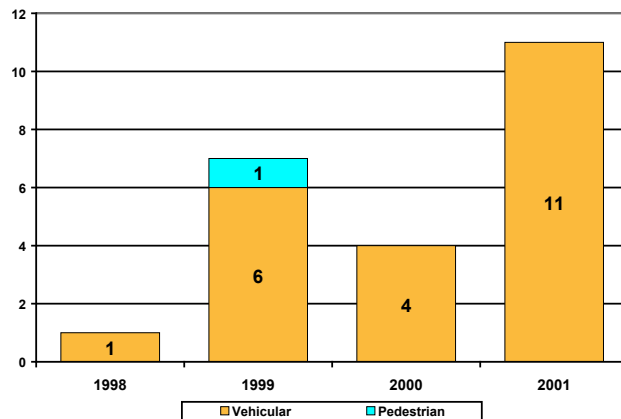
Original configuration of Intersection

Description

The intersection of West 95th Street and Riverside Drive was a signalized four-way intersection with an entrance and exit ramp to the Henry Hudson Parkway along its western leg. Due to the curvature of the exit ramps from the northbound Henry Hudson Parkway, motorists had little time to react to pedestrians crossing the southwest side of the intersection. Motorists entering the northbound Henry Hudson Parkway, especially those turning from southbound Riverside Drive had limited visibility of pedestrians crossing on the northwest side of the intersection. Additionally, there was insufficient refuge area for pedestrians crossing between the exit and exit ramps.

The accident experience at this location varied between 1998 and 2001. In 1998, there was one accident. In 1999, accidents increased to seven, of which one involved a pedestrian. In 2000, accidents decreased to four and in 2001, accidents increased to 11. In 2002, the Department installed several immediate treatments to improve safety for pedestrians and motorists at this intersection. These treatments were upgraded as part of the overall improvements taking place on the Henry Hudson Parkway and the resulting changes in traffic flow in 2003.

Accident Experience 1998 - 2001



Improvements implemented in 2002

In September 2002, the Department installed several improvements aimed at improving safety at the intersection of West 95th Street and Riverside Drive at the entrance and exit ramps to the HHP. These included:

- High visibility crosswalks were installed on the north and south legs of the intersection.
- The west crosswalk was widened by three feet to provide additional pedestrian space.
- The radius of the northwest corner was modified and an expanded neckdown was installed using markings.
- A temporary neckdown using roadway markings was created to provide shorter crossing distance and to prevent motorists from making wide turns from the Henry Hudson Parkway exit to southbound Riverside Drive on the southwest corner.

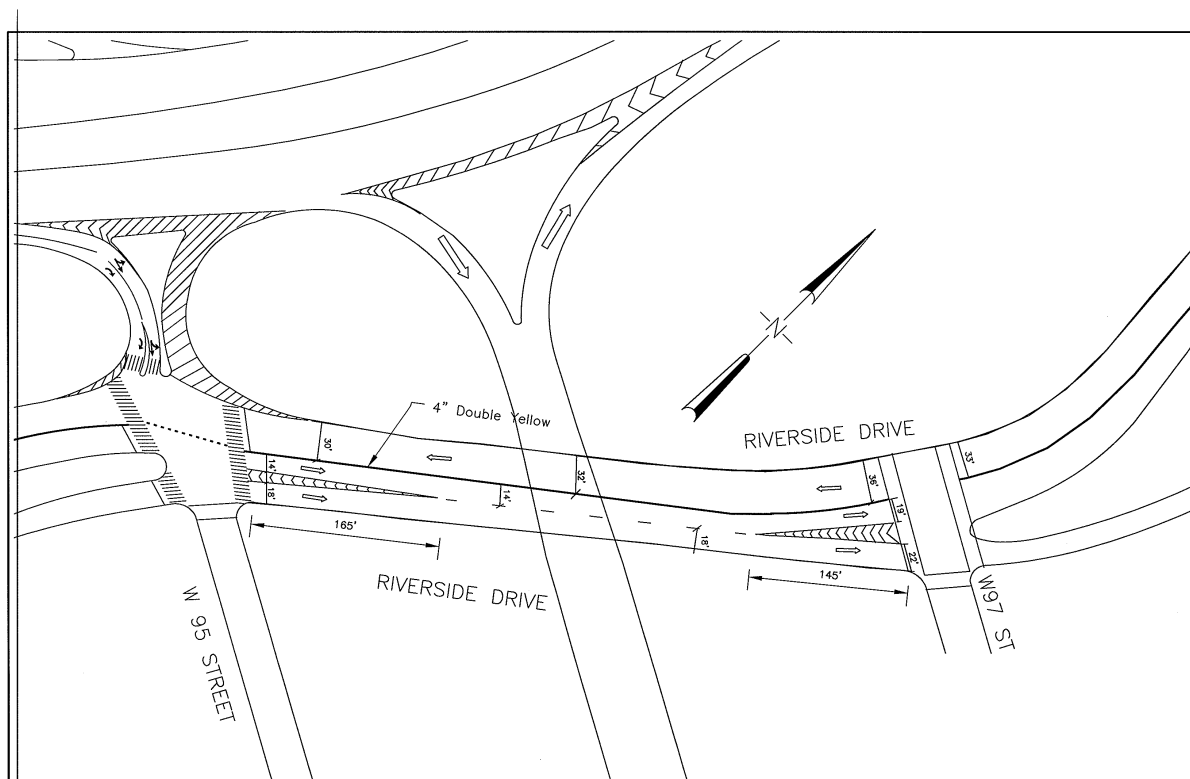
Improvements Implemented in February 2003

