Table of Contents

MANHATTAN

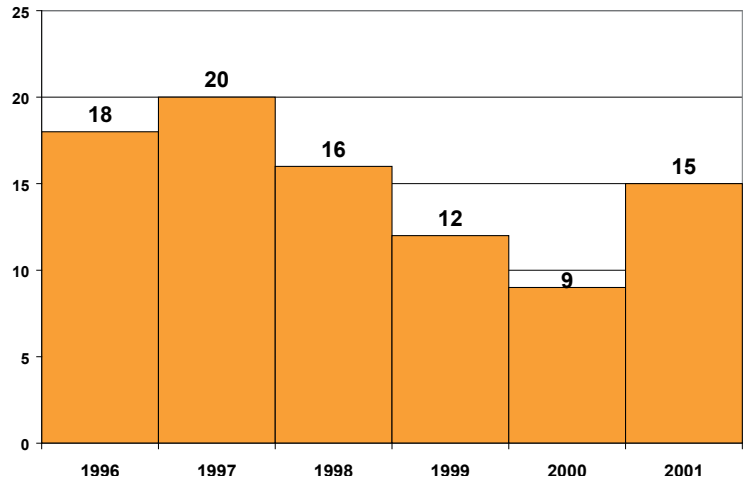
Park Avenue/East 33rd Street

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.

Pedestrian Accident Experience 1996 - 2001



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 and 2003 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 and 2003 accident experience. According to this database, pedestrian accidents decreased by 56% to only six in 2002. In 2003, pedestrian accidents increased slightly to eight. There were no fatalities in 2001 or 2002 and one fatality in 2003.

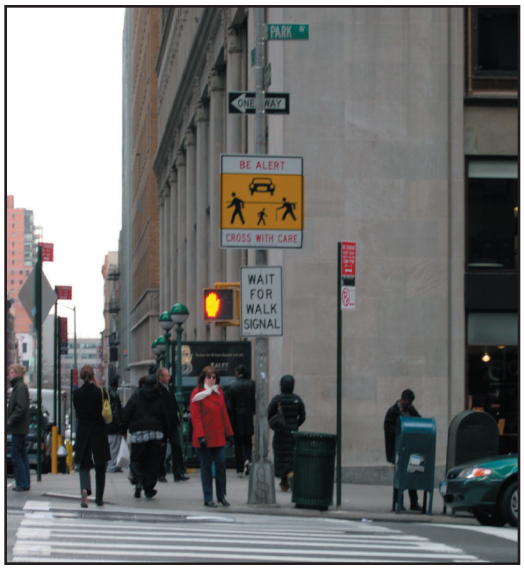
Based upon the additional information, the Department believes the accident experience in 2001 was an anomaly. Overall, pedestrian accidents have declined significantly at this location since the safety improvements were implemented in October 1999 and have made this intersection significantly safer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

Above: Signage and physical treatments on the north leg of the intersection

Below: High Visibility Crosswallks and distinct signage advises pedestrians to cross with care



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.
- Qwick Kurb 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.
- 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.

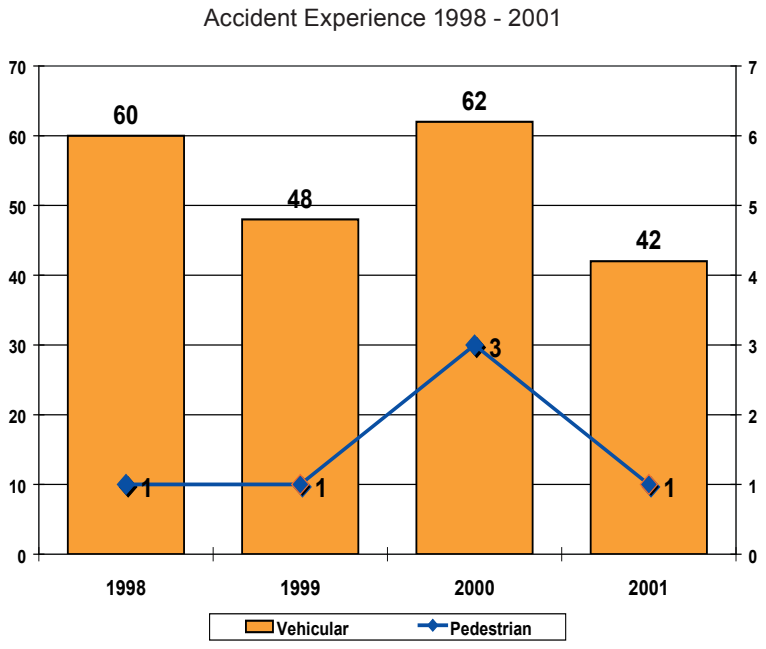
Maintenance of all special items is continuing. In June 2000, several damaged sections of the iron fencing were repaired and re-installed. In March 2003, 18 linear feet of fencing was repaired and re-installed. Pavement markings were refurbished in June 2003.

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.***

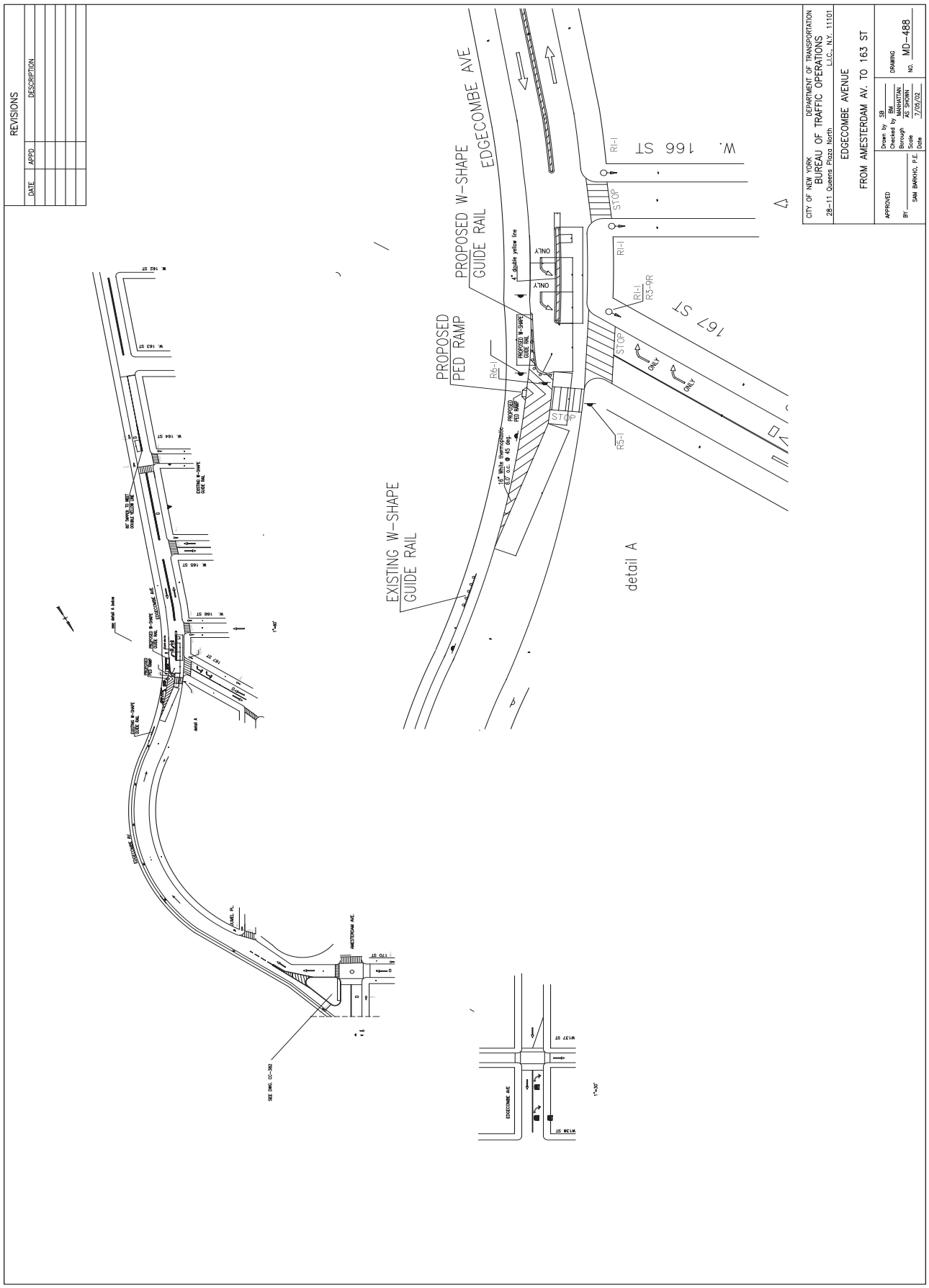


Improvements Implemented In July 2002

- 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.

