Table of Contents

QUEENS

Queens Boulevard

Description

Queens Boulevard is a major east-west arterial connecting the Queensboro Bridge to the west and the Van Wyck Expressway to the east and is highly utilized by both vehicular and pedestrian traffic along its entire length. In most sections, Queens Boulevard is an extremely wide arterial consisting of three mainline and three service road lanes in each direction separated by a raised curb median that offers refuge for pedestrian crossing this wide boulevard (up to 200 feet in some locations). Several express and local buses traverse the corridor, as well as access to the local subway lines (G and R) and express subway lines (E, F, V and #7).

Due to the nature of Queens Boulevard as a very wide, through arterial, there are several locations throughout the Boulevard that have incidences of high accidents, for both vehicles and pedestrians. A large percentage of the population crossing Queens Boulevard (particularly in Forest Hills and Rego Park) is elderly.

Given these physical characteristics, the Department has been actively engaged in improving the vehicular and pedestrian environment for over a decade. One of the primary concerns for the Department has been in reducing fatalities along the corridor. Between 1993 and 2004, there have been a total of 107 fatalities, with 84 (or 79%) of these pedestrian fatalities. The Queens Boulevard corridor had consistently ranked first annually in corridor fatalities between 1993 and 2003. Total fatalities peaked in 1993 at 24 (17 of which were pedestrians) and continued to decrease over the next seven years, except in 1997 when 22 fatalities (18 of which were pedestrians) occurred. In 2004, fatalities reached an all-time low of two, only one of which involved a pedestrian.

This reduction can be directly attributed to the Department's accelerated program to address pedestrian safety beginning in late 1999. Since this program was implemented, the fatality rate has fallen to 5.3 per year, significantly less than the 11.5 fatalities per year for the previous 7 1/2 years. The locations with the greatest number of fatal crashes are 70th Road (eight) and Broadway/Grand Avenue (five). Nearly half (40 or 48%) of the pedestrian fatalities were elderly persons age 65 or older.

Total pedestrian accidents along the Queens Boulevard corridor have gone down significantly since 1993. Pedestrian accidents peaked in 1995 at 154, and continued to decrease over the next five years to an all-time low of 87 pedestrian accidents in 2001.

Pedestrian Safety Study

In January 1997, the Department (in coordination with the Borough President's office and Community Board #6) commissioned a study conducted by the RBA Group for the area between the Long Island Expressway and Union Turnpike, a 2.5-mile stretch. The goal and main emphasis of the study was to improve pedestrian circulation and safety along the Queens Boulevard corridor, while maintaining vehicular levels of service. The final report, which was completed in September 1999, recommended different treatments ranging from Transportation System Management (TSM) type measures to intersection improvements to the relocation of slip ramps.

The Department reviewed the recommendations made by the RBA Group's Study and implemented the following measures:

- Pedestrian signals were installed at the Queens Boulevard/Ascan Avenue and Queens Boulevard/76th Road intersections in January 1999.
- A mid-block signalized crosswalk was installed at Queens Boulevard/69th Avenue in June 1999.
- High visibility crosswalks were installed at the Queens Boulevard/68th Drive intersection in June 1999.
- A stop bar was installed at 68th Drive in June 1999.

Other recommendations implemented include the capital reconstruction of selected elements by the Department of Design and Construction (DDC).

Phase I (67th Road to 70th Road) – Completed Fall 2000

- Installed midblock signalized crossing with high visibility crosswalk markings at three locations:
    - East of 69th Avenue (completed June 1999)
    - East of 68th Avenue (relocate westbound slip ramp, service to main, to east of 68th Road)
    - West of 70th Avenue (relocate eastbound slip ramp, service to main, to east of 67th Road; close eastbound slip, main to service, no relocation)
- Extended pedestrian refuge area of service road medians at two intersections:
    - 67th Road/102nd Street (four medians)
    - Yellowstone Boulevard (three medians)
    - Installed end caps on center medians at three intersections:
    - 67th Road
    - Yellowstone Boulevard
    - 70th Road

- Widened medians from four to five feet adjacent to left turn bays at two intersections:
  - 67th Road/102nd Street (westbound only)
  - Yellowstone Boulevard
- Installed sidewalk extensions (neckdowns), including pedestrian ramps, at six intersections:
  - 67th Road (southwest corner)
  - 68th Avenue (northeast corner, south side of crossing)
  - 68th Drive (southwest corner)
  - 69th Avenue (south side of crossing)
  - 70th Avenue (south side of crossing)
  - 70th Road (southwest corner)
- Installed high visibility crosswalk upgrades (all legs) at four intersections:
  - 67th Road
  - 68th Avenue
  - Yellowstone Boulevard
  - 70th Avenue
- Installed 3,700 linear feet of pedestrian barriers (36 inches in height) on the service roads medians (except in the vicinity of slip ramps where pedestrian barriers were installed on the center medians) for the entire length of Phase I. Work was completed in March 2001. The barriers conform to the Department's criteria for the installation of pedestrian barriers.

Phase II (Long Island Expressway to 67th Road and 70th Road to Union Turnpike)

- Extensions on service road medians at seven intersections (as of July 31, 2002 all work has been completed with the exception of 71st Avenue/Continental Avenue):
  - 63rd Avenue (six medians)
  - 65th Avenue (two medians)
  - 67th Avenue (three medians)
  - 71st Avenue/Continental Avenue (four medians)
  - Ascan Avenue (one median)
  - 76th Road (two medians)
  - 77th Avenue (three medians)
- Center median widening (to five feet from four at left-turn bays) at five intersections (as of July 31, 2002 all work has been completed with the exception of 71st Avenue/Continental Avenue):
  - 63rd Drive (one median, eastbound)
  - 65th Avenue (two medians)
  - 71st Avenue/Continental Avenue (two medians)

  - 76th Road (one median, eastbound)
  - Ascan Avenue (two medians)
- Neckdowns at eight intersections (all work has been completed):
  - 62nd Drive (northeast, southeast corners)
  - 63rd Drive (southeast corner)
  - 64th Avenue (northeast corner)
  - 65th Road (northeast corner)
  - 67th Avenue (southwest corner)
  - 71st Road (northwest, southwest corners)
  - Ascan Avenue (northeast, southwest corners)
  - 76th Road (southwest corner)
- End cap barriers on center median at ten intersections (as of July 2002 all work has been completed with the exception of Continental Avenue):
  - 62nd Drive, east and west sides
  - 63rd Drive, east and west sides
  - 65th Road east and west sides
  - 67th Avenue, east and west sides
  - 71st Road, east and west sides
  - Continental Avenue, east and west sides
  - Ascan Avenue, east and west sides
  - 76th Road, east and west sides
  - 77th Avenue, west side
  - 78th Avenue, west side
- High Visibility Crosswalk Upgrades at five intersections (as of July 2002 all work has been completed with the exception of 71st Avenue):
  - Eliot Avenue
  - 63rd Drive/63rd Avenue
  - 67th Avenue
  - 71st Avenue
  - 71st Road
- Installed 12,200 linear feet of pedestrian barriers on the service road medians except in the vicinity of slip ramps where barriers were installed on the center medians

NYCDOT Initiated Improvements (First Phase)

In September 1999, a revised signal coordination pattern intended to help reduce excessive vehicular speeds was implemented on Queens Boulevard between 63rd Avenue and Union Turnpike during the off-peak and weekend periods. In conjunction with these revisions, additional signal improvements implemented include the following:

- Signal timing changes were made during off-peak and weekend hours (to increase pedestrian crossing time ranging from three to ten seconds) on the section between 63rd and Union Turnpike (14 intersections) in August 1999. An analysis of the impacts of the timing changes showed significant decreases in the percentage of speeds greater than 35 mph. Average midday travel times decreased more than 25% in the eastbound direction but increased slightly (11%) in the westbound direction.
- Pedestrian crossing signals at 68th Drive and 75th Avenue were re-timed to allow pedestrians to completely cross Queens Boulevard.
- Four seconds were added to the westbound left turn movement at the Queens Boulevard/Yellowstone Boulevard intersection in September 1999.
- A new signal was installed in June 1999 at the Jacobus Street intersection, and crosswalks and stop bars were installed at the intersection in September 1999.

The Department surveyed the entire stretch of Queens Boulevard from Thomson Avenue to Hillside Avenue to determine the condition of signs, pavement markings, signals, and streetlighting. Traffic control devices were refurbished and upgraded to current standards and additional improvements were implemented.

- **Signs.** 139 intersections were surveyed. 209 signs and 20 driverails were installed. 44 intersections were in need of life-protecting devices (LPDs) and were repaired within nine business days. All work was completed by March 2000.
- **Pavement Markings**. Pedestrian crosswalks were refurbished for the entire length of Queens Boulevard in November 1999, except for the section between Woodhaven Boulevard and 69th Avenue (completed in April 2000) and the section between 72nd Street and Woodhaven Boulevard (completed in May 2000). Faded lane lines, double yellow centerline, channelization, and other pavement markings in the section between Woodhaven Boulevard and 69th Avenue were refurbished May 2000, markings for the remainder of the corridor were refurbished in July 2000. Pavement Markings were refurbished again in September 2002.
- **Signals.** A re-timing plan similar to that implemented between 63rd Avenue and Union Turnpike for off-peak hours was implemented in March 2000 on a trial basis in the Sunnyside section between 32nd Place and 48th Street. This new signal pattern has provided better speed control and increased pedestrian crossing time without any adverse impacts on traffic flow.
- **Pedestrian Signals.** Additional signals were installed on the center median (for the Queens Boulevard crossing) at 63rd Avenue/62nd Drive and 67th Avenue in April 2000, on 77th Avenue in May 2000, and 78th Avenue in June 2000. Additional pedestrian signals were installed on the center medians at Yellowstone Boulevard and all were upgraded to the new LED international signals in October 2000.

- **Streetlights.** All streetlights along Queens Boulevard are in good condition and all standards are met with the exception of the two underpasses at Woodhaven Boulevard, which were improved and converted to high-pressure sodium in June 2000.

Additional Improvements

- In January 2001, the Department implemented a new off-peak and weekend traffic signal coordination between 50th Street and 57th Avenue on Queens Boulevard, completing the signal retiming and adjustments along the entire length of Queens Boulevard from Van Dam Street to Union Turnpike. The new timing is designed to discourage speeding and allow additional pedestrian crossing time.
- In January 2001, Parking Control Unit (PCU) personnel were deployed at five locations (70th Road, Broadway, Yellowstone Boulevard, 66th Avenue, and 75th Avenue), where three or more fatalities occurred in the last three years, to distribute educational materials, and to give the public guidance on how to safely cross Queens Boulevard.
- In February 2001, 406 Pedestrian Crossing signs were installed at 36 intersections where pedestrian fatalities have occurred. At eight intersections where there had been three or more fatalities since 1993, signs were installed with the legend "A Pedestrian Was Killed Crossing Here/Be Alert/Cross With Care". At 27 intersections, signs were installed with the legend "Be Alert/Cross With Care". In addition, at the 36 intersections, signs were installed with the legend "Begin Walking on a Fresh Walk/If Don't Walk is Flashing Continue to Next Safety Island/Wait for a Fresh Walk/Cross With Care".

Example of Pedestrian Crossing sign on Queens Boulevard

- In February 2001, the 35 mph speed limit was reduced to 30 mph between Roosevelt and 51st Avenues making the entire stretch of Queens Boulevard 30 mph.
- In March 2001, the Department implemented an experimental peak period traffic signal modification that expanded the existing 120-second signal cycle length to 150 seconds on Queens Boulevard between 63rd Avenue and 83rd Avenue. This modification required the reallocation of the traffic signal phasing to 90 seconds (from 80 seconds) of green time for Queens Boulevard and to 60 seconds (from 40 seconds) for the cross street. An additional 20 seconds of WALK

time was provided to pedestrians crossing Queens Boulevard, enabling them to complete their crossing in one as opposed to two cycles (at all intersections except Yellowstone Boulevard).

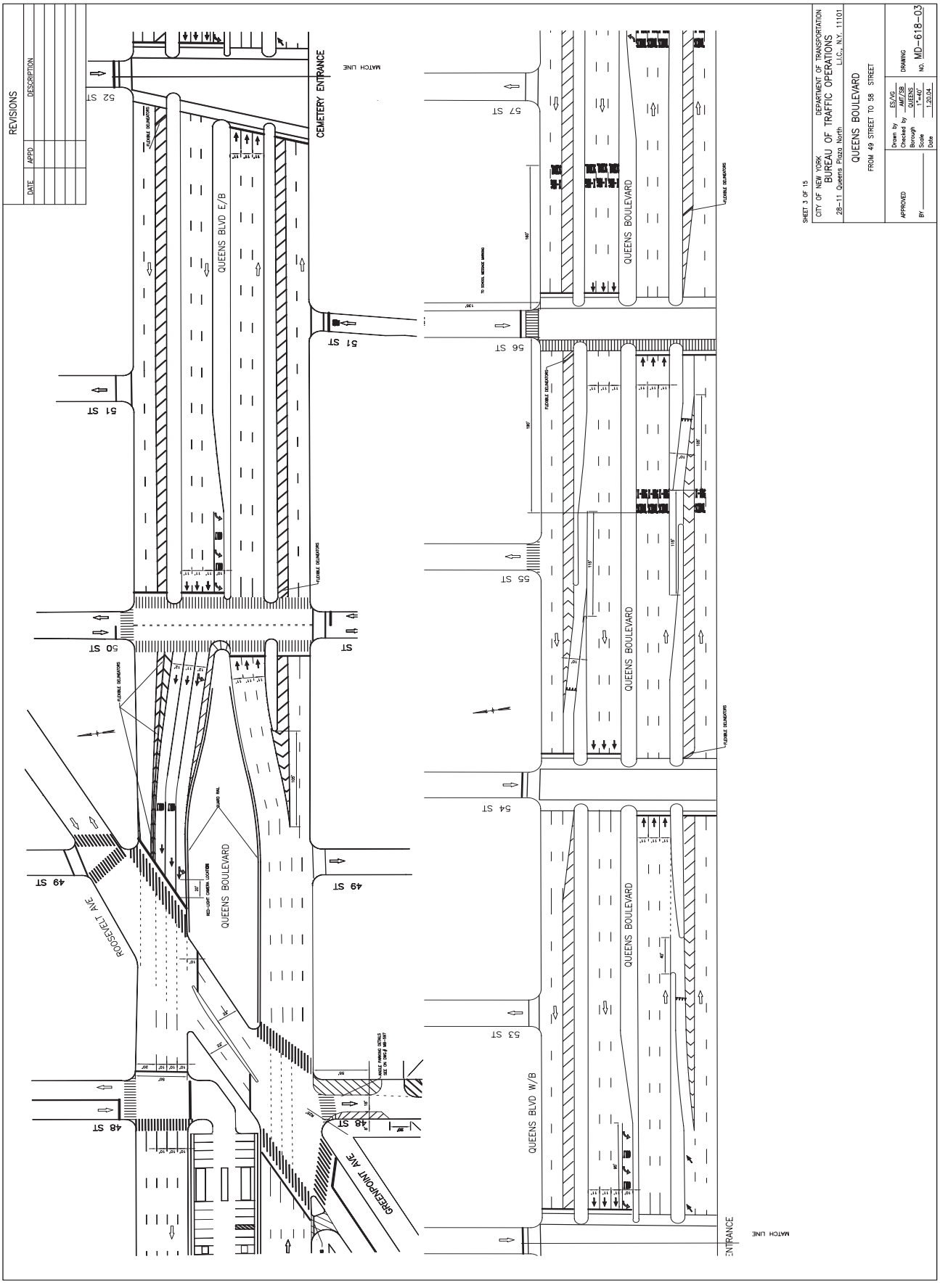
The change was monitored by analyzing "before" and "after" vehicular travel times, left-turn spillback and side street queue lengths. Our findings were generally positive. "After" vehicular travel times only increased approximately one to three minutes with the most significant travel time impacts confined to 7:30 to 8:00 AM (westbound) and 5:00 to 5:30 PM (eastbound). Vehicular travel times were consistent throughout the four-week analysis period. The analysis also indicated significant increases in the frequency of westbound left turn bay spillback at Yellowstone Boulevard, especially during the PM peak period. There were also some marginal increases recorded in the length of the side street queues. However, most vehicles cleared the approach during the expanded green time allotted to crossing Queens Boulevard.