- Installed five newly designed “Turning Vehicles Yield to Pedestrians” signs.
- A neckdown was installed on the northwest corner to provide shorter crossing distance and to slow motorist making turns onto the HHP entrance from southbound Riverside Drive.

Improvements Implemented in November 2003

- As part of the overall changes in the operation of the Henry Hudson Parkway interchange, the Department closed the entrance ramp from West 96th Street and Riverside Drive to reduce conflicts on the Parkway. This closure was implemented through the use of signage and barriers.

- In an effort to better channelize traffic and organize weaving movement between the main roadway and service road of Riverside Drive, the Department installed additional roadway markings between West 95th and West 97th Streets. The improvement is illustrated below.



Details of new roadway markings and channelization on Riverside Drive

Improvements Implemented in 2004

- A six second Leading Pedestrian Interval (LPI) was installed to cross Riverside Drive at West 95th Street. (April 2004)
- Adjusted signal timing at intersection to provide for additional green time for vehicles exiting at West 95th Street. (August 2004)



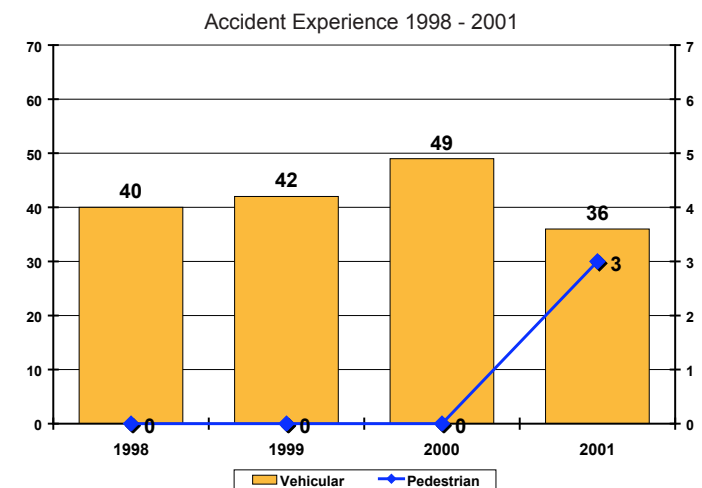
WEST 96TH STREET/ BROADWAY

Description

Broadway is the major two way, north-south arterial in the area. This intersection experiences extremely high vehicular and pedestrian traffic. Contributing factors include high density residential/commercial land uses, the 96th Street Subway station (1, 2, 3 and 9 lines), the M96 bus, and West 96th Street serving as one of the areas main east-west corridors due to the fact that it is two way and links up with the eastbound Central Park Transverse roadway as well as the West 96th Street entrance to the Henry Hudson Parkway. The roadway is split by a center median situated between the north and south travel lanes of Broadway that serves as a pedestrian refuge.

Overall, this was a poorly performing intersection due to the turning movements of vehicles. Double parking, buses making turns, and the lack of dedicated turn signals created numerous conflicts for motorists and pedestrians. Previously, left turns were prohibited in both directions daily between the hours of 7 AM and 7 PM. There was also some illegal turning activity that took place during these hours. Additional left turn prohibitions were also in place for southbound 95th Street which diverted eastbound traffic to West 94th Street and other residential streets.

Accidents at this location remained fairly consistent between 1998 and 2000, rising from 40 in 1998 to 42 in 1999 and peaking at 49 in 2000. In 2001, accidents decreased by 20% to 39. Although the decline predates the improvements, the decline in 2001 parallels the overall decline in accidents taking place citywide during this time period.



As with the other improvements implemented throughout this corridor, the treatments at this location are part of an overall plan for improving traffic and safety throughout the area.