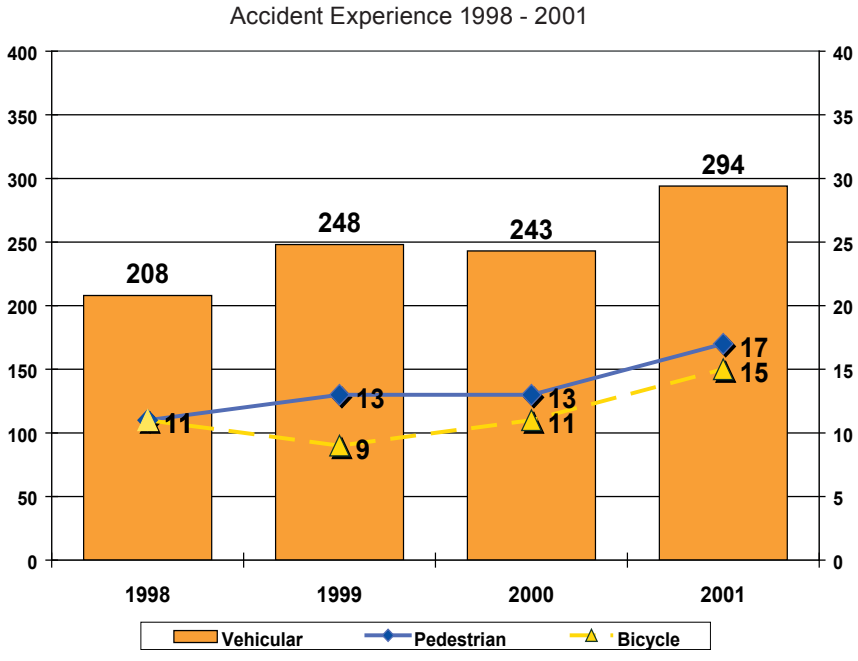

REVISIONS
DATE
APPD
DESCRIPTION
CITY OF NEW YORK DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC OPERATIONS
28-11 Queens Plaza North L.I.C., N.Y. 11101
EDGECOMBE AVENUE
FROM AMESTERDAM AV. TO 163 ST
APPROVED
BY SAM BARKHO, P.E.
Drawn by SB
Checked by SM
Borough MANHATTAN
Scale AS SHOWN
Date 7/05/02
DRAWING NO. MD-488
PROPOSED W-SHAPE EDGECOMBE AVE GUIDE RAIL
PROPOSED PED RAMP
EXISTING W-SHAPE GUIDE RAIL
detail A
W. 166 ST
167 ST
STOP
ONLY
R1-1
R3-9R
R5-1
R6-1
4" double yellow line
10" White thermoplastic 10'-0" o.c. @ 45 deg.
W. 162 ST
W. 163 ST
W. 164 ST
W. 165 ST
EDGECOMBE AVE
AMSTERDAM AVE
W 170 ST
W 137 ST
W 138 ST

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 pedestrians 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

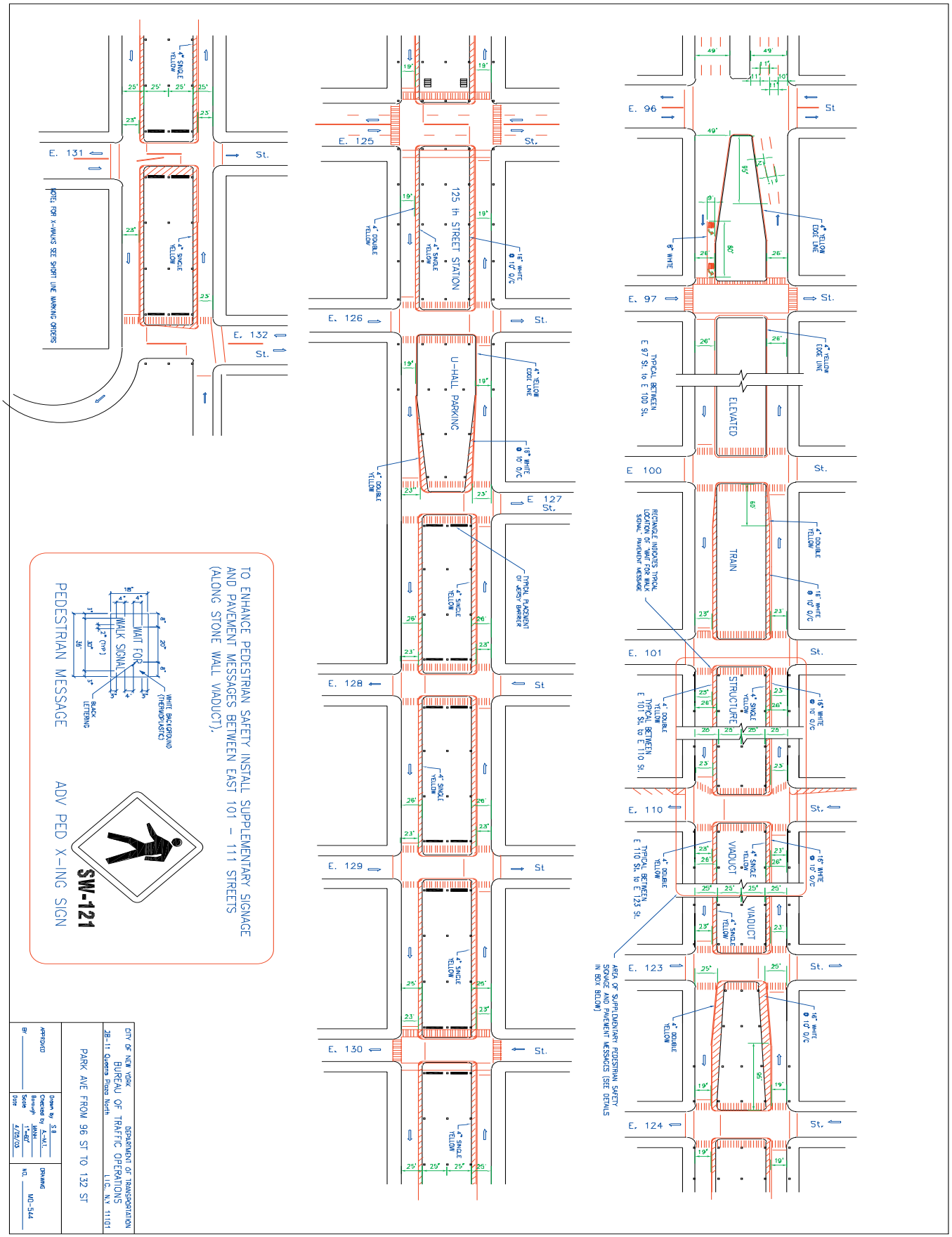
involved bicycles. In 2000, total accidents remained relatively unchanged at 267 with 13 involving pedestrians and 11 involving bicycles. ***In 2001, total accidents increased an additional 22% to 326 with 17 involving pedestrians and 15 involving bicycles. The rising accident trends predate the improvements that were implemented in September 2002.The treatments that were implemented reflect the Department's concern for the rising accident trend at this location.***

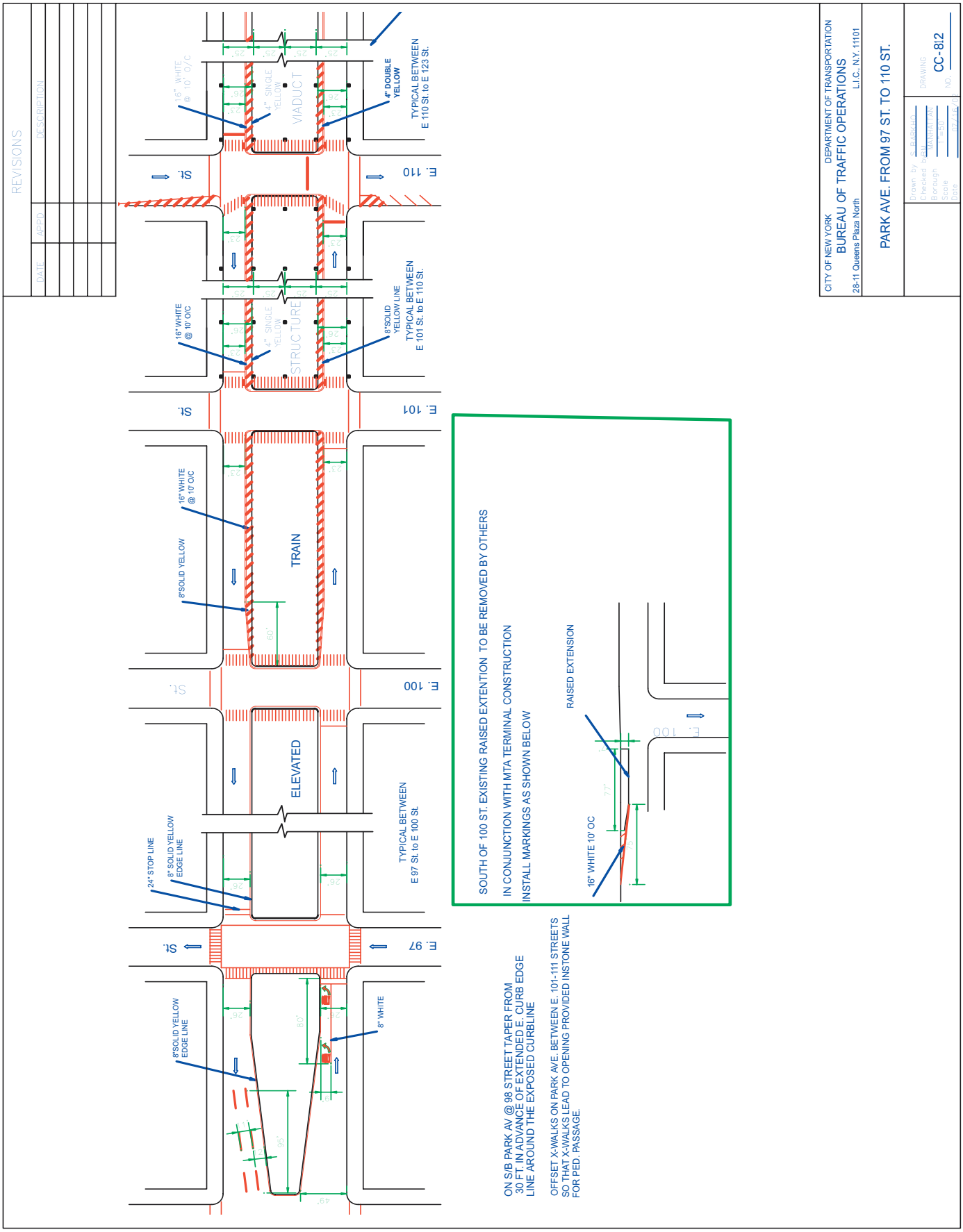
Improvements Implemented in September 2002

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 line between East 97th and East 100th Streets south of the new bus terminal currently under construction.
- Installed "WAIT FOR WALK SIGNAL" pavement messages to advise pedestrians to wait for a fresh walk signal. Messages are recommended between East 101st and East 111th Streets where the stone walls of the viaduct severely limit visibility for both pedestrians and motorists.
- Installed two sections of 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 (20 sections of 20-foot jersey barrier are required).
- Installed "NO STANDING 7-10AM Mon-Fri" rush hour regulation on the west curb (southbound) from East 132nd Street to East 130th Street to provide a second travel lane during morning rush hours.
- 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.