- In May 2001, studies were conducted to determine the feasibility of installing additional mid-block signalized crosswalks at nine non-signalized locations. The locations were 51st Street, 72nd Street, 54th Avenue, 67th Drive, 68th Road, 73rd Avenue, 76th Avenue, 82nd Road, and 86th Road. No locations met the warrants for installation.
- In June 2001, approximately 400 word message pavement markings advising pedestrians to "Wait for Walk Signal" were installed at close to 40 intersections.
- In June 2001, a new speed calming strategy was completed that permits parking in the left lane of the service road adjacent to the median in a four-mile section of Queens Boulevard between 76th Street/Kneeland Avenue and Union Turnpike. This provides 545 additional parking spaces on this section of the Boulevard. The number of travel lanes on the service roads in both the east and westbound directions were reduced from two to one. We believe this will result in "speed calming" on both the service and main roadways. In conjunction with this change, channelization was installed to guide vehicles through the slip ramps between the main roadways and the service roads.
- In November 2001, the Department made adjustments to the aforementioned traffic calming strategy to further improve pedestrian safety. Parking meters at locations with few vehicles parked along the median side of the service road were removed and pavement markings and flexible bollards installed to direct traffic into one travel lane. Meters were removed and street cleaning regulations retained along the curb where there was little parking activity. At locations with excessive parking demand, street cleaning regulations were supplemented with the installation of meters.
- In 2001, two additional red light cameras were installed (one at 71st Avenue {in July} and one at Roosevelt Avenue {in November}).

- In fall 2001, the Department completed the installation of energy-saving Light Emitting Diode (LED) traffic signals and international pedestrian signals at all intersections along Queens Boulevard.
- In December 2001, the Department installed eight permanently mounted speed detector boards to inform motorists of their travel speed at the following locations on the Queens Boulevard main roadway (one in each direction): 51st Street, Cornish Avenue, 62nd Avenue and 76th Avenue.

Roadway markings on Queens Boulevard between 51st Street and Roosevelt Avenue

- In spring 2003, additional markings (shown to the left and on the following page) were installed to ease the transition for westbound vehicles on Queens Boulevard between 51st Street and Roosevelt Avenue where the service road merges with the main roadway.
- In spring 2003, the Department replaced and/or repaired 259 linear feet of pedestrian separators along Queens Boulevard.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GREENPOINT AVE
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DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC OPERATIONS
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Borough QUEENS
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Queens Boulevard Pedestrian Safety Study (Phase II)

The Department initiated a pedestrian safety study for the sections of Queens Boulevard between the Long Island Expressway and the Queens Boulevard Bridge in Sunnyside, and between Union Turnpike and Hillside Avenue. In addition to a traffic planning component that will identify pedestrian safety and traffic issues and recommended short and long term improvements, the study will incorporate a Preliminary Design Investigation (PDI) component that will result in greater efficiency in advancing the project to the final design stage for implementation of capital improvements. The traffic planning study began in November 2001 and was completed in ***June 2004.*** A kick-off meeting was held in April 2002 with the Borough President and local elected officials to introduce the project followed by a Citizens Advisory Council (CAC) meeting with the affected Community Boards, local associations and civic groups (also held in April 2002).

The preliminary findings of the draft Existing Conditions Report was presented to the CAC in April 2003 and the TAC in May 2003. A briefing of the Report was also made to the Deputy Borough President in April 2003. The Final Existing Conditions Report, which includes a description of all data collected, existing conditions and problem identification, was completed and released in early August 2003.

Implemented Improvements

Several short term measures that were identified in this report have been implemented. These improvements include:

- Replaced missing stop sign at west exit driveway from median parking area between 33rd Street and 34th Street. (July 2003)
- Replaced missing stop sign at west exit driveway from median parking area between 39th Street and 39th Place. (July 2003)
- Installed pedestrian fencing along Queens Boulevard medians between Roosevelt Avenue and the LIE and between Union Turnpike and Hillside Avenue. (September 2003)
- Replaced missing luminaries at Queens Boulevard / Van Dam Street intersection. (September 2003)
- Widened crosswalks across Queens Boulevard at 58th Street so that the crosswalks encompass the ADA ramps at the median islands. (October 2003)

- Relocated "Stop Ahead" sign along Kew Gardens Road Westbound at 80th Road to improve visibility to motorists; sign is blocked by idling buses. (October 2003)
- Removed all signs and markings relating to worn rumble strips between 58th Street and 59th Street. (November 2003)
- Installed/maintain high-visibility crosswalks at the following 20 key intersections along the study corridor (November 2003):
    - Van Dam Street / Thomson Avenue
    - 39th Street
    - 43rd Street
    - Greenpoint Avenue / Roosevelt Avenue
    - 48th Street
    - 50th Street
    - 58th Street
    - 61st Street / 63rd Drive
    - 65th Place
    - 69th Street
    - 70th Street
    - 51st Avenue
    - Grand Avenue / Broadway
    - Van Loon Street
    - Long Island Expressway Service Road / Eliot Avenue
    - Union Turnpike
    - 80th Road (high-visibility crosswalk already exists)
    - 83rd Avenue / Hoover Avenue
    - Main Street
    - Hillside Avenue
- Removed misplaced stop bar in southbound direction along 35th Street between the Queens Boulevard eastbound and westbound roadways. (November 2003)
- Installed missing crosswalk along west crossing of Queens Boulevard Westbound/Eliot Avenue/Long Island Expressway Service Road intersection. (November 2003)
- Conversion of 51st Street to one-way southbound between Queens Boulevard and 47th Avenue to improve safety on this narrow roadway. (November 2003)

In addition to the scheduled work on the study, the Department has installed an additional 24,000 linear feet of pedestrian fencing along the medians of the entire study area (excluding the section between Roosevelt Avenue and Van Dam Street). The installation of the fencing was completed in September 2003.

Above Treatments used to implement Full closure of cross street

Below: Example of treatment used to close access to parking areas

The following improvements were completed in Winter 2003/2004:

- ***Installed a new sign "To Queens Boulevard with a 9 o'clock arrow" at the Grand Avenue/Van Loon Street intersection to prevent motorists from making a difficult left turn at Queens Boulevard.***
- ***Installed missing pedestrian signal heads for the east-west crossings (i.e. crossing Main Street East) on both the north and south sides of Queens Boulevard at Main Street.***
- ***Installed missing pedestrian signal heads for the east-west crossings (i.e. crossing Van Loon Street) on both the north and south sides of Queens Boulevard at Van Loon Street intersection.***
- ***Prevented the U-turns on 65th Place between Queens Boulevard and Woodside Avenue by installing Qwick Kurb on the centerline and installing No-U-turn signs.***

The following improvements were implemented in Spring 2004:

- ***Installed four speed boards at the following Queens Boulevard locations: one westbound between Hillside and 87th Avenues, one eastbound at 59th Street, one eastbound and one westbound at 83rd Avenue.***
- ***Installed leading pedestrian intervals (LPIs) at 17 locations (32nd Place to 47th Street).***
- ***Introduced a peak period 150-second cycle length between Skillman Avenue and 57th Avenue. This longer cycle***

length is now operating from Van Dam Street to Hillside Avenue.

- ***Closed parking area access to 39th and 43rd Streets with bollards and installed lane designation markings on the cross streets under the viaduct.***
- ***Full closure of the cross street at the main subway entrance/exits at 33rd Street. This includes closing access between parking areas.***
- ***Upgraded pedestrian crosswalks to high visibility from Van Dam Street to Roosevelt Avenue.***
- ***Installed "No Pedestrian Crossing" signs at the planted traffic island at Van Dam Street/Queens Boulevard.***
- ***Installed lane designation restriping and signage at Queens Boulevard/Van Dam Street, Kew Gardens Road/80th Road, 80th Road/QB intersections.***
- ***48th Street was converted to one-way southbound from two way operation between Queens Boulevard and 47th Avenue. In addition, angle parking was installed on the east curb resulting in the creation of an additional 25 parking spaces.***
- ***Eliminated free-right turn onto Greenpoint Avenue from eastbound Queens Boulevard.***
- ***Prohibited northbound and southbound left-turn movements at the 51st Avenue intersection and closed the free right turns onto 51st Avenue from both eastbound and westbound Queens Boulevard.***
- ***Restriped Woodhaven Boulevard northbound at 59th Avenue (to three exclusive left turn lanes from two).***
- ***Closed the vehicle turn-around at the west leg of the Eliot Avenue intersection to increase pedestrian space.***

Treatment eliminating free right turn onto Greenpoint Avenue

Pedestrian Fencing installed along parking facilities @ 47th Avenue and Queens Boulevard

- ***Re-signed and re-striped the approach to the BQE entrance at 66th Street.***
- ***Narrowed the service roads between 50th Street and 59th Place by installing a combination of pavement markings and Qwick Kurb.***
- ***Realigned the westbound Queens Boulevard movement at Hillside Avenue by using an improved channelization and lane designation markings at all approaches.***
- ***Installed additional pedestrian signals on the center medians at the following locations:***
  - ***56th Avenue***
  - ***65th Place***
  - ***58th Street***
  - ***Broadway***
  - ***55th Avenue***

The following improvements were made in late summer 2004:

- ***Installation of pedestrian fencing (approx. 6,500 linear feet) between Van Dam Street and Greenpoint Avenue. This brought the total linear footage of fencing on Queens Boulevard to 46,000.***

In addition, a Preliminary Design Investigation is underway to study the feasibility and prepare designs for the following capital improvements:

- ***Permanent closure of access to parking areas (39th and 43rd Streets).***
- ***Permanent full closure of the cross streets at 33rd Street, including upgrading 46th Street.***
- ***One-way cross street curb extensions, where feasible.***
- ***Extension of raised medians to crosswalks, median protection (e.g., bollards), and relocation of some signals and installation of additional pedestrian signals at 16 locations.***
- ***70th Street left-turn bay extension.***
- ***General pedestrian improvements at Eliot Avenue (including permanent closure of turn-around and pedestrian fencing).***
- ***Union Turnpike interim "punch through."***
- ***Extension of the curb and the west center median at the Van Wyck Expressway Service Road.***
- ***Hillside Avenue permanent roadway realignment.***

High Accident Location Improvements

In addition to the extensive improvements made on a corridor wide level, the Department focused additional efforts at high accident locations along Queens Boulevard. Locations that have consistently ranked high include the intersection of Queens Boulevard and Van Dam and Thomson Avenues (with total accidents ranging as high as 227 in 1997 to an all time-low of 84 total accidents in 2001) and the intersection of Queens Boulevard with Woodhaven Boulevard and 59th Avenue (***with total accidents ranging from a high of 169 total accidents in 1997 to an all time low of 103 accidents in 2001). Since 1996, there have been no intersections along Queens Boulevard which have ranked amongst the 20 highest pedestrian accident locations for the City.***

As is the case with the entire corridor, the accident history at these problematic locations shows a consistent, significant decline, particularly at Van Dam/Thomson Avenue where accidents decreased 63% since 1997 (to 84 in 2001 from 227 in 1997).

Queens Boulevard/Woodhaven Boulevard/59th Avenue

The intersection of Queens Boulevard/Woodhaven Boulevard/59th Avenue has ranked third or fourth within the top ten high accident locations between 1996 and 1999. Therefore, in an effort to reduce the number of accidents, the Department implemented (in 2000) several of the traffic mitigation strategies which were identified in an Environmental Impact Statement (EIS) for the Queens Center Mall Expansion.

The results of these improvements have been encouraging. Accidents at this location fell 28% (to 103 in 2001 from 143 in 1996).

Implemented Improvements

- Conversion of 57th and 59th Avenues from two-way to one-way roadways. The conversion of 57th Avenue between Queens Boulevard and Junction Boulevard to one-way southbound (towards Queens Boulevard) provides three moving

lanes between Junction Boulevard and 92nd Street with an exclusive left turn lane at 92nd Street. Two-way traffic is maintained between 90th and 92nd Streets in order to provide access to the existing mall parking garage. West of 90th Street, four moving lanes are provided at the approach to Queens Boulevard, including an exclusive right-turn lane, a shared through/right-turn lane, and two exclusive left-turn lanes. The conversion necessitated the removal of the left-turn movement and left-turn bay from eastbound Queens Boulevard onto 57th Avenue. The conversion of 59th Avenue between Queens Boulevard and Junction Boulevard to one-way northbound (away from Queens Boulevard) provides three moving lanes between Queens and Junction Boulevards. Two exclusive left-turn lanes are provided at 92nd Street, and one exclusive left-turn lane is provided at both Junction Boulevard and 94th Street.

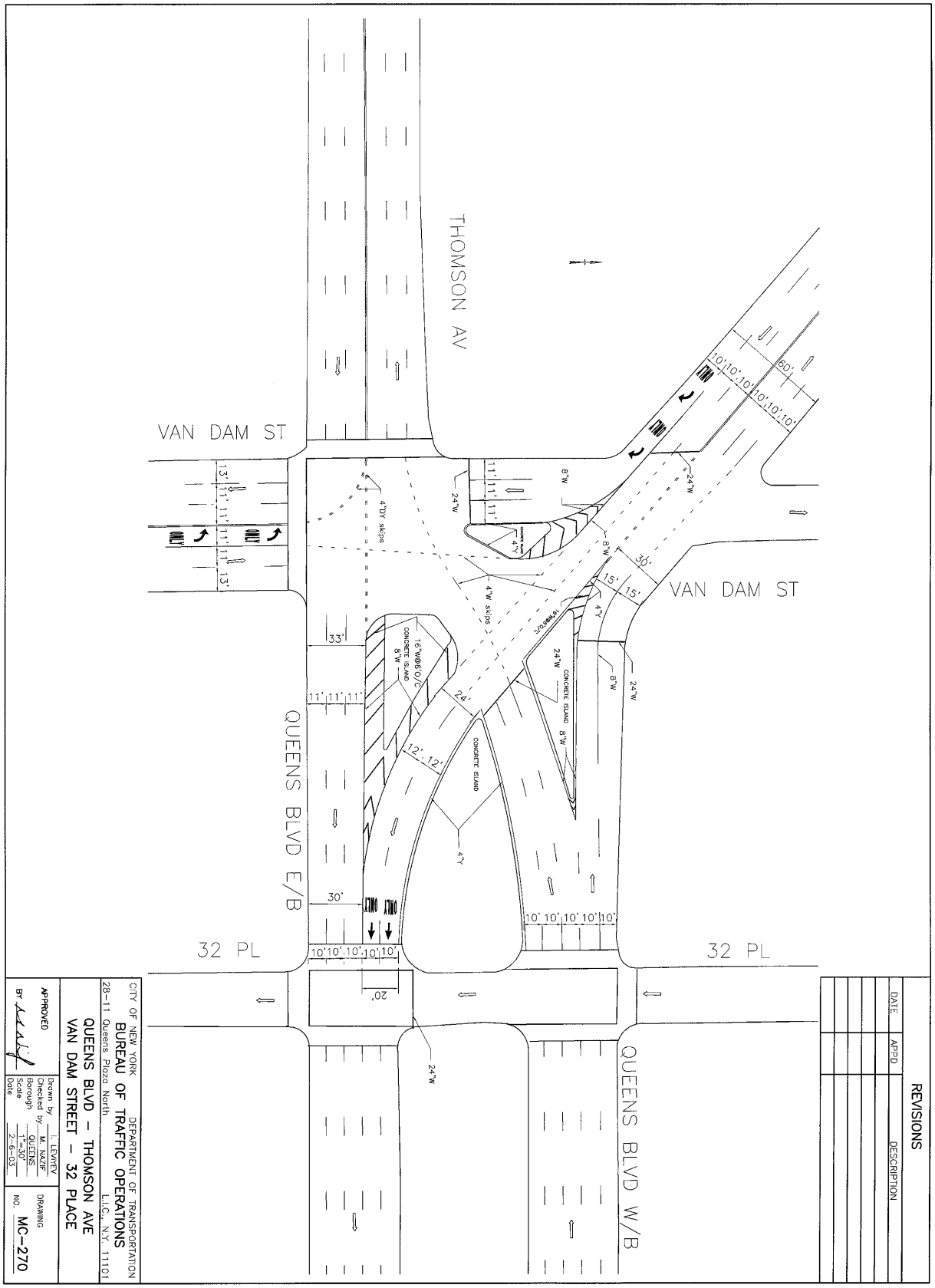
These street directional changes and the associated reconfiguration and realignment of lanes reduce vehicular and pedestrian conflicts and should significantly improve safety. In order to enhance pedestrian safety, the curb at the northwest corner of the intersection of Queens Boulevard/Woodhaven Boulevard/59th Avenue intersection was widened by approximately 40 feet. This reduces the pedestrian crossing distance nearly in half. More importantly, additional time was devoted to the most difficult and dangerous pedestrian crossing. As a result of the one-way conversion of 59th Avenue, away from Queens Boulevard, time formerly allocated to the southbound 59th Avenue approach was no longer necessary and was reallocated to provide more pedestrian crossing time.