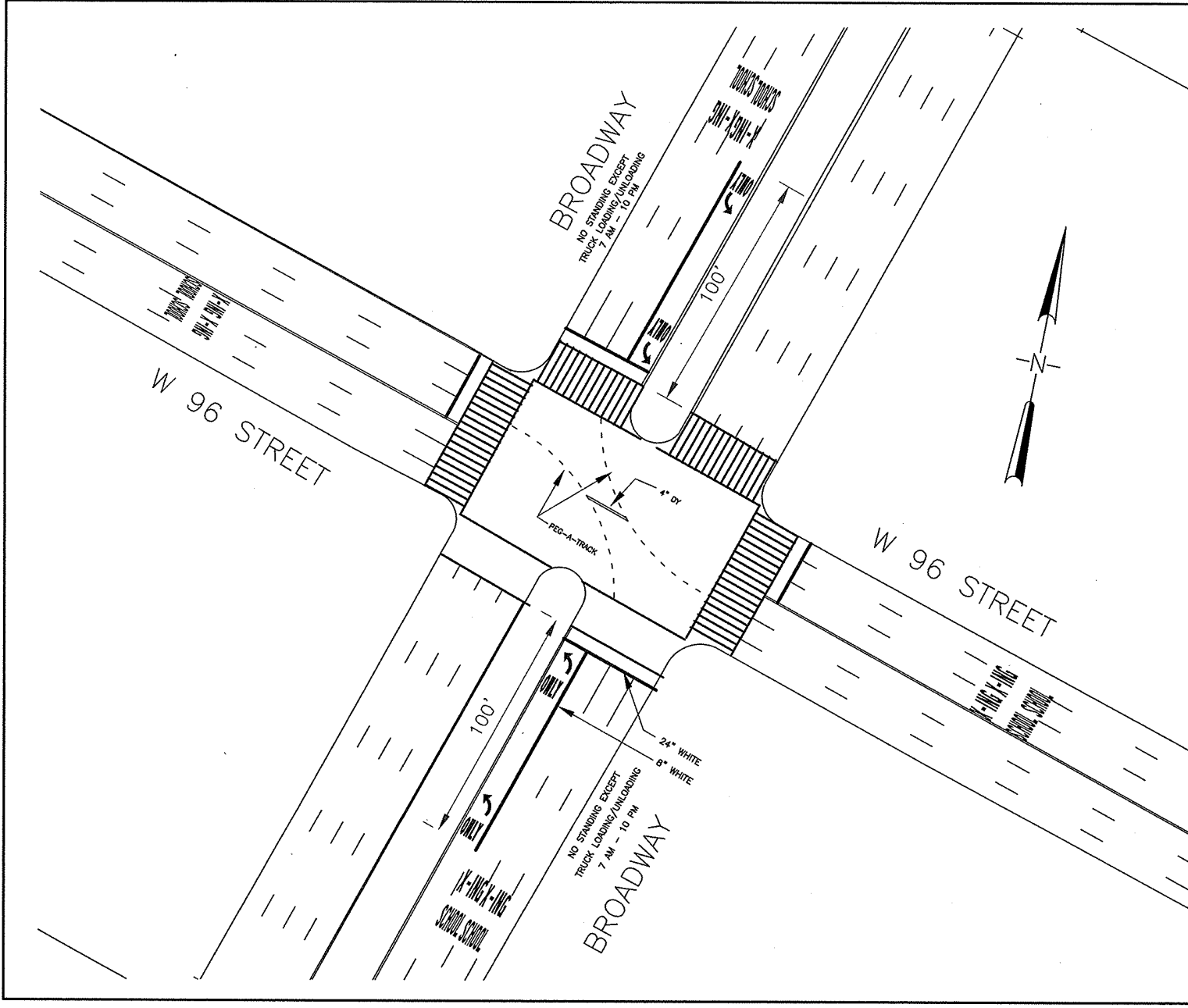
Improvements Implemented in November 2003

- Installation of a left turn signal phase and left turn bays on Broadway at West 96th Street to improve the performance of the intersection and to enable left turns.
- Replacement of meters on two blockfaces with truck loading zones to prevent double parking and ensure that at least two travel lanes are available for through traffic.

Improvements Implemented in 2004

- *As a result of the left turn signals, there was a greater need for pedestrians to comply with traffic signals. Pedestrians were not fully aware that during one phase of the signal cycle, when through traffic on Broadway was stopped, vehicles are permitted to make left turns from Broadway. As such, the Department installed and upgraded pedestrian informational signage at the intersection. (March 2004)*
- Installed “dual left turn” signs to complement lane markings on the roadway to guide left-turning vehicles. (September 2004)

The improvements are shown on the following page.