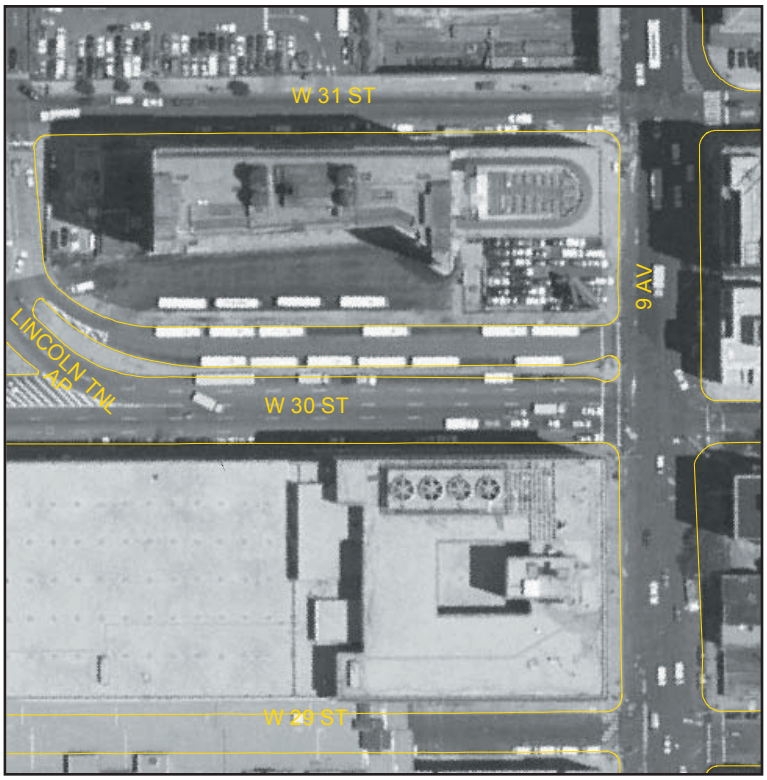
The improvements are shown on the following pages.


E. 131 St.
E. 132 St.
NOTE: FOR X-WALKS SEE SHORT LINE MARKING ORDERS
4" SINGLE YELLOW
E. 125 St.
125 th STREET STATION
4" DOUBLE YELLOW
18" WHITE @ 10' O/C
E. 126 St.
U-HAUL PARKING
4" YELLOW EDGE LINE
E. 127 St.
TYPICAL PLACEMENT OF JERSEY BARRIER
E. 128 St
E. 129 St
E. 130 St.
E. 96 St
E. 97 St.
TYPICAL BETWEEN E 97 St. to E 100 St.
ELEVATED
E 100 St.
TRAIN
RECTANGLE INDICATES TYPICAL LOCATION OF "WAIT FOR WALK SIGNAL" PAVEMENT MESSAGE
E. 101 St.
STRUCTURE
TYPICAL BETWEEN E 101 St. to E 110 St.
E. 110 St.
VIADUCT
TYPICAL BETWEEN E 110 St. to E 123 St.
E. 123 St.
AREA OF SUPPLEMENTARY PEDESTRIAN SAFETY SIGNAGE AND PAVEMENT MESSAGES (SEE DETAILS IN BOX BELOW)
E. 124 St.
TO ENHANCE PEDESTRIAN SAFETY INSTALL SUPPLEMENTARY SIGNAGE AND PAVEMENT MESSAGES BETWEEN EAST 101 – 111 STREETS (ALONG STONE WALL VIADUCT).
PEDESTRIAN MESSAGE
WALK SIGNAL
WAIT FOR
WHITE BACKGROUND (THERMOPLASTIC)
BLACK LETTERING
ADV PED X-ING SIGN
SW-121
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 96 ST TO 132 ST
APPROVED
BY
Drawn by S.S.
Checked by J. VAIL
Scale 1"=40'
Date 4/28/03
NO.
DRAWING MD-544


REVISIONS
DESCRIPTION
APP'D
DATE
CITY OF NEW YORK
DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC OPERATIONS
L.I.C., N.Y. 11101
28-11 Queens Plaza North
PARK AVE. FROM 97 ST. TO 110 ST.
DRAWING NO.
CC-812
Drawn by
Checked by
Borough
Scale
Date
TYPICAL BETWEEN E 110 St. to E 123 St.
4" DOUBLE YELLOW
16" WHITE @ 10' O/C
4" SINGLE YELLOW
VIADUCT
E. 110 St.
TYPICAL BETWEEN E 101 St. to E 110 St.
8"SOLID YELLOW LINE
STRUCTURE
E. 101 St.
TRAIN
8"SOLID YELLOW
E. 100 St.
ELEVATED
TYPICAL BETWEEN E 97 St. to E 100 St.
24" STOP LINE
8" SOLID YELLOW EDGE LINE
E. 97 St.
8" WHITE
SOUTH OF 100 ST. EXISTING RAISED EXTENTION TO BE REMOVED BY OTHERS
IN CONJUNCTION WITH MTA TERMINAL CONSTRUCTION
INSTALL MARKINGS AS SHOWN BELOW
RAISED EXTENSION
16" WHITE 10' OC
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 INSTONE WALL FOR PED. PASSAGE.

West 30th Street/9th Avenue

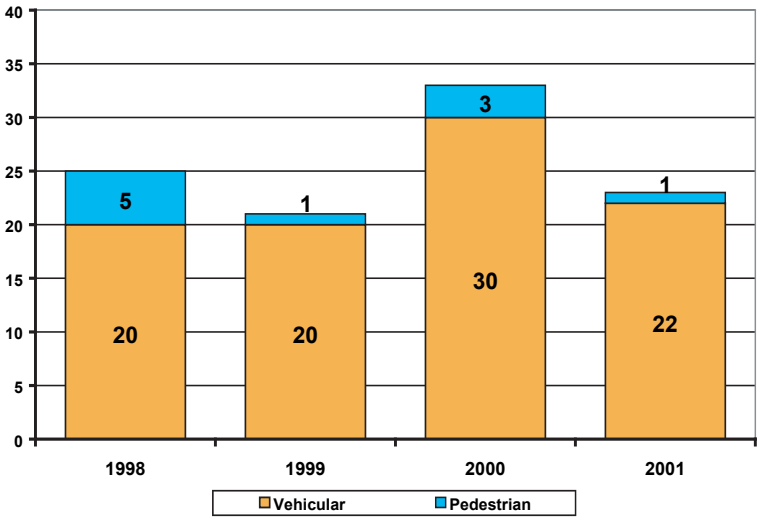
Description



Aerial view of West 30th Street and 9th Avenue

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.

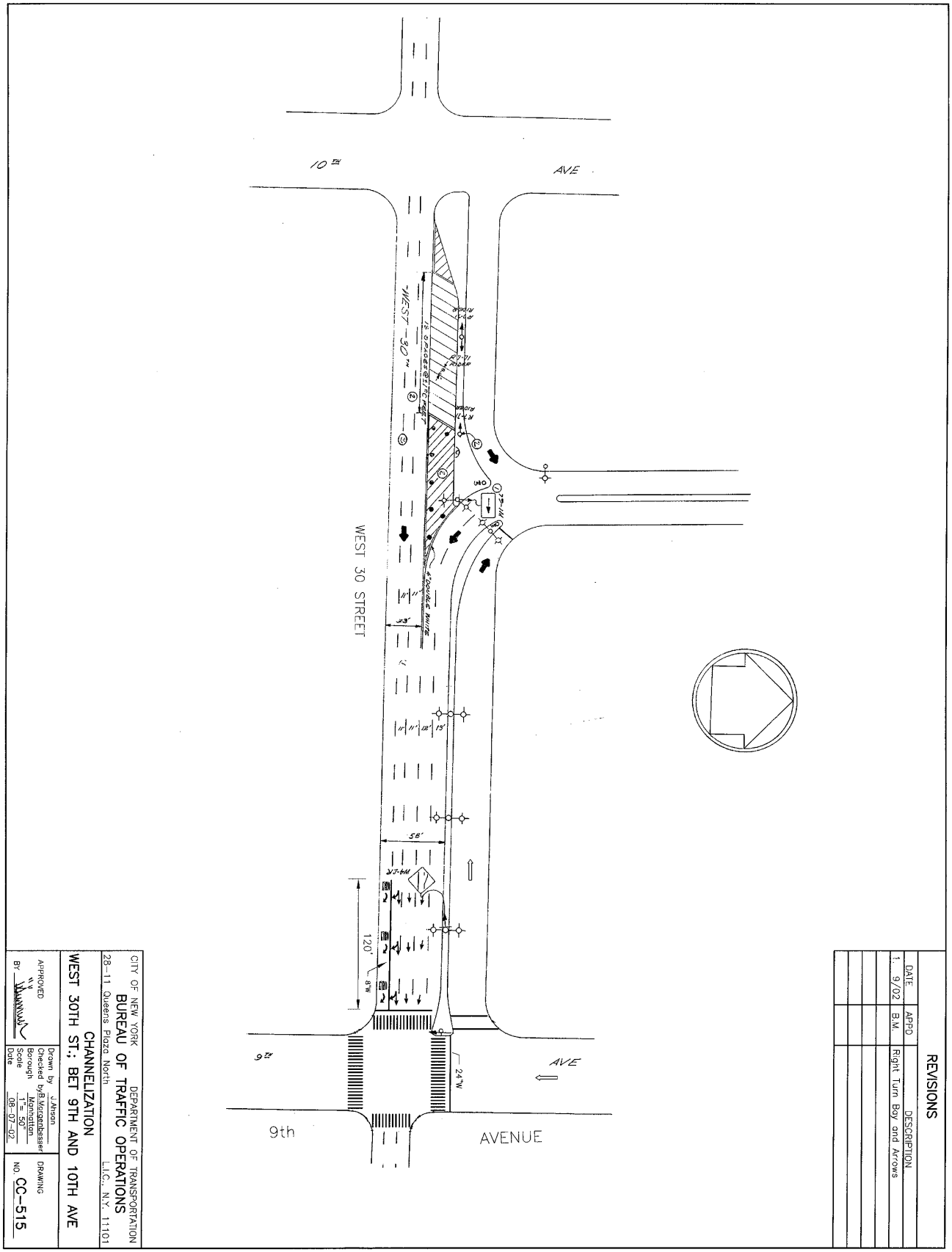
Between 1998 and 2001, the accident

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.