- Additional measures in the area include: installation of advance warning and directional signs along Queens Boulevard, 92nd Street, 94th Street, and Junction Boulevard; re-striping of the southbound lane on 92nd Street to provide access to the proposed garage. In November 2000, thirteen trailblazer signs were installed to guide motorists to the LIE; the east curb of Junction Boulevard at 59th Avenue was daylighted to provide for bus turning movements; the Junction Boulevard/57th Avenue intersection was daylighted to provide a northbound left-turn lane to reduce congestion at the intersection; and five additional signs were installed within the area to reinforce the one-way conversions.
- In March 2001, a study was completed to determine the feasibility of installing a left-turn phase at the 57th Avenue/92nd Street intersection. As a result of the study, a left-turn phase (for northbound 92nd Street) and a 170 controller (which allows varying the signal splits based on time of day) was installed in April 2001.

Queens Boulevard/Van Dam Street/Thomson Avenue

In November 2002, an additional channelization (shown to the right and on the following page) was installed to narrow the roadway on eastbound Queens Boulevard to two lanes just north of the traffic island where Thomson Avenue and Queens Boulevard converge. The new channelization removed the conflict between vehicles entering Queens Boulevard from those continuing eastbound on Queens Boulevard.

Channelization and markings @ Van Dam Street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NO. MC-270

Rockaway Freeway

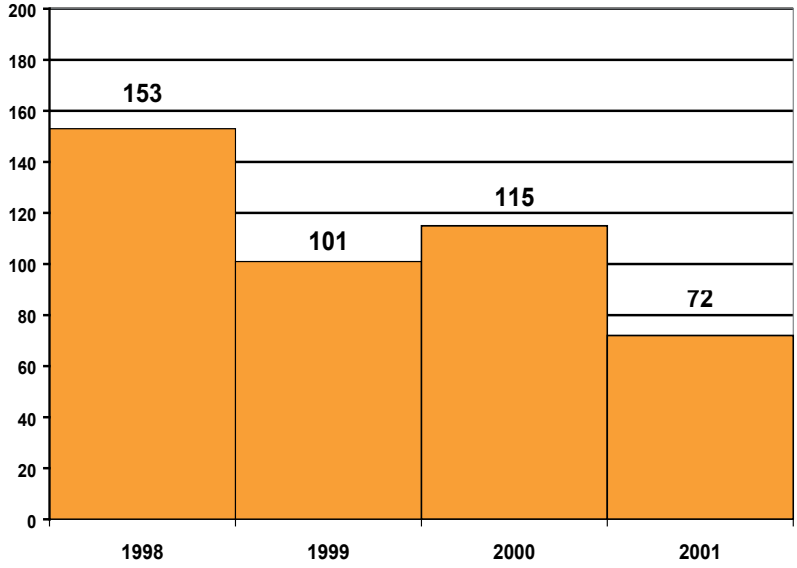
Description

Rockaway Freeway is a major east-west corridor in the Far Rockaways. This corridor is characterized by the elevated subway line running above the roadway. The elevated structure or "el" has support columns that are located in the raised island that separates the traffic flow. The roadway generally measures 25 feet wide in each direction. The primary area of concern is between Beach 114th Street and Beach Channel Drive.

Because of the configuration of the elevated structure, there were numerous traffic safety concerns. These included excessive vehicular speeds along the roadway, limited vehicular sight distances because of the elevated structure, lack of pedestrian refuge space and visibility, and traffic signals. Although not a high ranked corridor, the corridor experienced 12 fatal accidents between 1990 and 1998, which were the primary impetus that led to the Department implementing a broad range of measures to address the most serious deficiencies.

Overall, the accident experience along this corridor has been following a downward trend since the implementation of the safety measures in August 1998. In 1999, total accidents decreased sharply (34.0% to 101 from 153) from 1998. In 2000, total accidents increased to 115, but this is still 25% lower than in 1998. ***In 2001, total accidents experienced an even more dramatic decline, decreasing 37% to 72.***

Accident Experience 1998 - 2001



Even more encouraging is the decline in the number of fatalities along the corridor. Since these measures were implemented in August 1998, there was one fatality on the

corridor in 1999, one in 2000, two in 2001, and none in 2002 ***or 2003.***

The Department is confident that the implemented improvements have had a substantial impact in decreasing the number of fatalities and accidents along this corridor.

Improvements Implemented in August 1998

- Reconfigured Rockaway Freeway from a two-lane to a one-lane roadway in each direction. Installed 100-foot long exclusive left turn bays at all signalized intersections and revised signal timing to provide protected only phasing at all locations where left turns from Rockaway Freeway are permitted.
- Modernized six signals from red and green indicators to red, amber and green displays.
- Reduced the speed limit to 25 mph. New signs indicating this change were posted every 2500 feet in both directions of Rockaway Freeway.
- Closed 10 non-signalized intersections to cross traffic. Installed markings and regulations at the non-signalized intersections to direct all traffic to intersections controlled by a traffic signal.

Improvements Implemented in September 2003

- Markings were refurbished along the Rockaway Freeway corridor in September 2003.

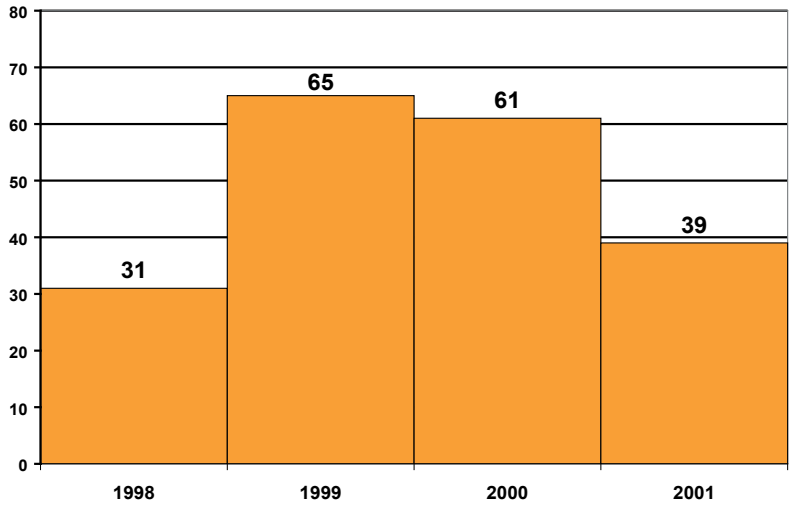
Linden Boulevard/ South Conduit Avenue

Description

Linden Boulevard and South Conduit Avenue are both heavily trafficked, signalized arterials. The terminus of eastbound Linden Boulevard feeds into the right and middle of three eastbound travel lanes on South Conduit Avenue in close proximity to a left hand entrance onto the eastbound Belt Parkway. Motorist visibility of approaching traffic is limited on both approaches due to the irregular street geometry and further obstructed during the summer when grass and weeds are not sufficiently maintained in advance of or at the junction. Many motorists destined for the Belt Parkway entering onto South Conduit from Linden Boulevard take unreasonable risks in order to move into the left lane through often congested traffic.

The accident experience at this intersection indicates a substantial increase in accidents between 1998 and 1999. In 1999, accidents more than doubled to 65 from 31 in 1998. Accidents decreased slightly in 2000 to 61. ***In August 2001, the Department implemented a series of improvements to address the primary vehicular concerns. For the year 2001, accidents decreased substantially by 36% (to 39 from 61 in 2000). After the implementation of measures in August 2001, the monthly total accidents showed a significant decline in the frequency of accidents averaging only 1.8 accidents for the months after the installation. For the 8 months prior to implementation, the average number of accidents per month was 3.6.***

Accident Experience 1998 - 2001



Implemented Improvements

- Installed a new traffic signal in August 2001 to separate conflicts and eliminate unsafe merging and lane changing.
- Scarified existing gore markings and lane lines that allowed only two travel lanes from each of the two approaches in advance of the intersection. Re-marked the approaches to permit three travel lanes in advance of the newly signalized intersection on both Linden Boulevard and South Conduit Avenue. All work was completed in May 2002.

Main Street

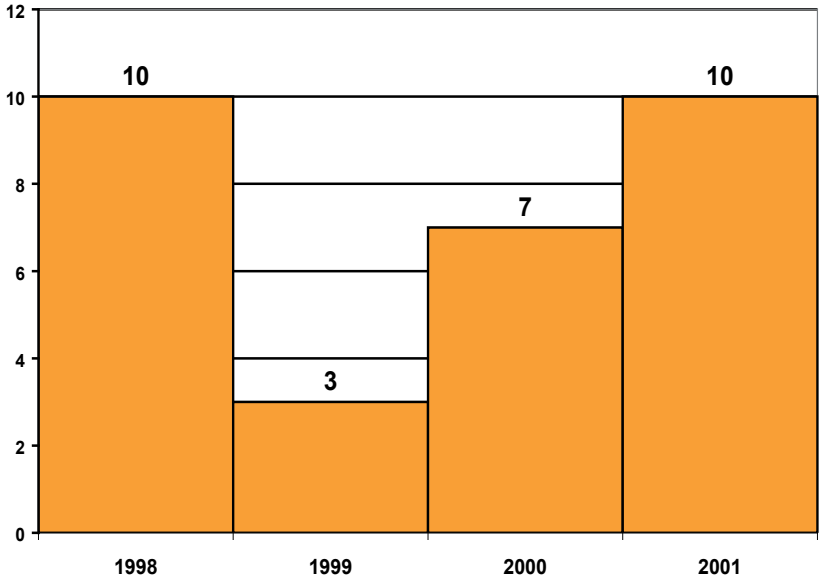
Southbound Main Street Service Road at 68th Drive

Aerial view of intersection

Description

Main Street is a major north-south corridor that runs through central Queens. At this particular intersection, the roadway is characterized by a three lane (two moving, one parking) northern roadway and a three lane (two moving, one parking) roadway separated by a concrete center median. There are left turn bays for both northbound and southbound traffic. There is also a southbound service road that is separated from the main roadway by a concrete median than ends at 68th Drive. The convergence of these roadways causes poor alignment and motorists frequently make unsafe merges onto mainline roadway. In addition, motorists frequently fail to obey the traffic signals. For pedestrians, the unique geometry of the intersection causes the crosswalks to not be aligned with the pedestrian signals.

Accident Experience 1998 - 2001



Accident history is available only for the entire intersection. There is no separation of data between mainline and service road accidents. In 1998, there were a total of ten accidents at the Main Street/68th Drive intersection. In 1999, accidents decreased sharply by 70% to three. ***In 2000, total accidents more than doubled to seven. In 2001, accidents continued***

to increase, with 10 total accidents at this intersection. Based upon the unique geometry of this intersection and the increasing accident experience, the Department implemented safety initiatives in December 2001. This improvement should provide for the safer movement of vehicles through the intersection and mitigate the rising accident trends.

Improvements Implemented in December 2001

A signal was installed on the southbound service road of Main Street (previously regulated by a Stop sign) and the movements were separated for the southbound main and service roads.

Southbound Main Street Service Road at 73rd Avenue

Description

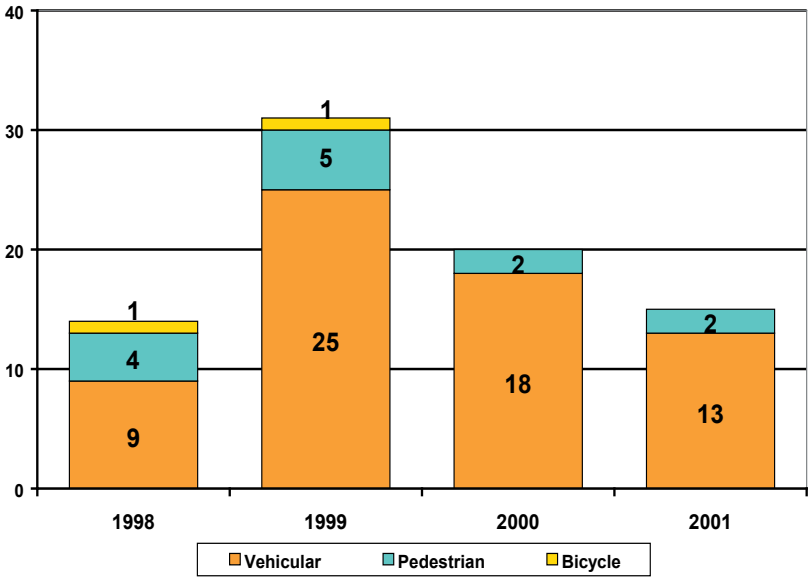
Main Street is a major north-south corridor that runs through central Queens. Along various portions of the corridor, a service road runs alongside the southbound portion of the roadway. At the Intersection of Main Street and 73rd Avenue, this service road comes to an end. This causes poor roadway alignment and dangerous movements as the service road and mainline traffic merge in an unsafe manner.

Aerial view of intersection

Accident history is available only for the entire intersection. There is no separation of data between mainline and service road accidents.

At this intersection, accidents increased substantially between 1998 and 1999. In 1998, there were a total of 14 accidents at the Main Street/73rd Avenue intersection of which four were pedestrian accidents and one was a bicycle accident. In 1999, total accidents increased sharply to 31, with five pedestrian accidents and one bicycle accident. In 2000, total accidents decreased 35% (to 20) with two pedestrian accidents. ***In 2001, total accidents decreased significantly by 25% (to 15) with***

Accident Experience 1998 - 2001



two pedestrian accidents. While these trends predate the implemented measures, this downward trend in accidents parallel the general decline in accidents citywide during this time period.