REVISIONS		
DATE	BY	DESCRIPTION

CITY OF NEW YORK		DEPARTMENT OF TRANSPORTATION	
BUREAU OF TRAFFIC OPERATIONS		28-11 Queens Plaza North	
		L.I.C., N.Y. 11101	
BROADWAY • W 96 STREET			
APPROVED BY	Drawn by	J.AHSAN	
	Checked by	AMT	
	Borough	MANHATTAN	
	Scale	1:40	
	Date	08/07/03	
		DRAWING NO.	MB-567



WEST 95TH STREET BETWEEN RIVERSIDE DRIVE AND AMSTERDAM AVENUE

Description

West 95th Street is one of the two exits from the Henry Hudson Parkway. The roadway operates one-way eastbound for three blocks to Amsterdam Avenue. Between Amsterdam Avenue and its terminus at Central Park West, it operates one-way westbound (resulting in a “head-on” condition at Amsterdam Avenue). The roadway is 32 feet wide along the entire corridor. Before implementation of the changes, West 95th Street operated more as an arterial roadway than a local street because of its relationship to the Parkway exit and its width and parking restrictions provided for three possible travel lanes during much of the day. These factors contributed to a speeding problem along this corridor. In addition, there is a public school located on the northwest corner of West End Avenue which contributes to pedestrian activity along this corridor.

Improvements Implemented in November 2003

In order to decrease speeding, the Department amended the parking regulations along West 95th Street from Riverside Drive to Amsterdam Avenue. The new restrictions discourage vehicles from using West 95th Street as a through street by effectively reducing the number of available travel lanes. The new parking regulations also provide an additional 100 community parking spaces. The number of travel lanes available on weekdays was reduced from three to two on the block between Riverside Drive and West End Avenue, and from three to one on the blocks between West End Avenue and Broadway and between Broadway

and Amsterdam Avenue. Signal timing changes were implemented for the intersections of West 95th Street at Riverside Drive and at West End Avenue to meet the needs of traffic flow with fewer travel lanes. The changes in the regulations are described below:

West 95th Street	Before	After
<i>North Side</i>		
Between Riverside Drive & West End Avenue	No Standing 1PM - 7PM Except Sunday	No Parking 11:30AM - 1PM Monday & Thursday
Between West End Avenue and Broadway	No Standing 1PM - 7 PM Except Sunday	No Parking 11:30AM - 1PM Monday & Thursday
Between Broadway and Amsterdam Avenue	No Parking Anytime	No Parking 11:30AM - 1PM Monday & Thursday
<i>South Side</i>		
Between Riverside Drive & West End Avenue	No Parking 8AM - 6PM Monday Thru Friday	No Parking 8AM - 6PM Monday Thru Friday
Between West End Avenue and Broadway	No Parking 8AM - 6PM Monday Thru Friday	No Parking 11:30AM - 1PM Tuesday & Friday
Between Broadway and Amsterdam Avenue	No Parking Anytime	No Parking 11:30AM - 1PM Tuesday & Friday

Improvements Implemented in September 2004

At the intersection of West 95th Street and West End Avenue, signal timing was adjusted to provide for additional green time for traffic on West 95th Street, providing an additional four seconds of green time between 7AM - 11AM and 4PM - 10PM, Monday through Friday, and nine additional seconds from 2:15 PM - 11:45 PM on Saturday and Sunday.



WEST 96TH STREET/ WEST END AVENUE

Description

At West 96th Street and West End Avenue conflicts primarily resulted from vehicles turning west from West End Avenue onto West 96th Street. This is a particularly sensitive location because the west leg of the intersection is a designated school crosswalk for P.S. 75, a grade school located on the west side of West End Avenue between West 95th and West 96th Streets. Before the changes to the interchange there existed a six second Leading Pedestrian Interval (LPI) to allow school children and other pedestrians to start crossing the west leg across West 96th Street before traffic was permitted to move on West End Avenue. This allowed pedestrians to establish themselves in the crosswalk before experiencing conflicts with turning vehicles. During the hours of school arrival and dismissal, two school crossing guards assisted crossing this intersection.

Vehicle volumes increased most significantly at this intersection as a result of changes in traffic flow related to the closure of the West 95th Street entrance and the subsequent diversion of traffic to West 96th Street. These changes led to an increase in peak hour volumes.

Improvements Implemented in Summer 2004

- Installed “No Standing 7AM-10AM, 4PM-7PM, Mon-Fri” regulations on the east curb of West*

End Avenue for 120 feet south of West 96th Street to provide peak-hour northbound curbside travel lanes and restriped northbound approach to three moving lanes. (July 2004)

- *Relocated teacher parking regulations from the west side of West End Avenue to the north side of West 95th Street, and installed “No Standing School Days 7AM-4PM” regulations on West End Avenue to accommodate school buses and drop off/pick up of children.*