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
BY

Drawn by J.Ahson
Checked by B.Morgenbesser
Borough Manhattan
Scale 1"= 50'
Date 08-07-02

DRAWING NO. CC-515

REVISIONS

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

Triangle at Canal, Laight and Varick Streets

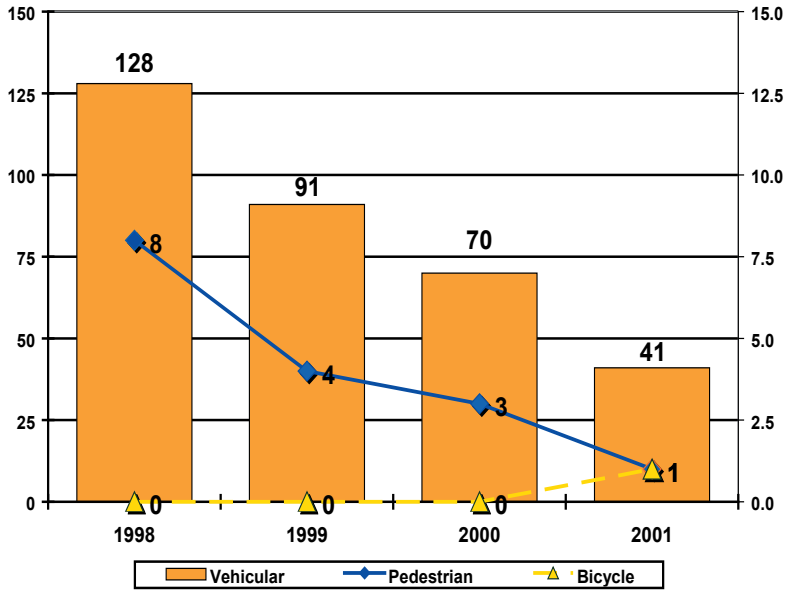
Description

The triangle formed by Canal, Laight and Varick Streets has become a key gateway into the growing neighborhood of Tribeca and Lower Manhattan. For several 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.

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 at points of 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.

Accident Experience 1998 - 2001



In terms of the accident

experience, the number of accidents since 1998 has been declining. In 1998, there were a total of 136 accidents, of which eight were pedestrian. In 1999, accidents declined significantly to 95, of which four were pedestrian. In 2000, total accidents continued to decline to 73, three of which were pedestrian. ***Two fatalities occurred in 2000. In 2001, total accidents were down 45% to 43, of which one was a pedestrian and one a bicycle accident. 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

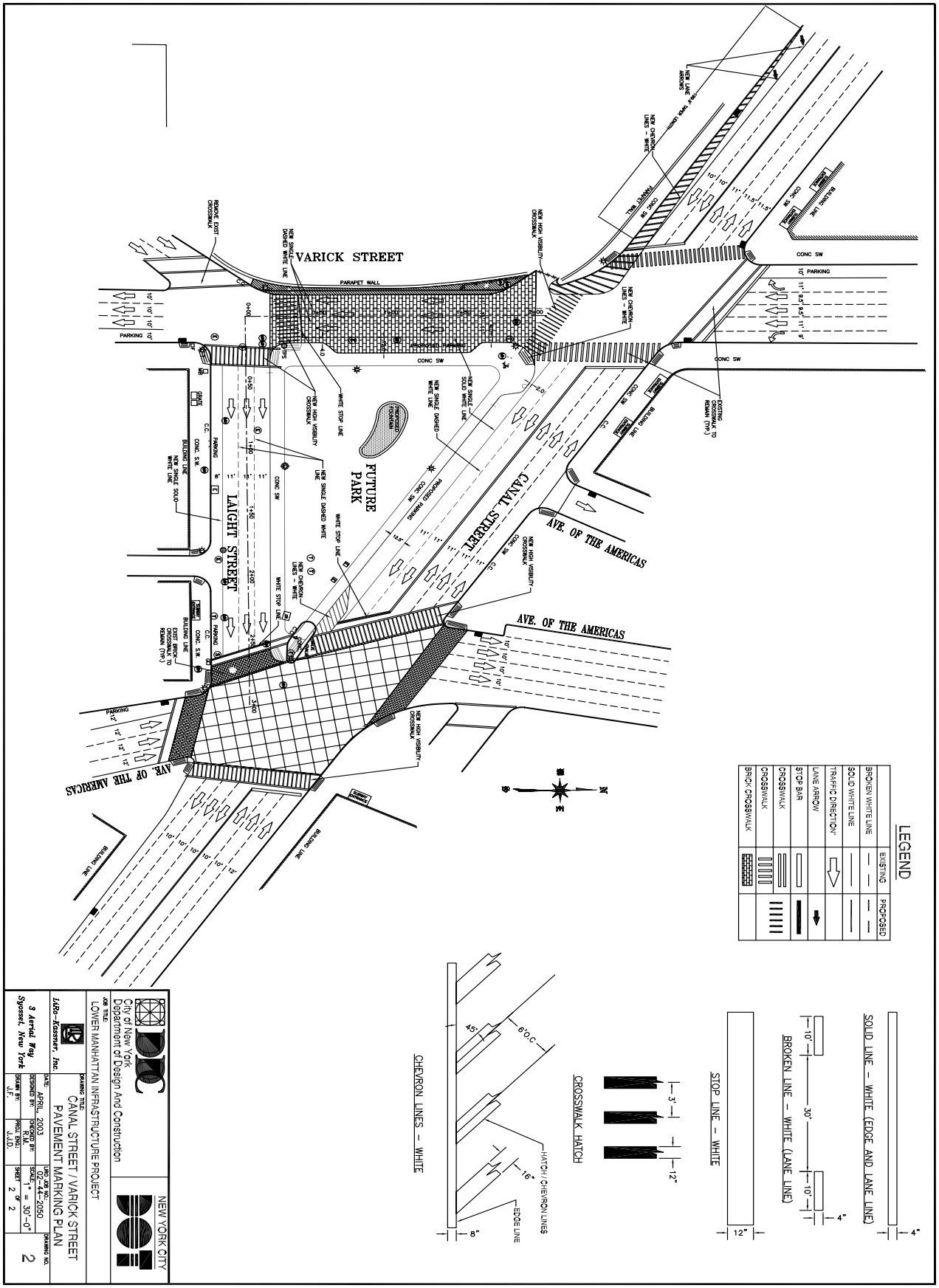
Central to these efforts to improve the safety and aesthetic values of the triangle is the creation of a pedestrian-friendly park. This park, built under the Parks Department GreenStreets Program would serve several key purposes:

- 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***
    - ***New York City Department of Transportation - Installed new streetlights on Canal Street, Laight Street and Varrick Street.***
- ***September 2004***
    - ***New York City Department of Transportation – Relocation and modification of 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***
- ***November 2004 - May 2005***
    - ***New York City Parks Department – Construction of GreenStreet.***

The improvements are shown on the following two pages.



City of New York
Department of Design And Construction

NEW YORK CITY DOT

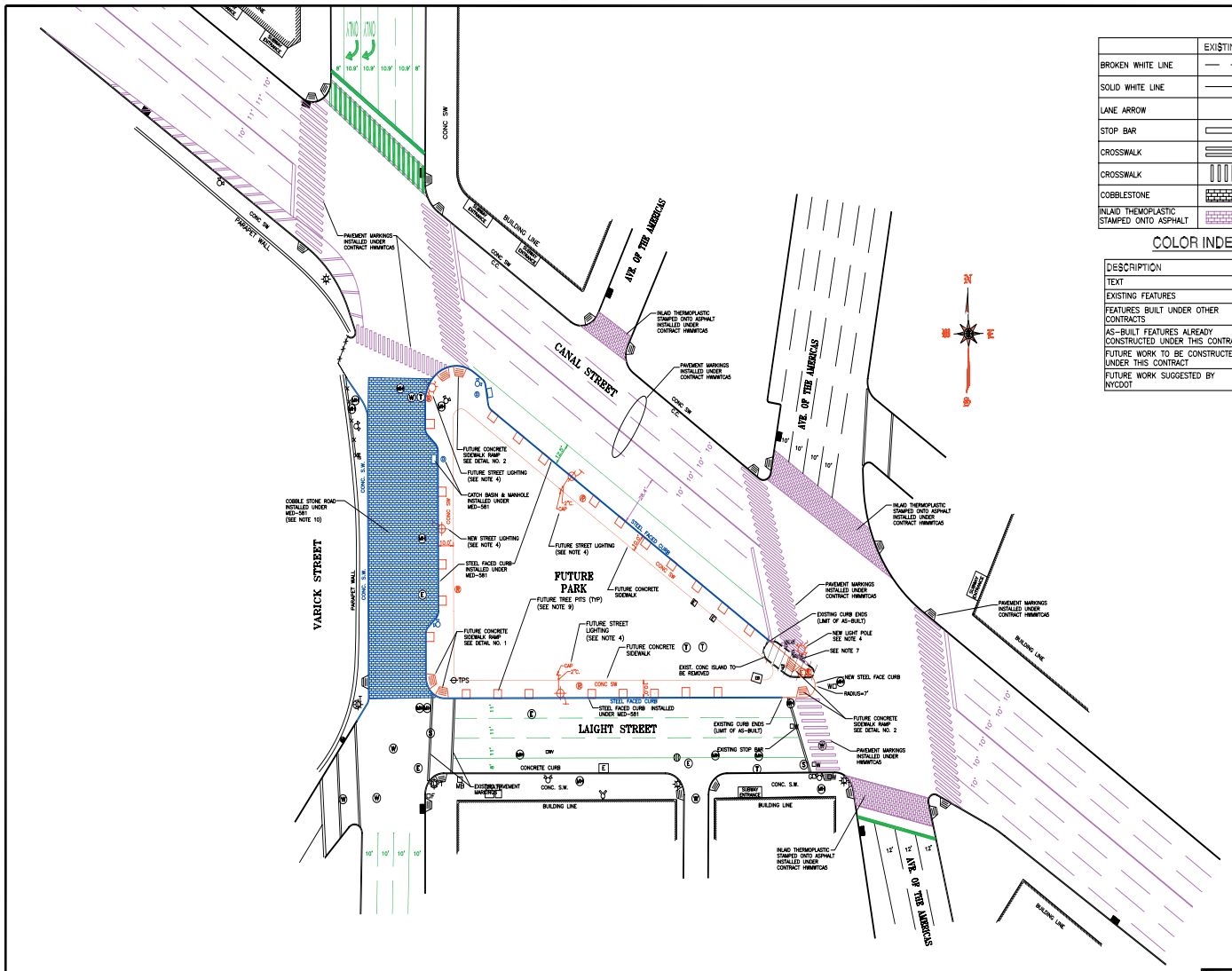
JOB TITLE: LOWER MANHATTAN INFRASTRUCTURE PROJECT

DRAWING TITLE: CANAL STREET / VARICK STREET
PAVEMENT MARKING PLAN

DRAWING NO.: 2

DATE: APRIL, 2003
DESIGNED BY: J.F.
DRAWN BY: J.F.
CHECKED BY: P.M.
PROJ. ENG.: J.J.D.
JOB NO.: 02-44-2050
SCALE: 1" = 30'-0"
SHEET: 2 OF 2