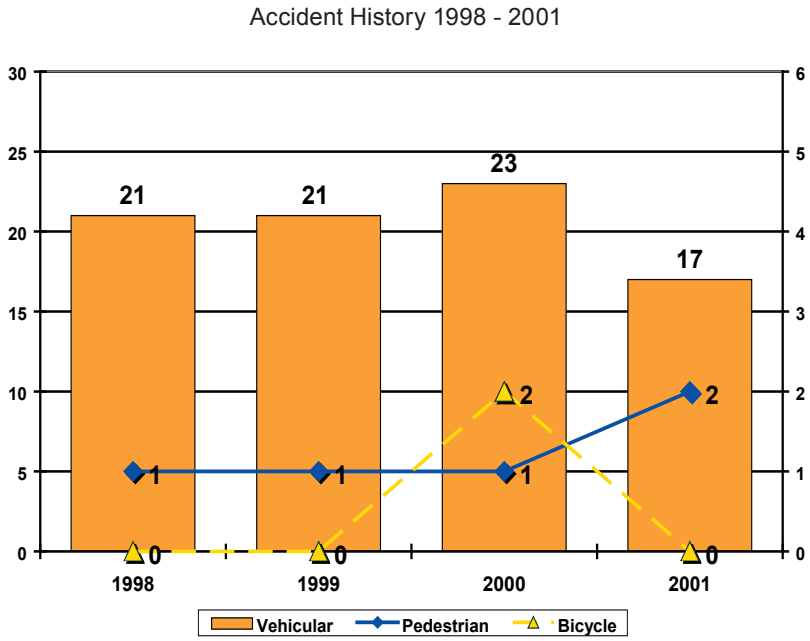
Improvements Implemented in December 2001

A signal modification was made separating the movements on the southbound main and service roads of Main Street (which previously ran concurrently).

Cooper Avenue Underpass/ 74th Street

Description

Cooper Avenue passes diagonally under the LIRR between 75th and 76th Streets. The only available crossing of the LIRR for pedestrians is to descend to Cooper Avenue (using one of two staircases), cross Cooper Avenue at an uncontrolled location below the LIRR tracks, and ascend to street level (using the other staircase). Because the crosswalk is directly below the LIRR tracks, visibility of crossing pedestrians is inadequate. Unfortunately, a middle school, MS 119, is located on 78th Avenue, one block south of Cooper Avenue. As such, a fair number of students must make this crossing twice daily raising serious safety concerns.



The accident experience at this location was fairly consistent between 1998 and 2000. In 1998 and 1999, total accidents remained at 22, with one pedestrian accident in each of the years. ***In 2000, total accidents increased slightly to 26, with one involving a pedestrian and two involving bicycles. In 2001, total accidents decreased 27% (to 19 from 26), two of which involved a pedestrian. The improvement in accident occurrences in 2001 predates the treatments implemented in September 2002. However, this decline parallels the overall trends citywide.***

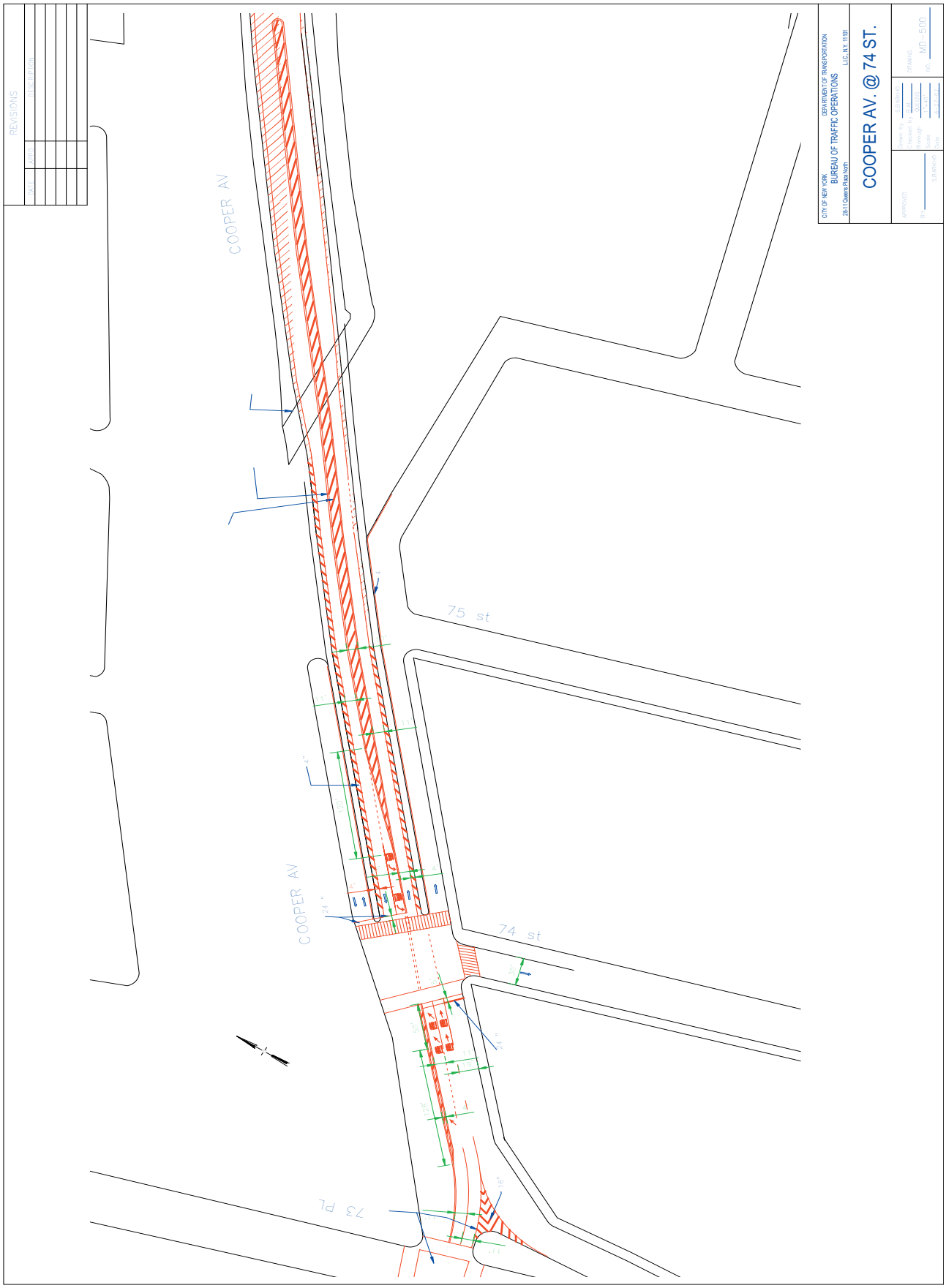
Improvements Implemented in September 2002

- Signalized 74th Street at Cooper Avenue to provide an at-grade crossing.
- Installed high visibility school crosswalks, school crossing signs, and school crossing

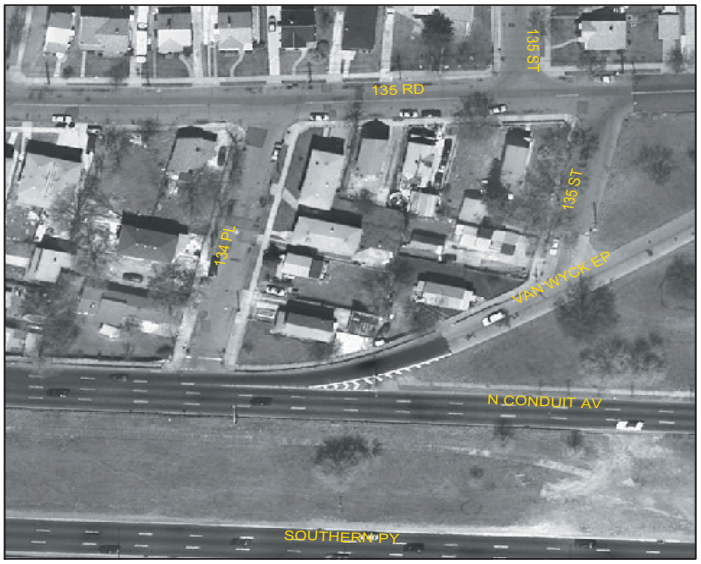
markings at the 74th Street/Cooper Avenue intersection.

- Created a buffer with markings along the north and south sidewalks of Cooper Avenue.
- Removed existing center median treatments.
- Closed the south staircase.
- Cooper Avenue between 73rd Place and 80th Street was milled and resurfaced to facilitate the implementation of the safety markings.

The improvements are shown on the following page.

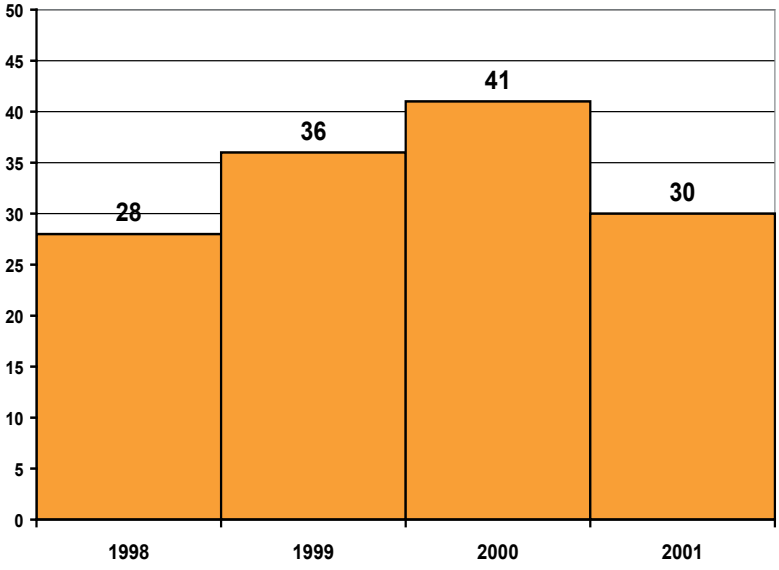

COOPER AV
75 st
COOPER AV
74 st
73 PL
COOPER AV. @ 74 ST.
BUREAU OF TRAFFIC OPERATIONS
MD-500

Van Wyck Expressway/ North Conduit Avenue



Original configuration of merge from Van Wyck Expressway onto North Conduit Avenue

Accident Experience 1998 - 2001



Description

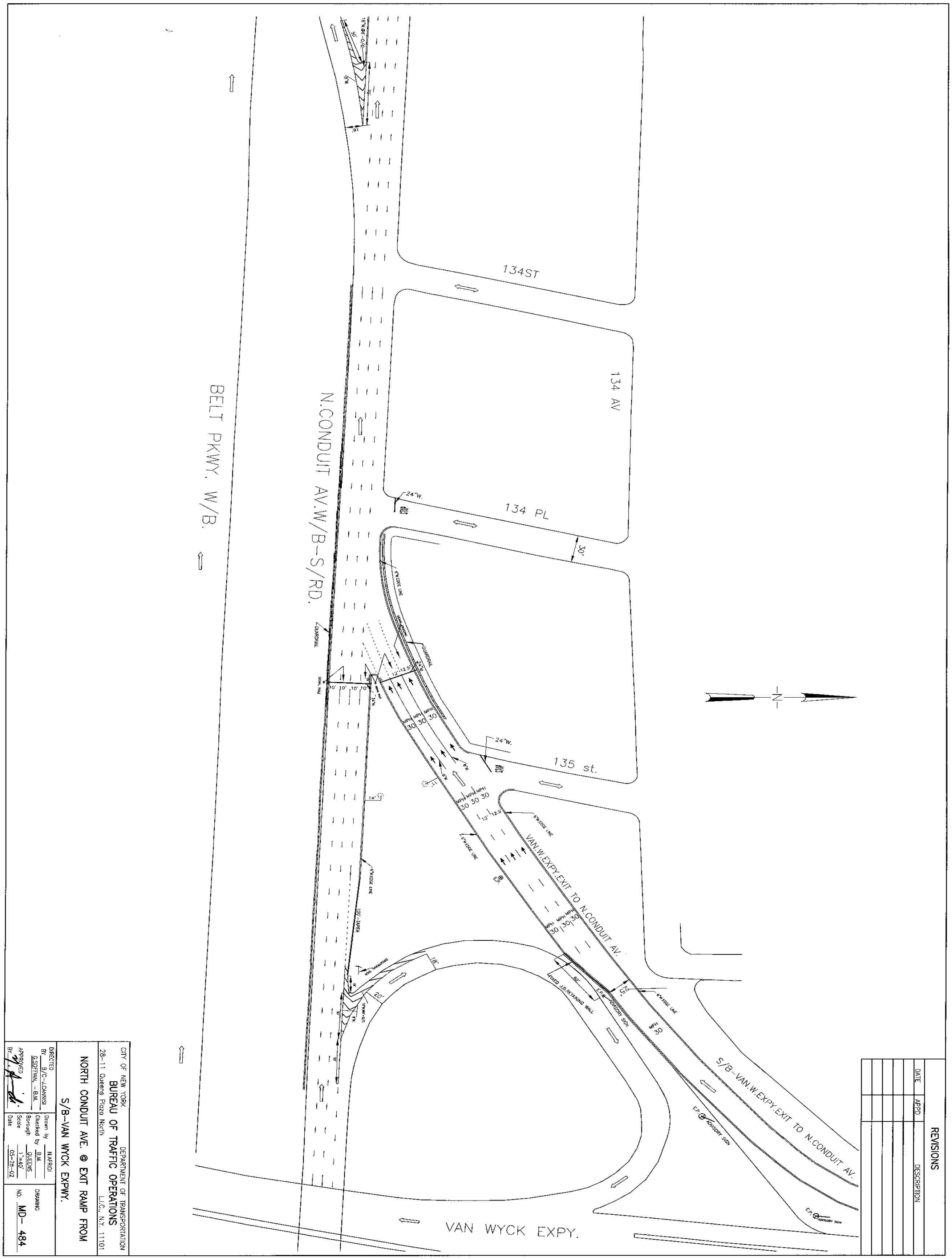
Vehicles exiting the southbound Van Wyck Expressway (VWE) destined to the westbound Belt Parkway were required to merge across three travel lanes on North Conduit Avenue within a 500 foot distance. In the morning peak hour approximately 500 vehicles from the Van Wyck Expressway must make this movement across approximately 3200 vehicles traveling on North Conduit Avenue. In the afternoon peak hour approximately 750 vehicles from the southbound VWE crossed approximately 2800 vehicles on North Conduit Avenue. As a result of these factors (high weaving volumes, high speed traffic, several lane changes and short merging distances), this location routinely found its way onto the NYPD Accident Prone Location list. The improvements implemented in November 2002 were a proactive response to this condition.

The accident experience at this location indicated an increasing trend in accidents between 1998 and 2000, increasing from 28 in 1998 to 36 accidents in 1999. Total ***accidents at this intersection peaked at 41 in 2000 before falling to 30 in 2001. This decline is similar to the citywide trend of decreasing accidents in 2001.***

Improvements Implemented in November 2002

- The intersection of the VWE exit ramp and North Conduit Avenue was upgraded from an uncontrolled merge to a signalized intersection. The new signal was energized in November 2002. To supplement this installation, signal ahead symbol and rider signs were also installed.
- The roadways approaching the new intersection were widened (from one to three lanes on the VWE exit ramp and from three to four lanes on North Conduit Avenue) to provide sufficient capacity to accommodate demand. In addition, the roadway lighting was upgraded and new streetlights were installed.
- Additional trailblazer signs were installed to clearly guide motorists to the Belt Parkway and North Conduit Avenue.

The improvements are shown on the following page.


134ST
134 AV
134 PL
135 st.
BELT PKWY. W/B.
N.CONDUIT AV.W/B-S/RD.
VAN.W.EXPY.EXIT TO N.CONDUIT AV.
S/B-VAN.W.EXPY.EXIT TO N.CONDUIT AV.
VAN WYCK EXPY.
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
NORTH CONDUIT AVE. @ EXIT RAMP FROM
S/B-VAN WYCK EXPWY.
DRAWING
NO. MD-484

Northern Boulevard Corridor

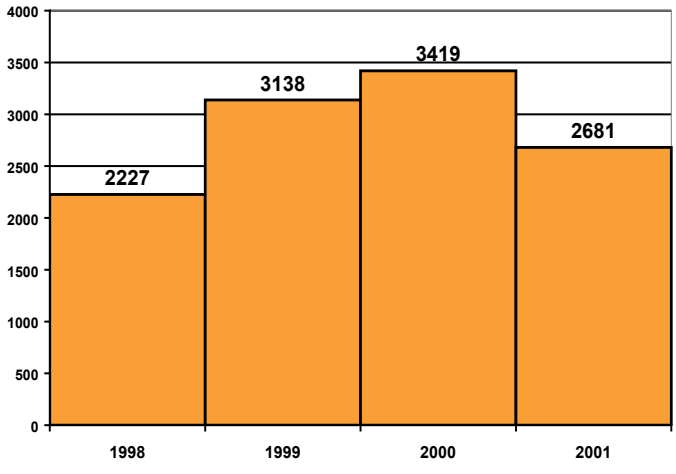
Description

Northern Boulevard is a major arterial roadway that traverses the entire length of Northern Queens and spans from Long Island City on the west to Little Neck on the east and continues into Nassau County. Along this corridor, land use and density vary from neighborhood to neighborhood. Certain areas are characterized by big-box retail and heavy commercial developments. Along other stretches, mixed-use medium density developments are prevalent. However, nearly all developments directly abut the roadway, or feature parking lots which feed onto Northern Boulevard. Heavy vehicular traffic is characteristic along the entire length of the corridor. The corridor is a local truck route and also has several bus routes running along and traversing the corridor.

There are several intersections along the corridor which experience high levels of pedestrian traffic due to their proximity to schools, transportation centers, commercial developments and other generators of pedestrian traffic. In most areas, the roadway has four travel lanes, and two parking lanes, with peak direction parking regulations providing an additional lane of moving traffic. Turning movements at several intersections provide conflicts with pedestrians.

While many of the intersections are signalized, there are still several intersections which are not, and motorists are forced to cross 2 lanes of oncoming traffic to access the travel lane. In some areas, there are dedicated turning lanes and striping in the middle of the roadway. An additional problem is speeding, both in peak and non-peak hours, as the roadway is fairly wide and straight.

Corridor Accident Experience 1998 - 2001



Given the overall length of the corridor, high volume of traffic and factors illustrated above, the Northern Boulevard corridor has consistently been one of the highest ranked accident corridors in the city. In 1998, the corridor was ranked third with a total of 2,227 accidents. In 1999, total accidents on

the Northern Boulevard increased significantly to 3,138 and was ranked fourth citywide. Accidents continued to increase in 2000 to 3,419, which again ranked it third citywide. ***In 2001, the total number of accidents on Northern Boulevard declined substantially to 2,681, a 21.6% decline from 2000 levels.***

Implemented Improvements

In 1997, at the request of State Assembly Members Lafayette and McLaughlin, analyses were performed at 52 intersections between 69th and 114th Streets in Jackson Heights/Corona and between Prince and 162nd Streets in Flushing.

This study resulted in the approval and installation of left turn phases at the following locations:

- 69th Street (eastbound left turn phase)
- 80th Street (westbound left turn phase)
- 82nd Street (westbound left turn phase)
- Junction Boulevard (dual left turn phase)
- 108th Street (dual left turn phase)
- Bowne Street (westbound left turn phase)
- Parsons Boulevard (dual left turn phase)

In April 2002, left turn phases were installed at 14 additional intersections:

- 78th Street (westbound left turn phase)
- 79th Street (eastbound left turn phase)
- 81st Street (eastbound left turn phase)
- 83rd Street (eastbound left turn phase)
- 84th Street (westbound left turn phase)
- 85th Street (eastbound left turn phase)
- 86th Street (westbound left turn phase)
- 87th Street (eastbound left turn phase)
- 88th Street (westbound left turn phase)
- 89th Street (eastbound left turn phase)

- 90th Street (westbound left turn phase)
- 91st Street (eastbound left turn phase)
- 92nd Street (westbound left turn phase)
- 93rd Street (eastbound left turn phase)

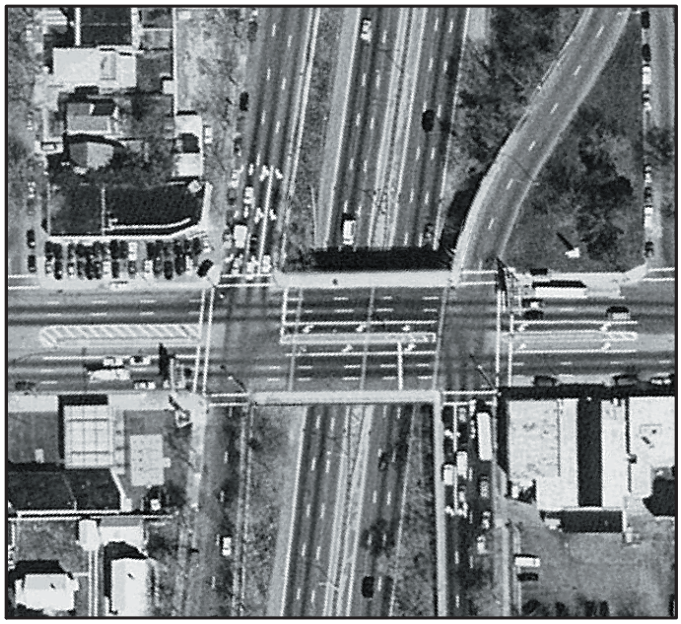
Since calendar year 2000, new signals have been installed at:

- Northern Boulevard and Oceania Street (February 2000)
- Northern Boulevard and 163rd Street (July 2000)
- Northern Boulevard and 192nd Street (February 2001)

Beginning in June 2003, the Department began replacing the existing electro-mechanical signal controllers with custom designed Advanced Solid State Traffic Controllers (ASTC). These controllers are microprocessor based and utilize advanced technology to insure operational integrity and reliability. The ASTC's are downloaded with the computerized signal timing programs so if communication is lost to the Traffic Management Center (TMC) the signal will remain in time with adjacent intersections to insure safe and efficient traffic flow on the artery. The ASTC's also allow the Department to implement different timing plans at non-computerized locations. As of September 2004, these controllers have been installed at 162 locations in Queens, 79 locations in Brooklyn and 203 locations in Staten Island.

Northern Boulevard/ Clearview Expressway

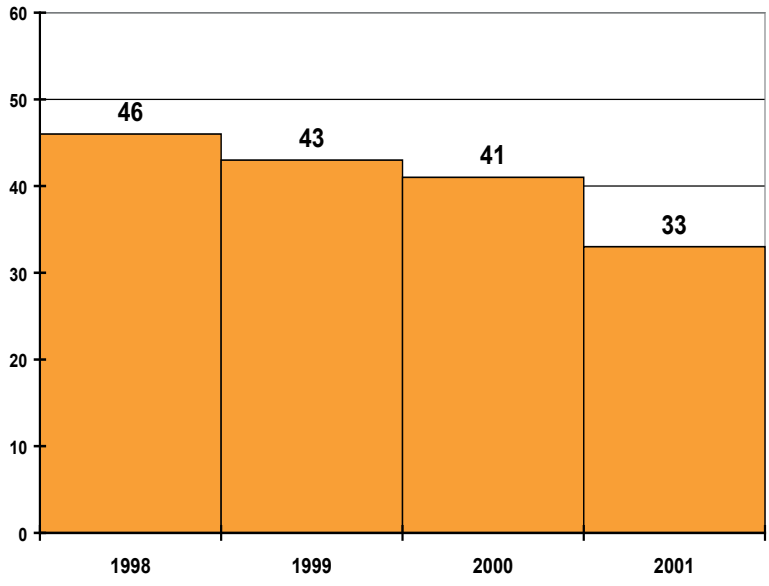
Description



Original configuration and roadway markings

Northern Boulevard is a major north-south corridor that travels through northern Queens. At this location. Northern Boulevard passes over the Clearview Expressway which is below grade. The northbound and southbound service roads flank the depressed roadway creating two closely spaced intersections on Northern Boulevard in an "H" configuration. This roadway configuration, coupled with high traffic volumes on all approaches, including significant turning movements, queuing, weaving and storage issues all lead to a high accident experience at this location.

Accident History 1998 - 2001



Since 1998, the occurrence of accidents at this location has been declining. In that year, there were 46 total accidents, one of which involved a cyclist. In 1999, total accidents decreased slightly to 43, and in 2000, decreased to 41. ***In 2001, accidents declined substantially to 33, one of which involved a pedestrian. There have been no fatalities reported during the past six years. This downward trend parallels the overall trend taking place citywide over this time period. Overall, these improvements should provide for***

an improved and safer operation of this intersection.

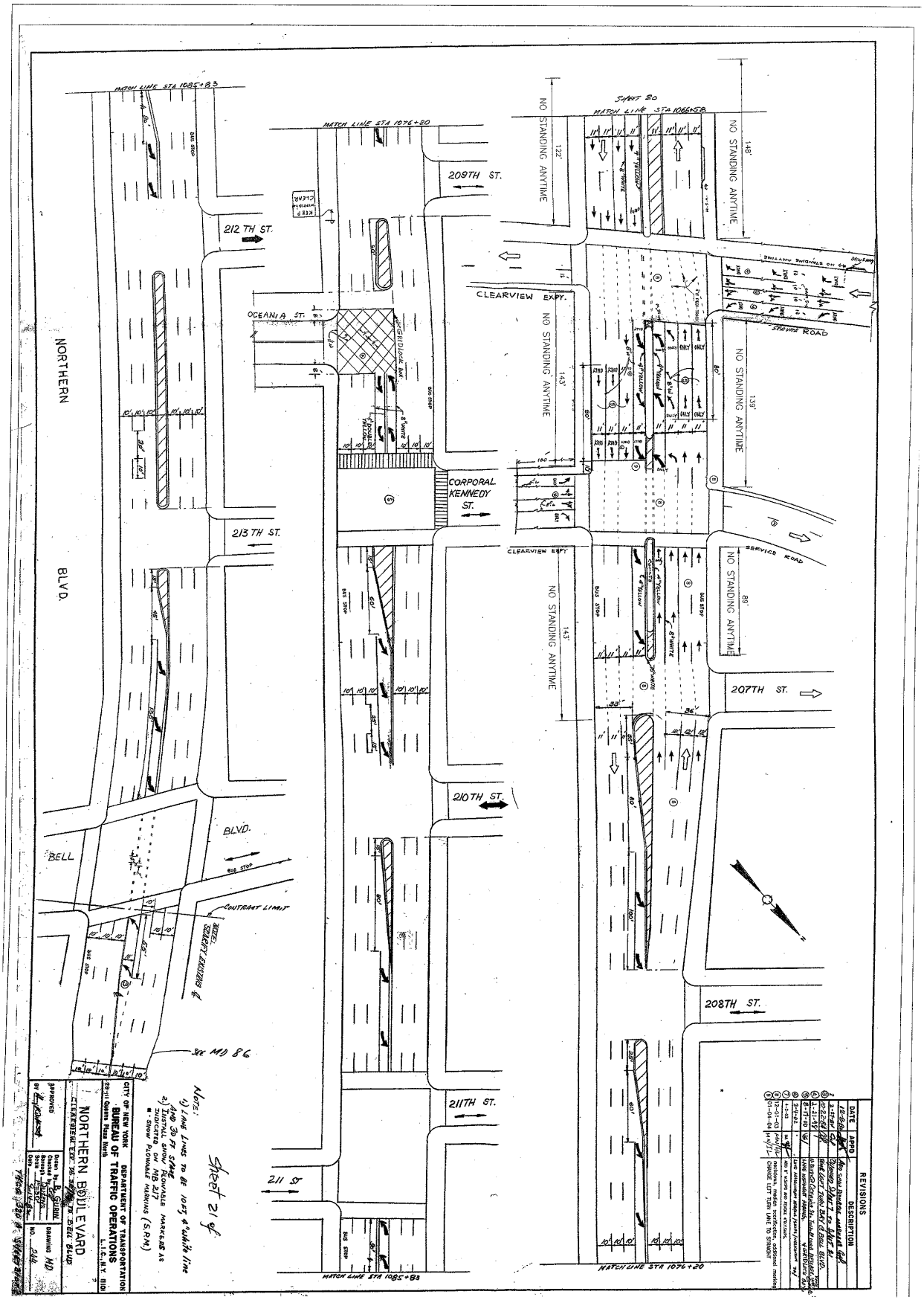
Improvements Implemented in Spring 2003

- Dual left turn lanes were installed in coordination with an exclusive left turn signal phase on Northern Boulevard in both directions approaching the Clearview Expressway service roads.
- Modified the left turn phase from “permitted/protected” to “protected” only (for both directions) in coordination with the installation of dual left turn lanes. This work was completed in May 2003.

Improvements Implemented in Spring 2004

- ***The dual left turn lane on eastbound Northern Boulevard was changed to a single left turn lane.***

The improvements are shown on the following page.


NORTHERN BLVD.
BELL BLVD.
CLEARVIEW EXPY.
CORPORAL KENNEDY ST.
OCEANIA ST.
212 TH ST.
213 TH ST.
209TH ST.
210TH ST.
211TH ST.
207TH ST.
208TH ST.
211 ST.
SERVICE ROAD
NO STANDING ANYTIME
MATCH LINE STA 1085+83
MATCH LINE STA 1076+20
SEE MD 86
CONTRACT LIMIT
NORTHERN BOULEVARD
CLEARVIEW EXP. TO BELL BLVD.
BUREAU OF TRAFFIC OPERATIONS
DEPARTMENT OF TRANSPORTATION
CITY OF NEW YORK
REVISIONS
DESCRIPTION
DATE
APPD
Sheet 21 of

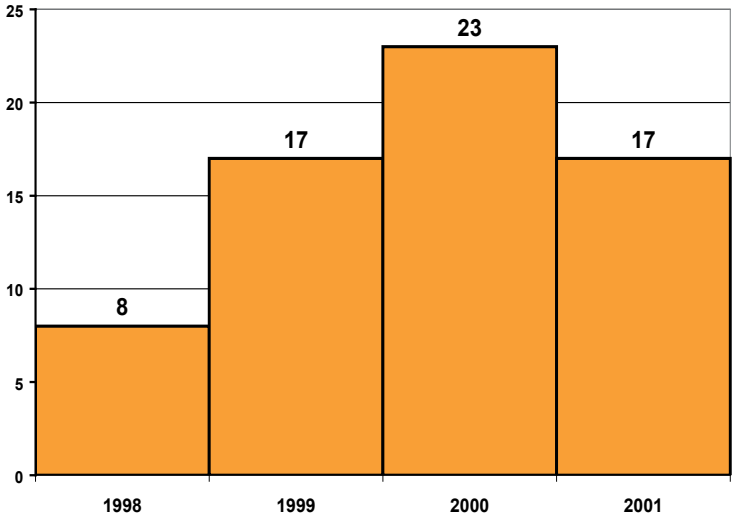
Francis Lewis Boulevard Between 120th Avenue/220th Street and 125th Avenue/232nd Street

Description

Francis Lewis Boulevard is a major north-south thoroughfare through Queens. This residential corridor is characterized by its wide width which leads to excessive speeding. Some of the intersections along this corridor are offset at angles to Francis Lewis Boulevard, while others form T intersections. A concrete median exists at several locations along the corridor.