LiRo-Eisenman, Inc
3 Aerial Way
Syosset, New York



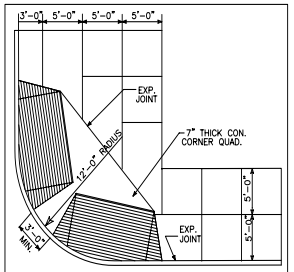
LEGEND

	EXISTING	FUTURE
BROKEN WHITE LINE	— —	— —
SOLID WHITE LINE	——	——
LANE ARROW		
STOP BAR		
CROSSWALK		
CROSSWALK		
COBBLESTONE		
INLAID THEMOPLASTIC STAMPED ONTO ASPHALT		

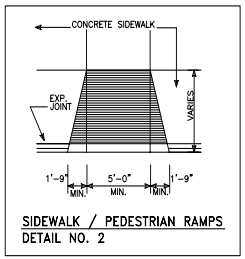
	EXISTING	PROPOSED
SIDEWALK RAMP		
SIDEWALK		CONC SW
BUILDING LINE		
CONCRETE CURB		
PARAPET WALL		
LIGHT POLE		
CATCH BASIN		
ELECTRIC MANHOLE	(E)	
WATER MANHOLE	(W)	
TELEPHONE MANHOLE	(T)	
DRAINAGE MANHOLE	(D)	
UNKNOWN MANHOLE	(MH)	
FIRE HYDRANT		
TRAFFIC SIGN	TS	

COLOR INDEX

DESCRIPTION	COLOR
TEXT	BLACK
EXISTING FEATURES	BLACK
FEATURES BUILT UNDER OTHER CONTRACTS	MAGENTA
AS-BUILT FEATURES ALREADY CONSTRUCTED UNDER THIS CONTRACT	BLUE
FUTURE WORK TO BE CONSTRUCTED UNDER THIS CONTRACT	RED
FUTURE WORK SUGGESTED BY NYCDOT	GREEN



SIDEWALK / PEDESTRIAN RAMPS
DETAIL NO. 1



SIDEWALK / PEDESTRIAN RAMPS
DETAIL NO. 2

REVISIONS	
DATE	DESCRIPTION
10/30/03	REV. LOCATION OF CANAL PED RAMP
10/30/03	REV. CURB TO AVOID CON ED MANHOLE
1/05/03	REV. TO SHOW AS-BUILT CONDITIONS

1. THIS PLAN IS FOR CONSTRUCTION GUIDANCE ONLY FOR THE FUTURE PARK. ACTUAL CONSTRUCTION WILL BE AS ORDERED, MANAGED AND DIRECTED BY NYCDOT AND NYCDDC.

2. WORK ASSIGNMENTS AND LIMITS TO BE DETERMINED BY NYCDDC AND NYCDOT AND CONFIRMED PRIOR TO CONSTRUCTION.

3. THIS PLAN SHOWS AS-BUILT CURB, DRAINAGE, PAVEMENT MARKINGS AND COBBLESTONE LOCATIONS.

4. SEE NYCDOT DIVISION OF STREET LIGHTING CONTRACT NO. 84102MBTR317 DRAWING NO. M31112 FOR NEW STREET LIGHTING LAYOUT. LOCATION OF LIGHTING MAY BE FIELD ADJUSTED DEPENDING ON EXISTING CONDITIONS AS ORDERED BY NYCDOT STREET LIGHTING.

5. ALL PAVEMENT MARKINGS ON THIS DRAWING ARE EXISTING AS PER CONTRACT HWMWTCA5.

6. THE CONTRACTOR SHALL BE AWARE THAT THE LOCATIONS OF UTILITIES SHOWN ON THIS DRAWING ARE APPROXIMATE ONLY AND THE CONTRACTOR IS RESPONSIBLE FOR INVESTIGATING THE EXACT LOCATIONS OF THE UTILITIES BEFORE WORK IS BEGUN.

7. COMMUNICATION DUCTS WITHIN THE PROJECT AREA HAVE A MINIMUM COVER OF 1'-9" AS DETERMINED BY ECS. THE CONTRACTOR IS WARNED TO HAND DIG IN THESE AREAS WITH EXTREME CAUTION.

8. SKEW CURB AT THIS POINT APPROX. 4 1/2 DEGREES TO AVOID CON ED MANHOLE TO THE SOUTH. IF FIELD CONDITIONS PERMIT AND THE NEW CURB WILL NOT BE PLACED ABOVE THE CON ED STEAM LINE, PLACE CURB AROUND TRAFFIC SIGNAL POLE TO AVOID RELOCATION.

9. SEE NYC PARKS & RECREATION ALCA STREET TREE LAYOUT DRAWING UNDER CONTRACT NO. MG-703M FOR TREE PIT LOCATIONS, DETAILS AND NOTES.

10. HI VIS CROSSWALK AND PAVEMENT MARKINGS ON COBBLESTONE ARE ELIMINATED FROM FUTURE PLAN.

11. PROPOSED GRID LOCK PAVEMENT MARKINGS ARE ELIMINATED FROM FUTURE PLAN.

City of New York
Department of Design And Construction

NEW YORK CITY DOT

JOB TITLE: LOWER MANHATTAN INFRASTRUCTURE PROJECT

LiRo-Kassner, Inc.

3 Aerial Way
Syosset, New York

DRAWING TITLE: CANAL STREET / VARICK STREET LAYOUT PLAN

DATE:	LRO JOB NO.:	DRAWING NO.
JANUARY, 2004	02-44-2050	1-R2
DESIGNED BY:	CHECKED BY: R.M.	SCALE: 1" = 20'-0"
DRAWN BY: J.J.D.	PROJ. ENG.: J.J.D.	SHEET 1 OF 1

Henry Hudson Parkway Interchange/Riverside Drive/ West 95th and 96th Street Corridors

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. Both elected officials and the Department of Transportation have actively been working on resolving these issues over the past few years. 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 are being addressed as a result of this initiative. These include:

- ***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***

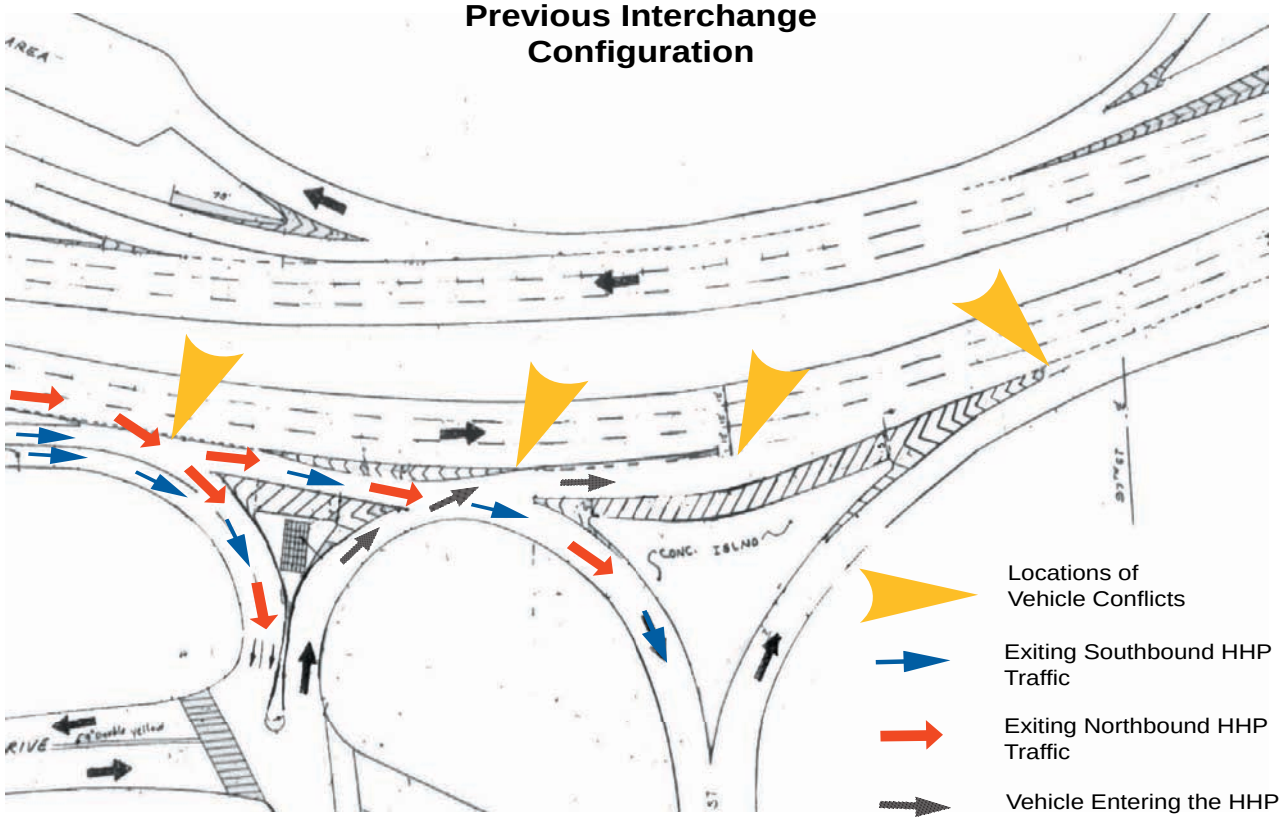
While the operation of the Henry Hudson Parkway interchange is the central component of this initiative, the safety improvements and changes in regulations on the interchange's supporting intersections should provide for a substantial improvement in pedestrian and vehicular safety throughout the area.