While not a high accident location, there have been numerous complaints from area residents, elected officials and Community Board 13 regarding excessive speeding and unsafe conditions. A review of the accident experience along this corridor indicates a steady increase in accidents between 1998 and 2000. In 1998, there were a total of eight vehicular accidents. In 1999, accidents more than doubled to 17. ***In 2000, total accidents continued to increase to 23. In 2001, accidents decreased slightly to 17. This decrease parallels the declining trend in accidents citywide.***

Accident Experience 1998 - 2001

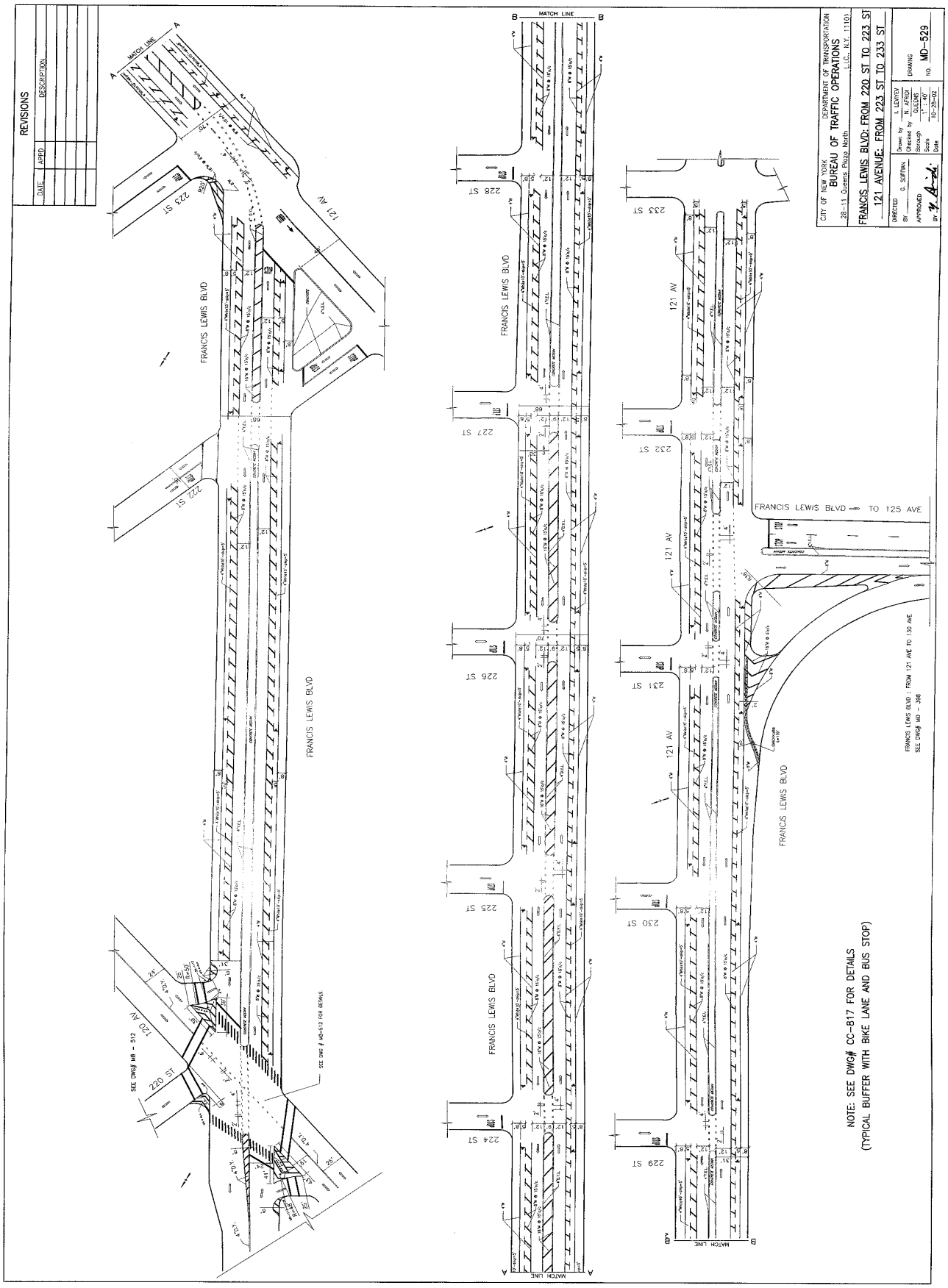


In addition, the Department believes this proactive approach to addressing the community concerns at this location will continue to improve safety along this stretch of Francis Lewis Boulevard.

Improvements Implemented in 2003

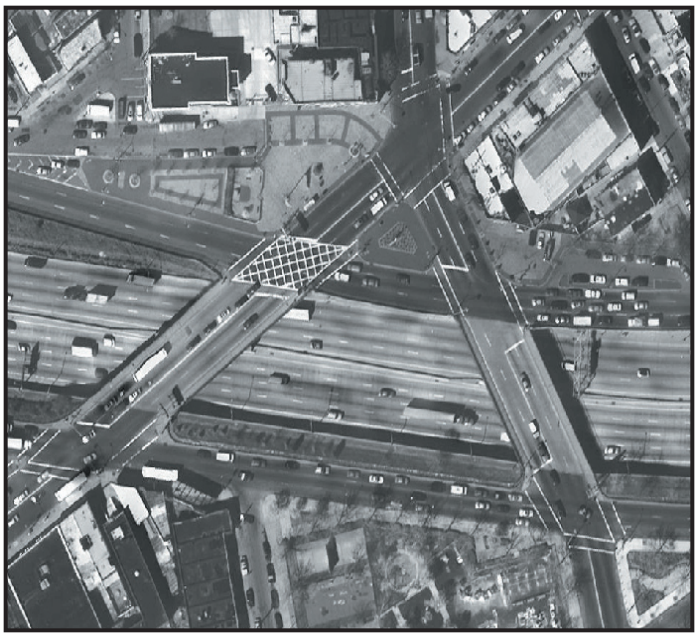
- In June 2003, new thermoplastic bicycle lane markings were installed on Francis Lewis Boulevard from 120th Avenue to 233rd Street. We expect this improvement will reduce speeds along Francis Lewis Boulevard by narrowing the roadway to one travel lane in each direction flanked by the Class II bicycle lane with a buffer zone and parking along the curb.
- Just east of 231st Street, Francis Lewis Boulevard follows a 90 degree turn and proceeds southbound. At this intersection, a turning lane for vehicles continuing along Francis Lewis Boulevard was removed through the installation of Qwick Kurb and striping. This normalized the intersection of Francis Lewis Boulevard between 231st and 232nd Streets. This improvement was completed in October 2003.

The improvements are shown on the following page.


REVISIONS
DESCRIPTION
APPD
DATE
MATCH LINE
FRANCIS LEWIS BLVD
223 ST
121 AV
220 ST
120 AV
230 ST
SEE DWG # MD - 512
SEE DWG # MD-512 FOR DETAILS
228 ST
227 ST
226 ST
225 ST
224 ST
233 ST
232 ST
231 ST
229 ST
FRANCIS LEWIS BLVD TO 125 AVE
SEE DWG # MD - 308
NOTE: SEE DWG# CC-817 FOR DETAILS
(TYPICAL BUFFER WITH BIKE LANE AND BUS STOP)
CITY OF NEW YORK
DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC OPERATIONS
28-11 Queens Plaza North L.I.C., N.Y. 11101
FRANCIS LEWIS BLVD: FROM 220 ST TO 223 ST
121 AVENUE: FROM 223 ST TO 233 ST
DIRECTED BY G. SOFTAK
APPROVED BY
Drawn by I. LEVIEV
Checked by N. AFRIDI
Borough QUEENS
Scale 1" = 40'
Date 10-28-02
DRAWING NO. MD-529

69th Street/Grand Avenue/ Long Island Expressway

Description



Aerial view of intersection

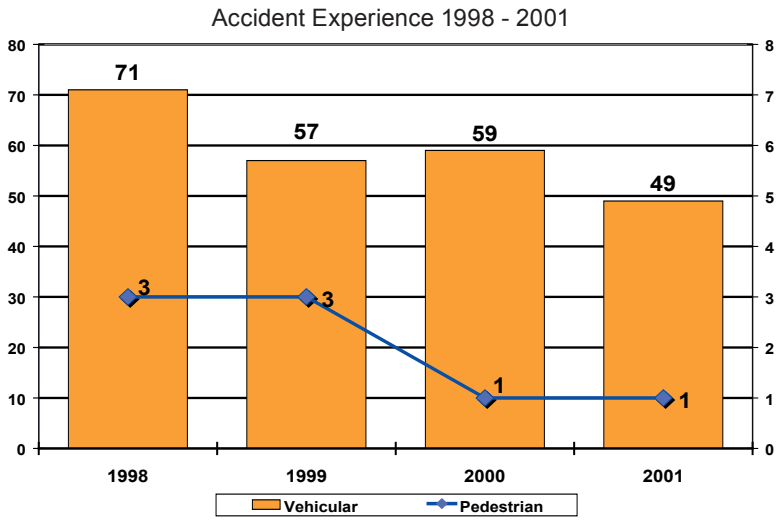
The interchange of 69th Street, Grand Avenue and the Long Island Expressway Service roads form a complex set of 5 closely spaced intersections. This configuration is due to the unusual roadway created by 69th Street and Grand Avenue crossing each other, the trenched Long Island Expressway, and the eastbound and westbound Long Island Expressway Service Roads. Speeding, heavy truck traffic exiting the LIE and motorists hurrying through this complex intersection contribute to the unsafe conditions. Additionally motorists and pedestrians alike must be cognizant of the varying directions traffic is moving through the intersection.

Based upon community input and the efforts of elected officials, in the spring of 2003 the Department worked with community groups to formulate measures to improve both vehicular and pedestrian safety. Prior to the most recent study, the Department had implemented several improvements at this intersection, such as changing the timing of some of the traffic lights, installing LED signals and adding clearer signage.

Within this interchange there is a high level of pedestrian traffic, mainly from the commercial corridor along 69th Street and Grand Avenue. Pedestrians crossing these streets face unusual crossing movements because of the angle of the intersection and the high frequency of turning movements. Additionally, the LIE service roads accommodate high volumes of traffic and many pedestrians cross this intersection to reach bus stops and public facilities located to the south of this intersection.

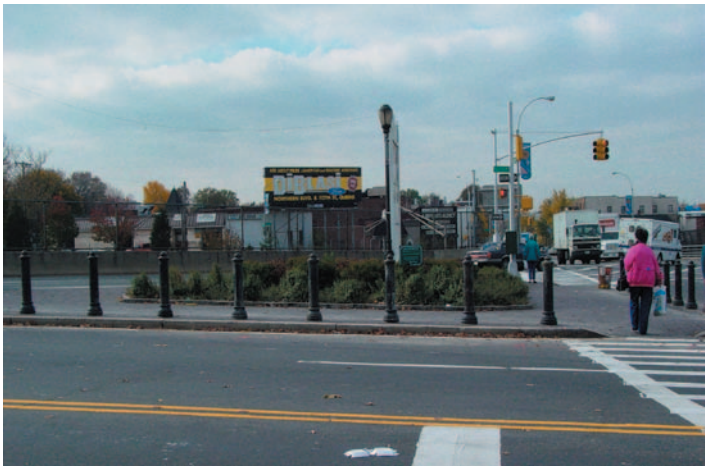
Overall, there has been a downward trend in total accidents at this location between 1998 and 2001. In 1998, there were a total of 74 accidents in this intersection complex, of which three were pedestrians. In 1999, there were 60 accidents, of which three were pedestrians. In 2000, there were 60 accidents, only one of which

involved a pedestrian. ***In 2001, total accidents declined 17% (to 50 from 60 in 2000), only one of which involved a pedestrian. Although the decline in accidents predates the treatments, this downward trend parallels the overall decline taking place citywide.***



Improvements Implemented in October 2003

- Installed bollards at the north end of the traffic island at 69th Street and Grand Avenue.
- Placed a stop sign on the slip roadway of the L.I.E.'s eastbound service road at Grand Avenue.
- Posted "No Left Turn" signs on northbound 69th Street at Grand Avenue.
- Upgraded all pedestrian crosswalks to high visibility.
- Installed peg-a-trac markings on 69th Street across Grand Avenue.
- Repositioned the left-turn signal arrow for northbound 69th Street at the westbound service road of the LIE.
- Installed five foot extensions to the signal mast arms at Grand Avenue and 69th Street to enhance visibility.
- Installed edge lines on both sides of Grand Avenue and 69th Street between the service roads of the expressway.

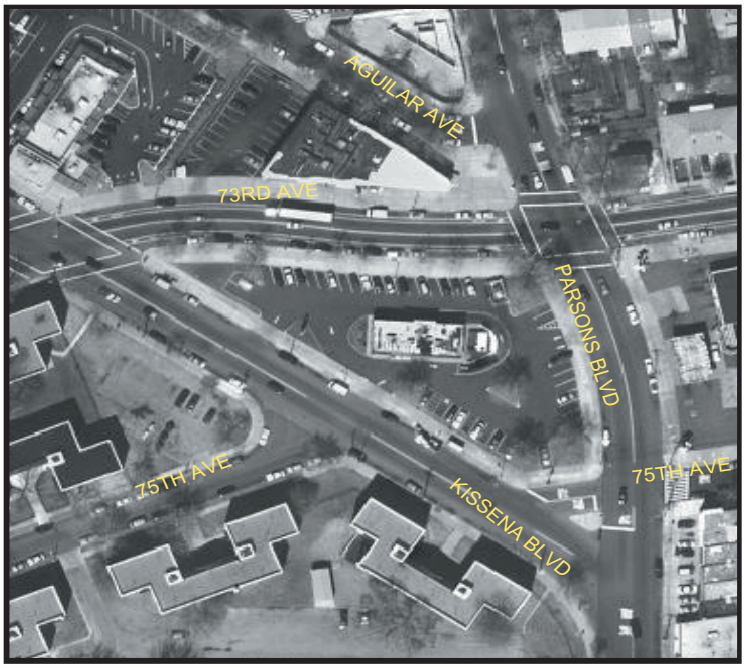


Implemented improvements at Grand Avenue

- Louvered the green signal (facing north) at 69th Street and the westbound service road, so they are not visible to southbound 69th Street motorists approaching Grand Avenue.

Parsons Boulevard/Kissena Boulevard

Description



Aerial view of original configuration

Over the past few years, the intersection of Kissena Boulevard with Parsons Boulevard and 75th Avenue has been identified as a problematic location. The traffic problems at this location occur because of the unusual geometry created by the merge of Kissena Boulevard with Parsons Boulevard and 75th Avenue. Furthermore, the location of a small strip mall on the east side of Kissena Boulevard contributes to unsafe vehicular movements at this location. Although not a high accident location, the Department has looked at ways to improve this intersection and has worked with the 109th Precinct of the NYPD to mitigate the conflicts. Accidents have steadily increased over the past few years with a dramatic increase in 2002. As a result, the Department created a mitigation plan in September 2003 that addressed the safety concerns at this location.

Improvements Implemented in July 2004

In order to mitigate the irregular geometry at this intersection, the following measures were implemented:

- ***Removal of the small traffic island and the installation of a larger island resulted in a normalized right angle intersection at Parsons Boulevard and 75th Avenue.***
- ***Installation of a Stop control slip roadway for southbound Kissena Boulevard at Parsons Boulevard.***

- ***Installation of a traffic signal at the intersection of Parsons Boulevard and 75th Avenue.***
- ***Installation of Stop controls, a Stop word message and a crosswalk for southbound Kissena Boulevard where it will intersect with southbound Parsons Boulevard.***
- ***Installation of a raised center median on Parsons Boulevard between 75th Avenue and 75th Road, which eliminated the unsafe movements into the strip mall. Vehicles exiting the strip mall will be forced to turn right onto northbound Parsons Boulevard.***
- ***Installation of lane use arrows and "ONLY" messages for Kissena Boulevard.***
- ***Removal of parking meters and the installation of parking restrictions on the east side of Parsons Boulevard between 75th Avenue and 75th Road.***

The improvements are shown on the following page.


Kissena Blvd.
75 Rd
75 Ave
Parsons Blvd.
INSTALL 20 FT OF FLEXIBLE BOLLARDS
INSTALL 100 FT OF FLEXIBLE BOLLARDS
STOP
KISSENA BLVD. AT PARSONS BLVD.
CITY OF NEW YORK
DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC OPERATIONS
28-11 Queens Plaza North
L.I.C., N.Y. 11101
APPROVED
BY
Drawn by
Checked by
Borough
Scale
Date
DRAWING
NO.
REVISIONS
DATE
APPD
DESCRIPTION

STATEN ISLAND

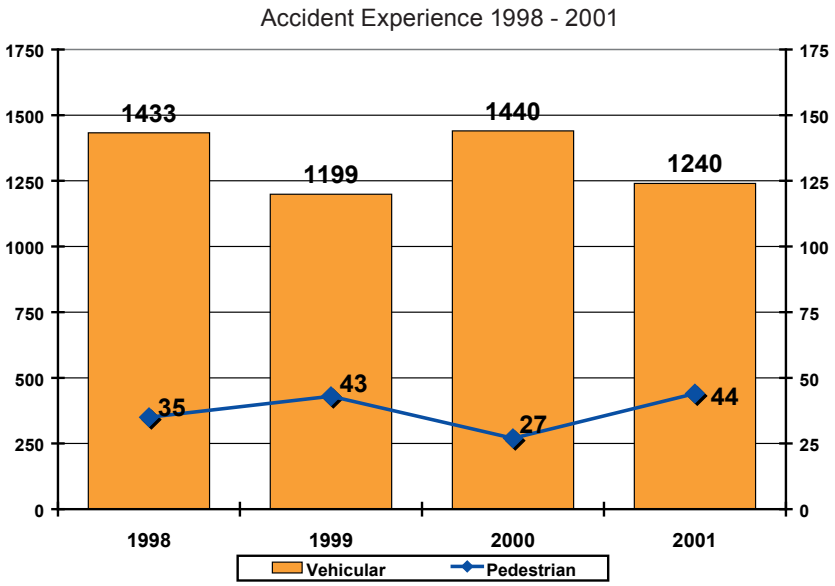
Hylan Boulevard

Description

Hylan Boulevard, the city's longest continuous road, is one of Staten Island's primary roadways, connecting the island along the East Shore, linking Rosebank and Tottenville. Throughout the corridor, there are numerous residential communities and active commercial districts that attract numerous vehicular trips. In addition, Hylan Boulevard serves as a principal commuter route to and from the Verrazano-Narrows Bridge and serves as an alternate route to the Outerbridge Crossing.

Due to the nature and function of the corridor, Hylan Boulevard is frequently congested on both weekdays and weekends, especially during peak travel hours. As such it has been a primary focus for both residents and public agencies. In 2000, a task force comprised on members of the New York City Department of Transportation and NYPD to formulate solutions to safety and operational problems along Hylan Boulevard. This task force built upon past accomplishments and programs that were implemented in 1999 and programmed for 2000.

Safety is a primary concern along the entire length of Hylan Boulevard. The accident experience between 1998 and 2001 has varied from year to year. In 1998, there were a total of 1,438 accidents and 35 pedestrian accidents along the corridor. In 1999, there were 1,242 total accidents (13% less than 1998) and 43 pedestrian accidents. In 2000, total accidents increased again to 1,467 but pedestrian accidents decreased significantly by 37% (to 27 from 43 in 1999). ***In 2001, total accidents decreased to 1,284. Pedestrian accidents increased to 44.***



Implemented Improvements

Improvements made to Hylan Boulevard include the installation of left-turn bays and an innovative two-way left turn lane.

Left turn bays were installed at the following intersections on Hylan Boulevard in the summer 1999:

- Adams Avenue
- Arden Avenue
- Bedford Avenue
- Jefferson Avenue
- Liberty Avenue
- Page Avenue
- Seaview Avenue
- Stobe Avenue

DOT installed the first two-way left turn lane in the City along a 600–foot stretch of Hylan Boulevard between Lincoln and Midland Avenues in July 1999. The two-way left turn lane is located in the center of the boulevard; vehicles are permitted to make a left turn from this lane from either direction of travel on Hylan Boulevard. It provides for safe access to the many commercial establishments located in the area.

Large street name signs were installed at seven major intersections along Hylan Boulevard in May 2000. The signs are supported from mast arms extending over the roadway. At the same time, 12 large street name signs were installed in advance of six major signalized intersections between Steuben and Ebbitts Streets. These improvements primarily assist motorists with vision limitations and visitors unfamiliar with the area in identifying cross streets.

Emergency Exit Keep Driveway Clear signs and Keep Clear pavement markings were installed on Hylan Boulevard at the 122nd precinct near Bryant Avenue in May 2000.

In May 2000, on a trial basis, signal timing at the intersection of Hylan Boulevard at New Dorp Lane was modified so that each direction of New Dorp Lane moved on separate signal phases. The trial program was discontinued and the traffic signal pattern reverted to the prior "normal sequence" pattern in conjunction with implementation of the following improvements:

- The left turn bay on Hylan Boulevard was extended by 100 feet in the westbound direction to accommodate five additional vehicles or 200 vehicles per hour.
- The raised center median (approximately 290 feet) from New Dorp Lane to Jacques Street was removed and replaced with a Qwick Kurb center divider.
- The roadway was resurfaced between New Dorp Lane and Jacques Street.
- Rush-hour parking restrictions were implemented between Guyon Avenue and Steuben Street.
- Five bus stops were relocated from near side to far side locations to improve traffic flow. In addition, three bus stops were lengthened to provide more space for buses to unload passengers and prevent spillback into the intersection.
- In coordination with NYC Transit, ensured that buses pull to the curb to pick up and discharge passengers.
- In coordination with the Police Department, increased enforcement of parking regulations along Hylan Boulevard (especially deliveries and bus stop violations during the AM and PM peak periods).
- In coordination with the Department of Sanitation and private sanitation companies, ensured that no pickups occur during the AM and PM peak periods.

These improvements resulted in PM peak travel time savings of approximately six minutes on southbound Hylan Boulevard between Jefferson Avenue and Beach Avenue. This represents a 57% reduction in travel time from 10.5 minutes to 4.5 minutes.

- All crosswalks on Hylan Boulevard were refurbished in April 2002.

Since May 2000, new traffic signals have been installed on Hylan Boulevard at the following locations:

- Hylan Boulevard and Artbus Avenue (June 2000)
- Hylan Boulevard and Sharroot Avenue (September 2000)

- Hylan Boulevard and Sprague Avenue (April 2001)
- Hylan Boulevard and Holdridge Street (March 2002)
- Hylan Boulevard and Holton Avenue (March 2003)

In the Spring of 2003, oversized street name signs were installed at:

- Chesterton Avenue
- Buffalo Street
- Justin Avenue
- Bay Terrace
- Keegans Lane
- Cleveland Avenue
- Armstrong Avenue

Future Improvements

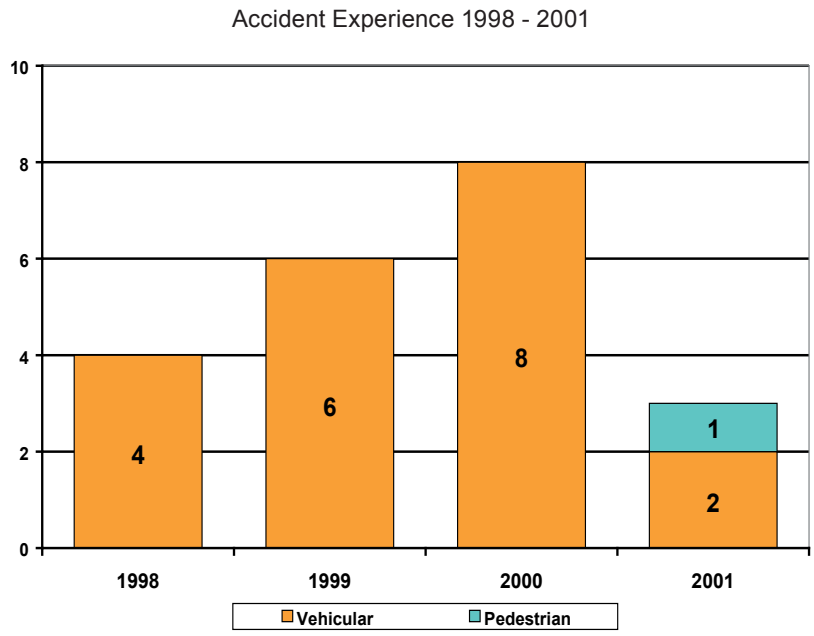
- Widen New Dorp Lane in order to provide an exclusive right-turn lane in the southbound direction.

A Preliminary Design Investigation (PDI) was prepared to evaluate existing and future conditions on Hylan Boulevard between Bache Avenue and Groton Street. Twenty-three intersections were studied in detail and Transportation Systems Management alternatives were recommended to enhance capacity and level of service on this section of Hylan Boulevard. Some of the recommendations proposed include changing the geometric configuration, adding left turn bays, installing traffic signals, prohibiting left turns, and optimizing signal timing.

Hylan Boulevard/Reynolds Street

Description

Building upon DOT's efforts to improve safety along the entire length of Hylan Boulevard, the Department implemented a set of safety improvements at Hylan Boulevard in the vicinity of Reynolds Street. This section of Hylan Boulevard was very wide (70 feet) with two moving lanes in each direction and a high incidence of speeding. ***While not a high accident intersection, this location experienced a rising accident trend from 1998 through 2000.*** In 1998, there were four total accidents along this stretch of Hylan Boulevard, six in 1999 and eight in 2000. There were no pedestrian accidents or fatalities during these three years. ***In 2001, there were three total accidents, of which one involved a pedestrian fatality. There have been no fatalities in either 2002 or 2003.***

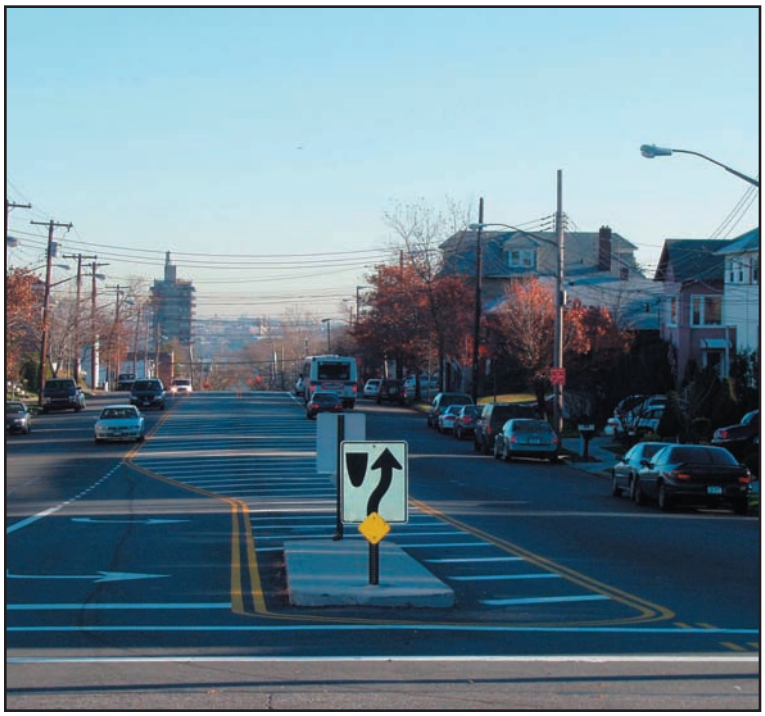


In response to these trends, the Department implemented a series of traffic calming measures in December 2001. Although the New York State Accident data is not available for comparison, NYPD data shows that there have not been any accidents at the Hylan Boulevard/Reynolds Street intersection since the implementation of these measures.

Improvements Implemented in December 2001

In an effort to improve pedestrian safety and crossing time on Hylan Boulevard in the vicinity of Reynolds Street, the Department implemented a traffic calming measure to narrow the roadway to one moving lane in each direction between Tompkins Avenue and Colton Street. Roadway markings were installed to narrow

the roadway and a raised center median was installed at the Hylan Boulevard/ Reynolds Avenue intersection to supplement the painted median. At Tompkins Avenue, the Department installed new signs to help direct motorists through the intersection. Additionally, the crosswalk at the Hylan Boulevard/Reynolds Avenue intersection was relocated from the west to the east leg. All work was completed in December 2001.



Roadway markings and raised intersection at Hylan Boulevard and Reynolds Avenue

This improvement also resulted in decreased speeds on Hylan Boulevard, particularly in the westbound direction. There was a greater impact on eastbound speeds. Average speeds decreased by 8.6% eastbound (to 33.1 mph from 36.2 mph) and 3.6% westbound (to 35.3 mph from 36.6 mph). Eighty-fifth percentile speeds decreased 14% eastbound (to 37.0 mph from 43.0 mph) and 4.3% westbound (to 40.2 mph from 42.0 mph). Although speeds have decreased, they remain relatively high and the local precinct has been asked to increase enforcement on this section of Hylan Boulevard.

Father Capodanno Boulevard

Description

Father Capodanno Boulevard is a 2.8-mile roadway connecting the Verrazano Narrows Bridge to Miller Field that operates along the southeast shore of Staten Island. This roadway is used as an alternate to Hylan Boulevard as it provides a direct access to the Verrazano Narrows Bridge. The roadway geometry consists of sharp curvature in the vicinity of Sand Lane, but is generally straight and level. Motorists tend to speed during off-peak hours when traffic volumes are light and there is considerable excess available capacity. ***Four fatalities occurred on this roadway between 1993 and 2000, however no fatalities have occurred since 2001.***

Improvements Implemented

- Trailer mounted speed boards were placed (facing both directions) approximately 1000 feet south of Slater Boulevard in January 2000. The unit facing northbound traffic was vandalized and removed in June 2000.

- A new signal was installed at the intersection of Father Capodanno Boulevard/ Slater Boulevard in June 2000.

Future Improvements

In order to maintain capacity during commuter rush hours and control speeding during off-peak hours when there is excess capacity, we are considering the design and installation of lane control signals (in coordination with signs and markings) that would regulate lane usage by time of day. A preliminary cost estimate using 15,000 feet as the approximate length of the system with 35 lane stations installed at intervals of approximately 400-450 feet is $5.21M. It is assumed the system would be designed (and a construction contract prepared) by a consultant under the engineering services agreement. It should also be noted that the estimate does not include the installation of any signs and markings needed to reinforce the system or other components (e.g., VMS signs, cameras, detection equipment) that may be considered to enhance the system.

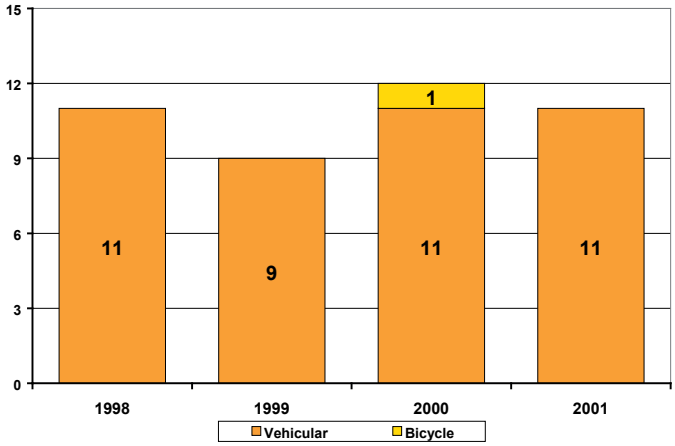
Page Avenue, PS 6

Description

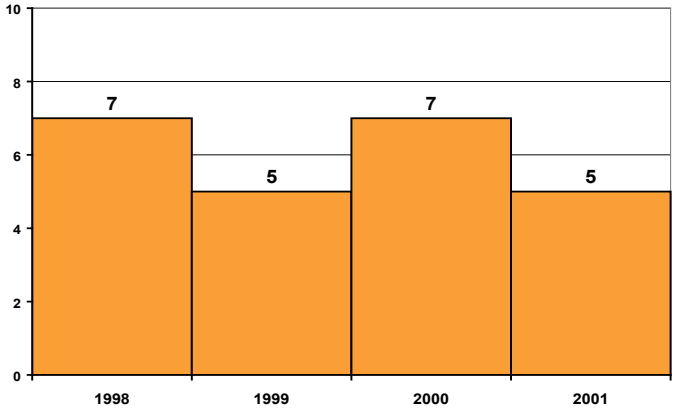
PS 6, which is located on Page Avenue between Hylan Boulevard and Amboy Road, has many safety concerns, particularly during arrival and dismissal times. Among these problems are the absence of sidewalks along Page Avenue, the absence of traffic controls at the Page Avenue/Academy Place intersection, and motorists' failure to obey parking/traffic regulations, particularly speeding, illegal U-turns, and double parking. Radar speed surveys conducted along Page Avenue show 85th percentile speeds of 48 mph northbound and 47 mph southbound. Based upon these concerns the Department took a proactive approach at addressing these concerns.