Henry Hudson Parkway Interchange

Description

Numerous traffic issues are the direct result of the unusual design of the HHP's 95 th/96th Street interchange and the movement of vehicles entering, exiting and continuing along the mainline of the parkway. All vehicles exiting the HHP, including those traveling in the southbound direction were forced into a short single lane merge in which they had options to exit at either West 95th or West 96th Street. This merge caused excessive speed differentials and overlapping merges between exiting traffic. Additionally, the exit lane for West 96th Street also served as an acceleration lane for traffic entering the northbound roadway at West 95th Street, causing additional conflicting movements and reducing both visibility and warning time for exiting and entering drivers. Motorists were forced into sudden acceleration and deceleration in order to either merge onto or exit the parkway. These movements also created conflicts between mainline and entering/exiting traffic, frequently causing extensive queuing on the mainline roadway and ramps. These conflicts are illustrated graphically below.

Previous Interchange Configuration



Improvements Implemented in November 2003

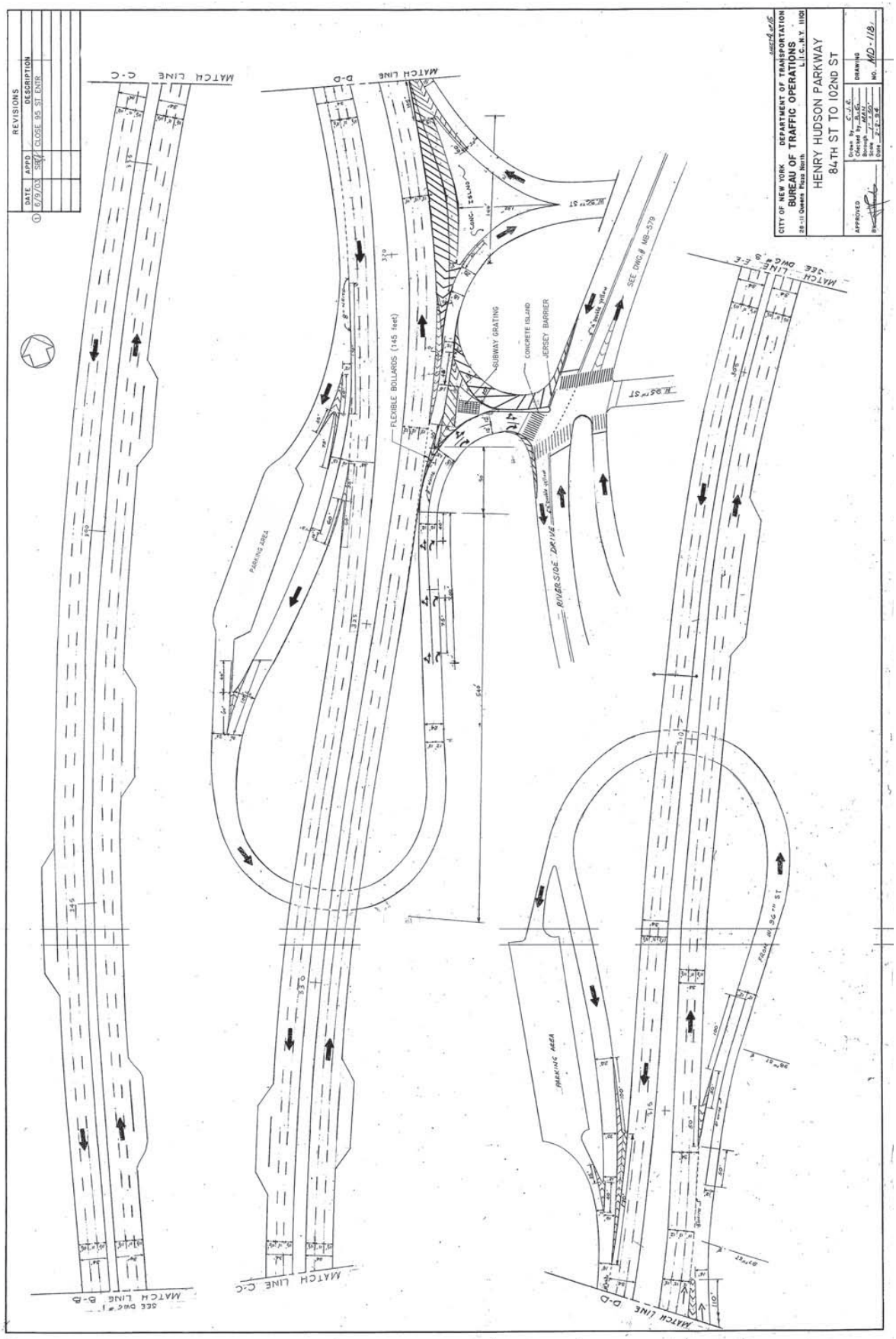
In order the alleviate the conflict between vehicles exiting and entering the highway, the Department minimized the weaving conflicts by:

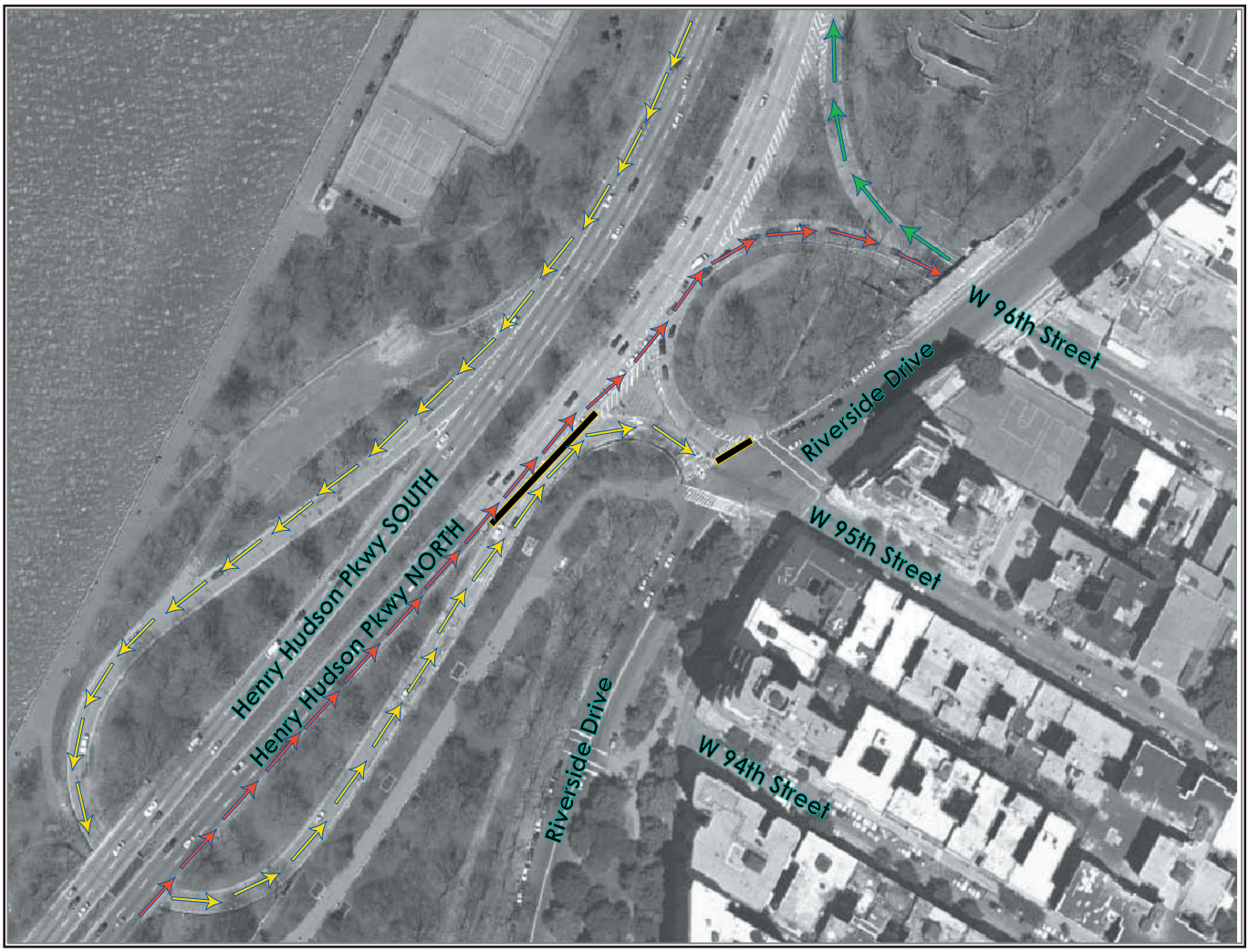
- Closing the entrance ramp from West 95th Street and Riverside Drive to all traffic,
- Eliminating the West 95th Street exit for exiting northbound HHP traffic and
- Eliminating the West 96th Street exit for southbound traffic.

In this configuration, 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 will be 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 Qwick Kurb on all approaches and ramps.

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


REVISIONS
DESCRIPTION
APPD
DATE
6/9/03 SKF CLOSE 95 ST ENTR
CITY OF NEW YORK DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC OPERATIONS
L.I.C., N.Y. 11101
HENRY HUDSON PARKWAY
84TH ST TO 102ND ST
APPROVED
DRAWING
NO. MD-118
MATCH LINE C-C
MATCH LINE D-D
MATCH LINE E-E
FLEXIBLE BOLLARDS (145 feet)
SUBWAY GRATING
CONCRETE ISLAND
JERSEY BARRIER
RIVERSIDE DRIVE
PARKING AREA
SEE DWG # MB-379



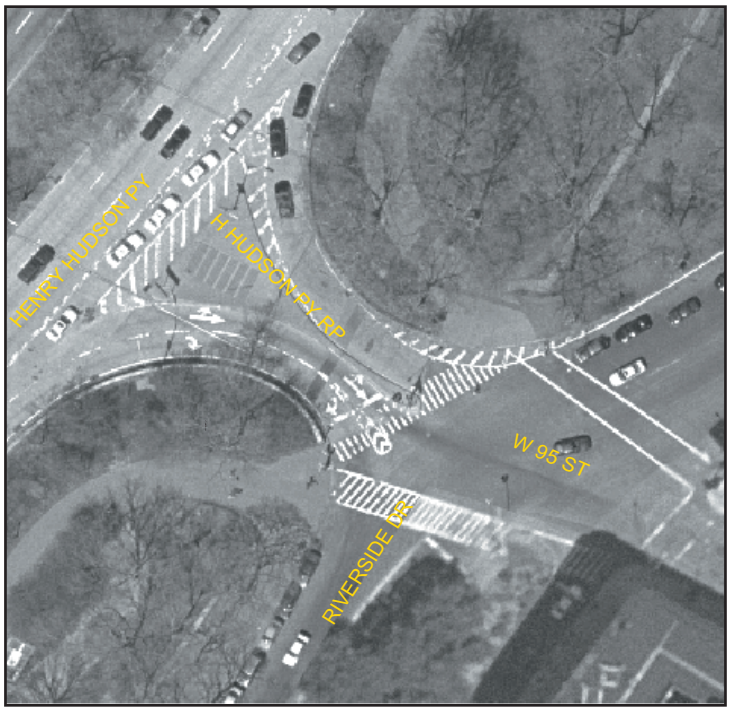
Operation of Henry Hudson Parkway / West 95th and 96th Street Interchange under the new configuration

Henry Hudson Parkway at Modified West 95th Street Exit, including physical treatments and signage

West 95th Street/Riverside Drive

Description

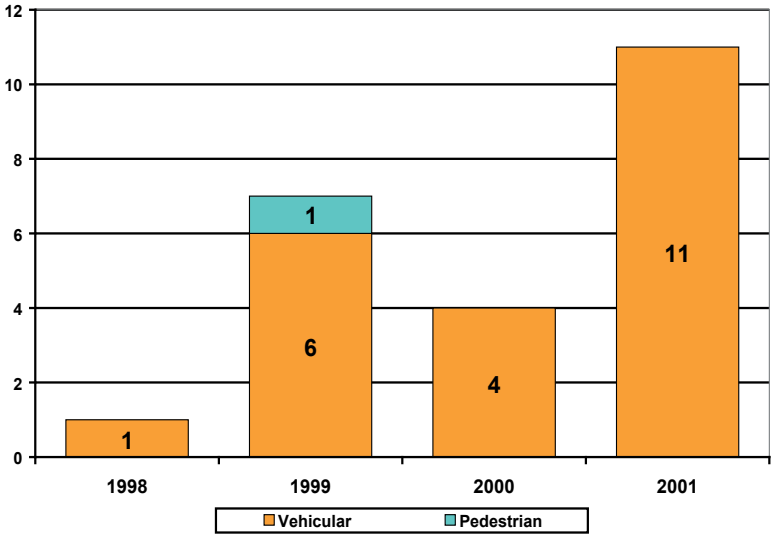
The intersection of West 95th Street and Riverside Drive was a signalized four-way intersection with an entrance and exit ramp to the Henry Hudson Parkway along its western leg. Due to the curvature of the exit ramps from the northbound Henry Hudson Parkway, motorists had little time to react to pedestrians 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.



Original Configuration of Intersection

The accident experience at this location varied between 1998 and 2001. In 1998, there was one accident. In 1998, 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

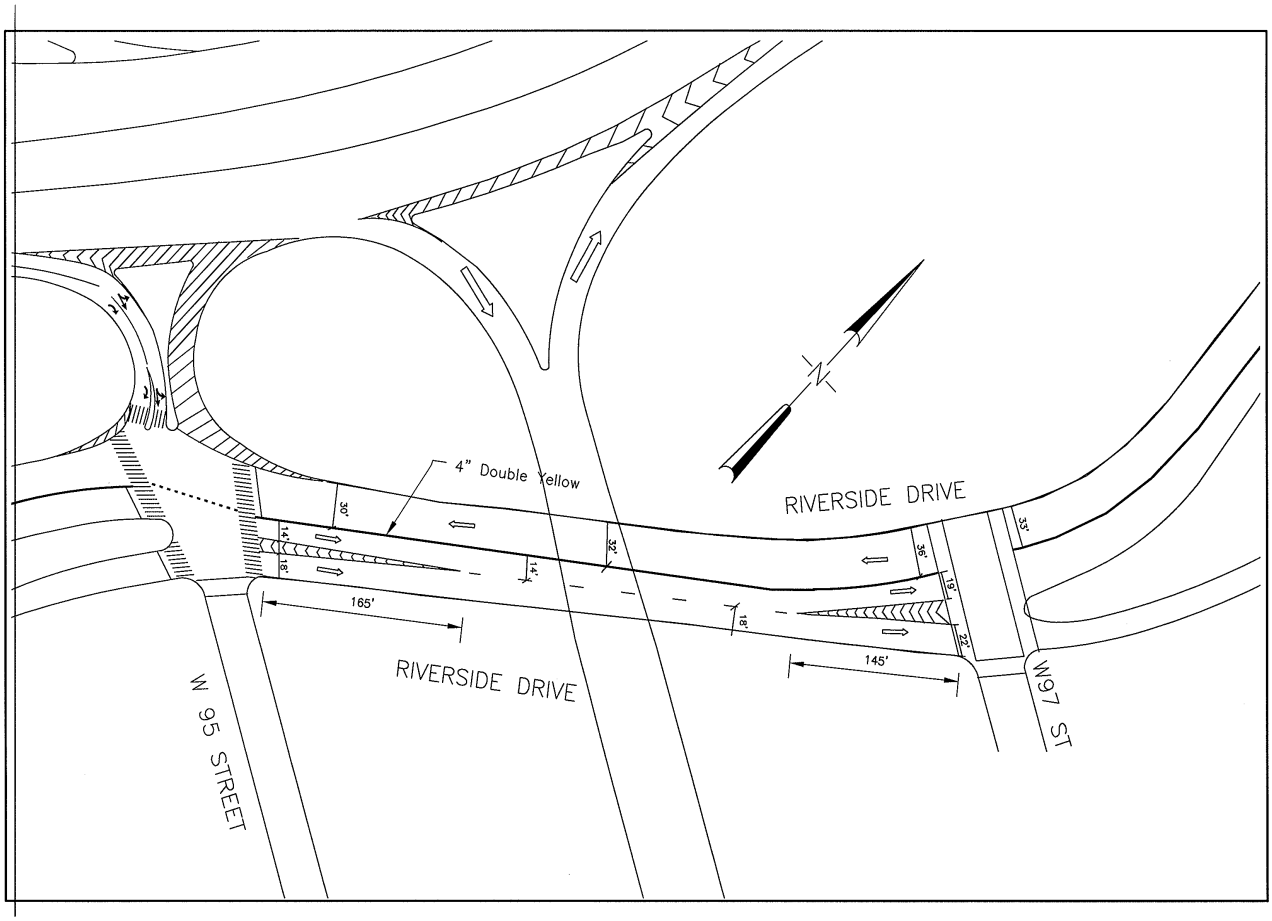
- Installed five newly designed "Turning Vehicles Yield to Pedestrians" signs.
- A neckdown was installed on the northwest corner to provide shorter crossing distance and to slow motorist making turns onto the HHP entrance from southbound Riverside Drive.

Closure of West 96th Street Entrance Ramp to Henry Hudson Parkway

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. (Depicted to the left)***
- ***Adjusted signal timing at intersection. (August 2004)***

- ***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.***



New Roadway Markings and Channelization on Riverside Drive

Improvements Implemented in 2004

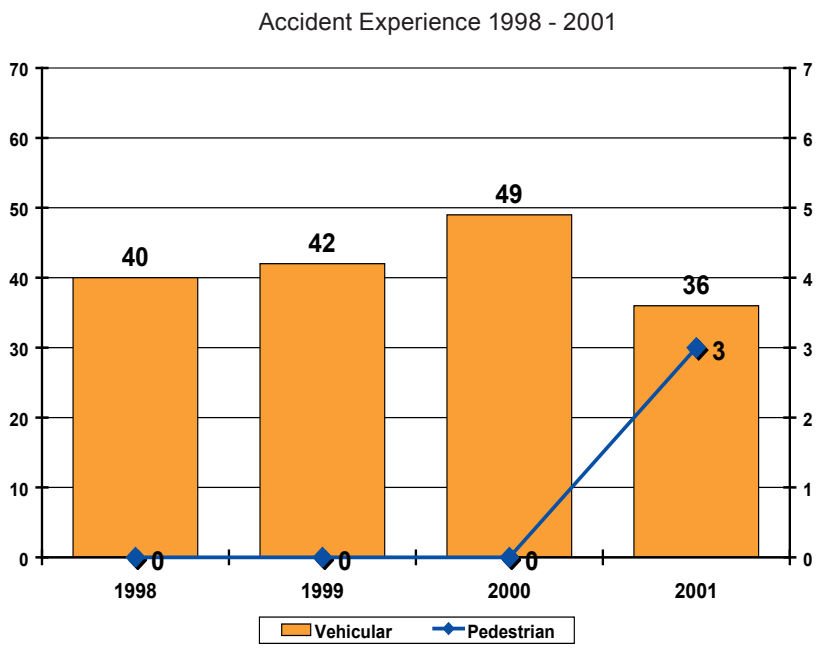
- ***A six second Leading Pedestrian Interval (LPI) was installed to cross Riverside Drive at West 95th Street. (April 2004)***
- ***Adjusted signal timing at intersection. (August 2004)***

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 non-dedicated signals provide 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 takes place during these hours. Additional left turn prohibitions were also in place for southbound 95th Street which diverts 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

The improvements implemented at the intersection of West 96th Street and Broadway are part of the overall plan for improving traffic related to the HHP Interchange. These improvements included:

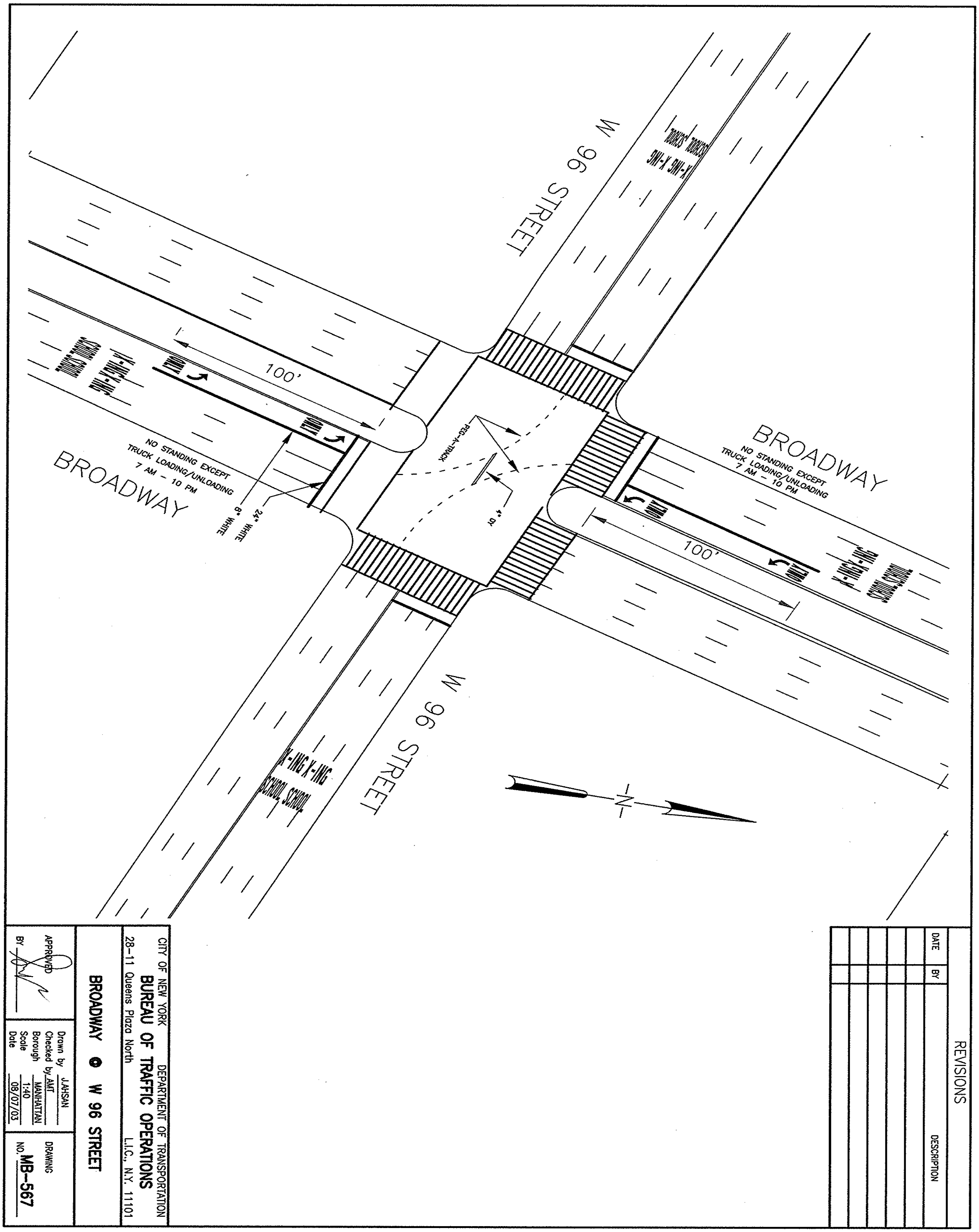
- Installation of a left turn signal phase and left turn bays on Broadway at West 96th Street to improve the performance of the intersection and to enable left turns.
- Replacement of meters on two blockfaces with truck loading zones to prevent double parking and ensure that at least two travel lanes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

Treatments at Intersection of
West 96th Street and Broadway

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)***
- ***Installed "dual left turn" signs at intersection of Broadway and West 96th Street to complement lane markings on the roadway to guide left-turning vehicles. (September 2004)***

The improvements are shown on the following page.


W 96 STREET
BROADWAY
NO STANDING EXCEPT
TRUCK LOADING/UNLOADING
7 AM - 10 PM
100'
SCHOOL X-ING
ONLY
PED-A-TRACK
24" WHITE
8" WHITE
4" DY
N
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

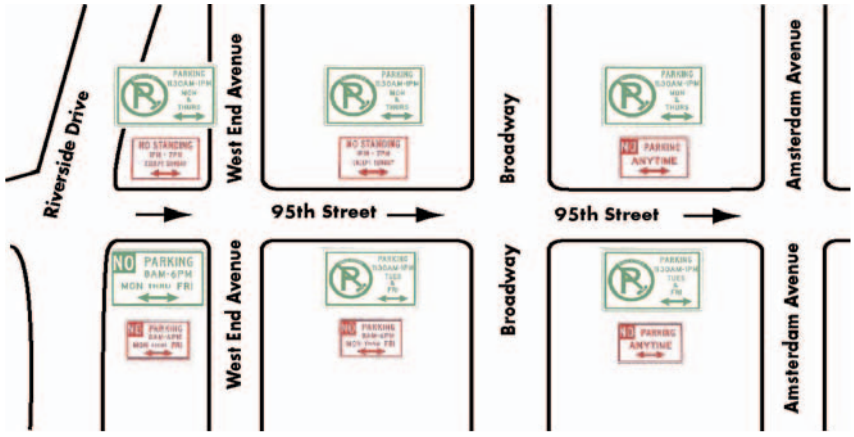
West 95th Street Between Riverside Drive and Amsterdam Avenue

Description

West 95th Street is one of the two exits from the Henry Hudson Parkway. In addition, the roadway provides eastbound access to Broadway as there is no access to West 96th Street from Riverside Drive. Currently, West 95th Street runs eastbound from Riverside Drive to Amsterdam Avenue, where it then changes to westbound operation. While this corridor does not experience heavy traffic volumes, parking restrictions and a wide roadway 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 north corner of West End Avenue which contributes to pedestrian activity along this corridor.

Improvements Implemented in November 2003

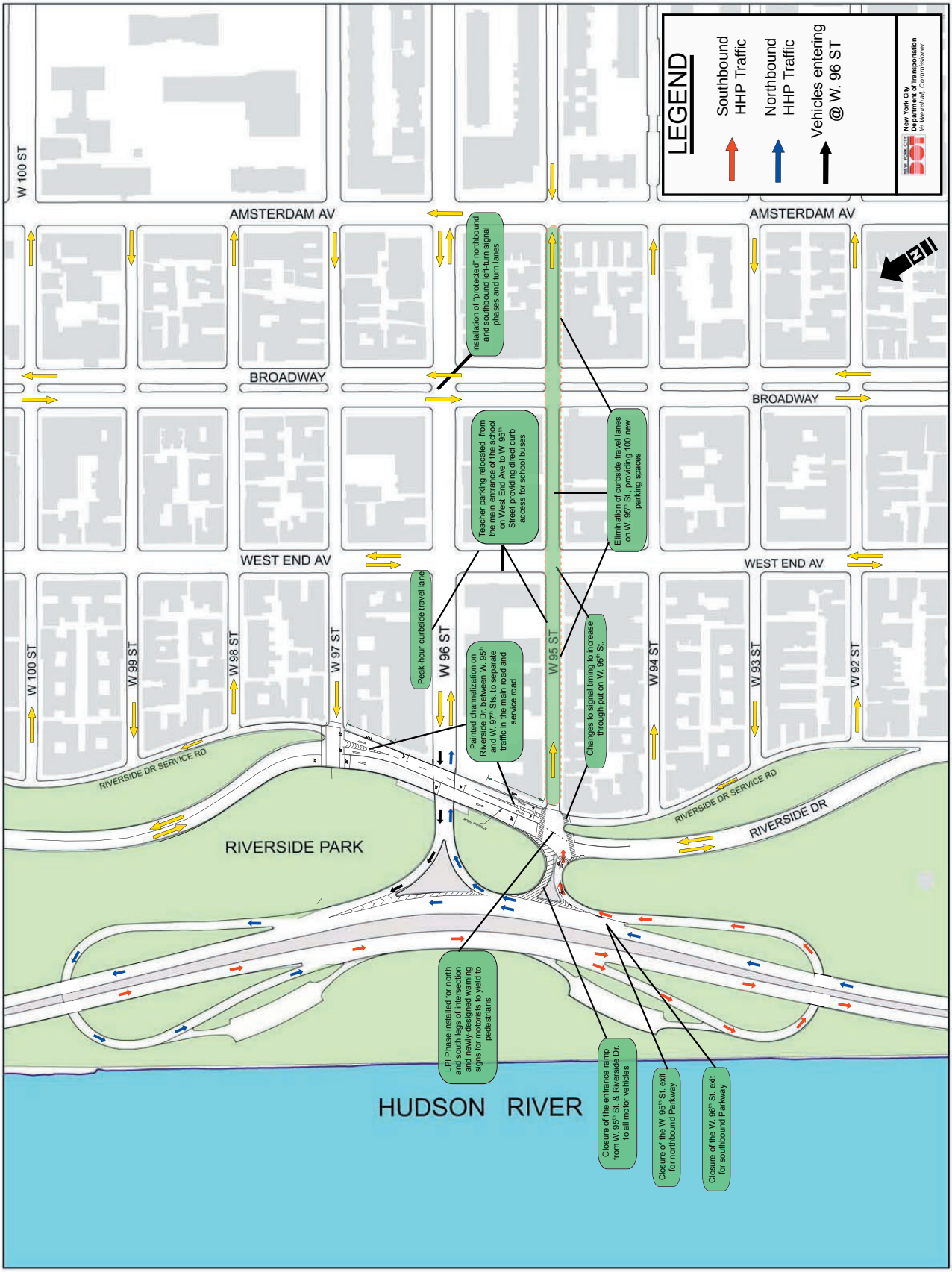
In order to decrease speeding, the Department amended the parking regulations along West 95th Street from Riverside Drive to Amsterdam Avenue. The new restrictions will discourage vehicles from using West 95th Street as a through street by effectively reducing the number of available travel lanes. The new parking regulations provide for additional community parking. The new regulations (depicted in green) are illustrated below. The previous regulations are depicted in red.



Parking Regulations along the West 95th Street Corridor

Improvements Implemented in May 2004

- ***Relocated teacher parking regulations from west side of West End Avenue to 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 offs/pick ups of children.***



Overall Traffic Improvements in the Vicinity of the West 95 th/96th Street / Henry Hudson Parkway Interchange