In terms of the accident experience at this location, the department examined the accident history both Page Avenue and Amboy Road and Page Avenue and Hylan Boulevard. The accident trends at both of these locations is similar. In 1998, there were a total of 11 accidents at the Page Avenue/Amboy Road intersection and seven accidents at the Page Avenue/Hylan Boulevard intersection. Accidents declined at both intersection in 1999, decreasing by 18% to nine at Page Avenue/Amboy Road and by 25% to five at the Page Avenue/Hylan Boulevard intersection. In 2000, both intersections experienced an increase in total accidents. The intersection of Page Avenue and Amboy Road increased to 12 total accidents, one of which involved a cyclist. At Page Avenue and Hylan Boulevard, accidents increased slightly to seven. In 2001, accidents at Page Avenue and Amboy Road decreased slightly to 11, and the intersection of Page Avenue and Hylan Boulevard decreased to five total accidents. The

Page Avenue / Amboy Road
Accident History 1998 - 2001



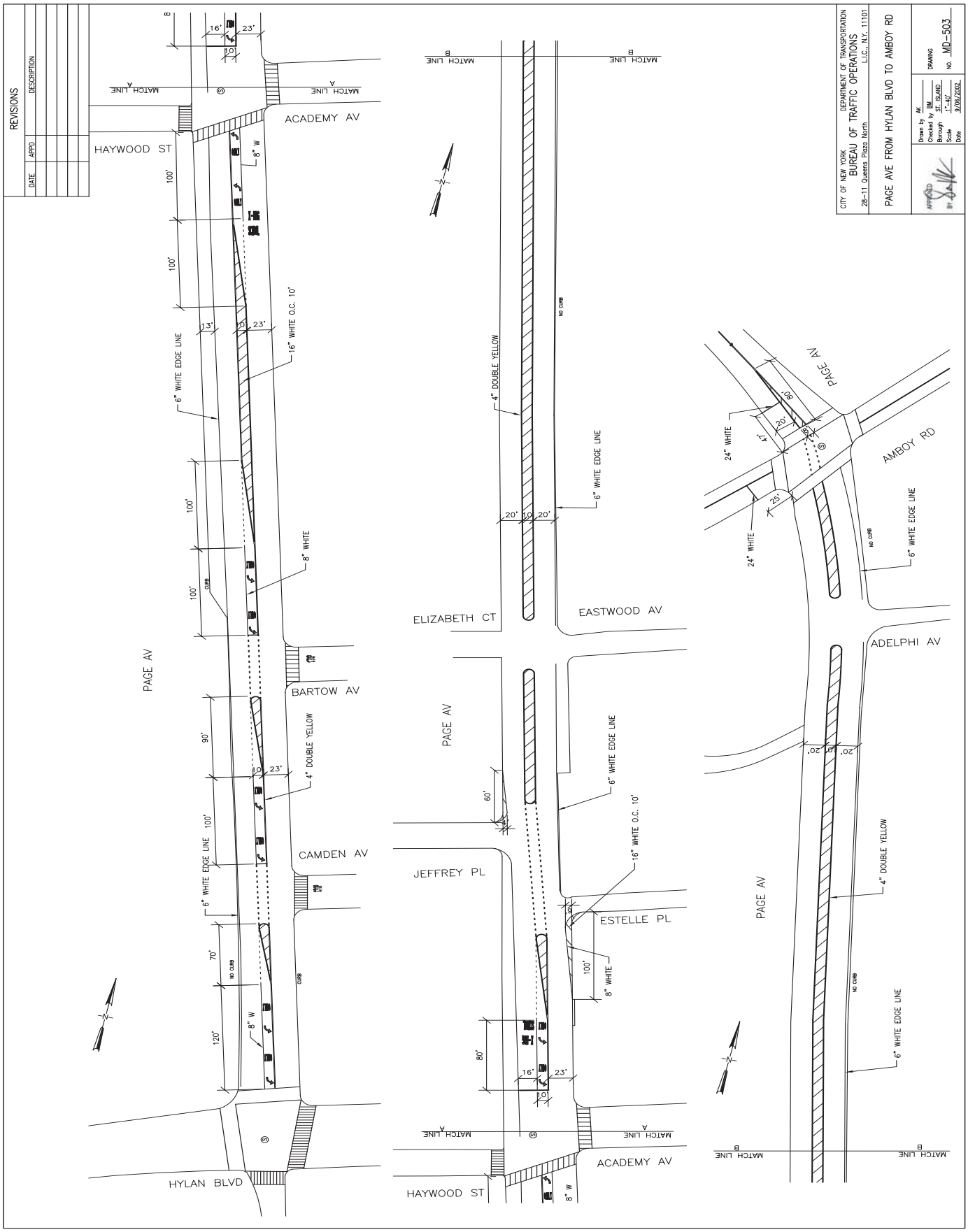
Page Ave / Hylan Boulevard
Accident History 1998 - 2001



implementation schedule for improvements at this location began in the Spring of 2001 and continued for the following year, post dating the available accident information. However, these improvements, including signage, markings and signal improvements provide for a safer pedestrian and vehicular environment around PS 6.

Implemented Improvements

- Phase I of the sidewalk and curb installation for a distance of 400 feet on the west side of Page Avenue (opposite the school) was completed in November 2000. Phase II, which included 200 feet on the east side of Page Avenue between Hylan Boulevard and Bartow Avenue and 100 feet along the bus stop on the north side of Hylan Boulevard at Page Avenue, was completed in September 2000. As a result of the completion of Phases I and II, a continuous safe walkway for students now exists from the bus stop on Hylan Boulevard to PS 6.
- Pedestrian signals were installed at the Page Avenue/Amboy Road intersection in February 2001.
- Installed No U-Turn signs at the Academy Avenue/Page Avenue intersection in March 2001.
- Missing speed limit signs were replaced in the area in June 2001.
- A traffic signal was installed at the Page Avenue/Academy Avenue intersection in September 2001.
- New crosswalks (both pedestrian and School crosswalks) and school crossing markings were installed on Page Avenue from Hylan Boulevard to Amboy Road. All work was completed in April 2002.(Improvements are shown on the following page)
- School crossing signs (yellow-green fluorescent) and advance warning signs were installed at the Page Avenue/Bartow Street intersection in December 2000, at the Academy Avenue/Page Avenue intersection in October 2001, and at the Camden Avenue/Page Avenue and Hylan Boulevard/Page Avenue intersections in early August 2002.
- A painted median was installed to narrow the roadway on Page Avenue between Hylan Boulevard and Amboy Road in September 2002.
- Phase III, which includes installation of 2,000 feet of sidewalks and curbs on the west side of Page Avenue (between Academy Place and Amboy Road) was completed in early August 2002. Completion of Phase III provides a continuous walkway from Hylan Boulevard to Amboy Road.
- ***At the intersection of Page Avenue and Academy Avenue, the cycle length was increased from 60 to 90 seconds to allow an additional nine seconds (from 27 to 36 seconds) to cross Page Avenue. (May 2004)***


REVISIONS
DESCRIPTION
APPD
DATE
CITY OF NEW YORK
DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC OPERATIONS
28-11 Queens Plaza North
L.I.C., N.Y. 11101
PAGE AVE FROM HYLAN BLVD TO AMBOY RD
DRAWING
NO. MD-503
Drawn by AK
Checked by BM
Borough ST. ISLAND
Scale 1"=40'
Date 9/06/2002
APPROVED
HAYWOOD ST
ACADEMY AV
HYLAN BLVD
PAGE AV
BARTOW AV
CAMDEN AV
ELIZABETH CT
EASTWOOD AV
JEFFREY PL
ESTELLE PL
ADELPHI AV
AMBOY RD
PAGE AV
MATCH LINE
8" W
8" WHITE
16" WHITE O.C. 10'
6" WHITE EDGE LINE
4" DOUBLE YELLOW
24" WHITE
NO CURB
CURB

Borough Wide Daylighting Initiative

Description

Working with the Staten Island Borough President and the local police precincts, the Department identified intersections (listed below) that would benefit from daylighting to enhance safety in the borough.

"Daylighting" refers to the process of installing restrictive parking regulations at intersections to improve visibility and safety for motorists. These parking restrictions are designed to help motorists gain an unobstructed view of traffic approaching the intersection.

As a result, daylighting has been installed at the following locations:

- Crystal Avenue @ Gourdon Street – "No Standing Anytime" regulations were installed on the east curb of Crystal Avenue to provide daylighting at the intersection of Gourdon Street. Completed in October 2002.
- Victory Boulevard @ Stewart Avenue – "No Parking Anytime" regulations were installed to provide daylighting at the intersection of Victory Boulevard. Completed in June 2002.
- Westcott Boulevard @ Coale Avenue – "No Standing Anytime" regulations were installed on the west curb of Westcott Boulevard to provide daylighting at the intersection of Coale Avenue. Completed in October 2002
- Lynhurst Avenue @ Tompkins Avenue – "No Parking Anytime" regulations were installed to daylight the south side of Tompkins Avenue. Completed in October 2002.
- Amboy Road @ Sprague Avenue – "No Standing Anytime" regulations were installed on the south curb of Amboy Road to provide daylighting at the intersection of Sprague Avenue. Completed in June 2002.
- Huguenot Avenue @ Lombardi Court – "No Standing Anytime" regulations were installed on the east curb of Huguenot Avenue to provide daylighting at the intersection of Lombardi Court. Completed in June 2002.
- Guyon Avenue @ Clawson Street – "No Standing Anytime" regulations were

installed on the west curb of Guyon Avenue to provide daylighting at the intersection of Clawson Street.Completed in June 2002.

- Decker Avenue @ Palmer Avenue – "No Standing Anytime" regulations were installed on the west curb of Decker Avenue to provide daylighting at the intersection of Palmer Avenue. Completed in August 2002.
- Finlay Avenue @ Creston Avenue – "No Standing Anytime" regulations were installed on the south curb of Finlay Avenue to provide daylighting at the intersection of Creston Avenue. Completed in January 2002.
- Amboy Road @ Joline Avenue – "No Standing Anytime" regulations were installed on the west curb of Amboy Road to provide daylighting at the intersection of Joline Avenue. Completed in June 2002.
- Sharrotts Road @ Arthur Kill Road – "No Standing Anytime" regulations were installed on the west curb of Arthur Kill Road at the intersection of Sharrotts Road. Completed in June 2002.
- Willowbrook Road @ Buchanan Avenue – "No Standing Anytime" regulations were installed on the north curb of Willowbrook Road to provide daylighting at the intersection of Buchanan Avenue. Completed in January 2003.
- South Gannon Avenue @ Ardmore Avenue –"No Standing Anytime" regulations were installed on the south curb of South Gannon Avenue at the intersection of Ardmore Avenue. Completed in November 2002.
- Forest Avenue @ Elizabeth Street – "No Standing Anytime" regulations were installed on the north curb of Forest Avenue at the intersection of Elizabeth Street. Completed in November 2002.
- Holden Boulevard @ Wellbrook Avenue -– "No Standing Anytime" regulations were installed on the south curb of Holden Boulevard at the intersection of Wellbrook Avenue. Completed in November 2002.
- North Burgher Avenue @ Delafield Avenue – "No Standing Anytime" regulations were installed on the east and west curbs of North Burgher Avenue at the intersection of Delafield Avenue. Completed in November 2002.
- South Railroad Avenue @ Greeley Avenue –"No Standing Anytime" regulations were installed on the north curb of South Railroad Avenue at the intersection of Greeley Avenue. Completed in November 2002.
- Palma Drive @ Parkhill Avenue –– "No Standing Anytime" regulations were installed on the north curb of Palma Drive to provide daylighting at the intersection of Parkhill Avenue (both the east and west sides). Completed in November 2002.
- Harold Street @ Wellbrook Avenue – "No Standing Anytime" regulations were installed on the north and south curbs of Harold Street at the intersection of Wellbrook Avenue. Completed in November 2002.

- Amboy Road @ Sprague Avenue – “No Standing Anytime” regulations were installed on the south curb of Amboy Road at the intersection of Sprague Avenue. Completed in November 2002.

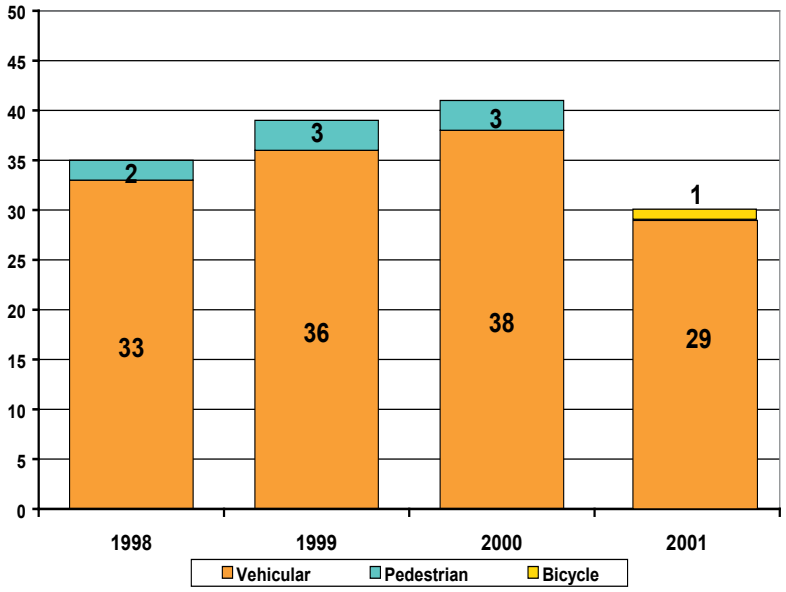
Forest Avenue/Morningstar Road/Richmond Avenue

Description

Richmond Avenue and Forest Avenue function as major arterials through Staten Island. At the intersection of Forest Avenue, Morningstar Road and Richmond Avenue, Richmond Avenue comes to its western terminus, approximately 60 feet north of Forest Avenue. Morningstar Road functions as a connector between this intersection and the Richmond Avenue continues along a north-south corridor. Overall, this intersection is the focus of high vehicular activity, as the surrounding land use is predominately commercial. A significant generator of this traffic is along the northwest corner of Forest Avenue and Morningstar Road. These conditions created numerous vehicular conflicts and illegal maneuvers by motorists.

Original Configuration of Intersection

Accident Experience 1998 - 2001



Based upon an increasing number of accidents and concerns about the illegal movements of vehicles at this intersection, the Department took a proactive approach at addressing these concerns. The accident history at this location indicates a steady increase in accidents between 1998 and 2000. In 1998, there were a total of 35 accidents, of

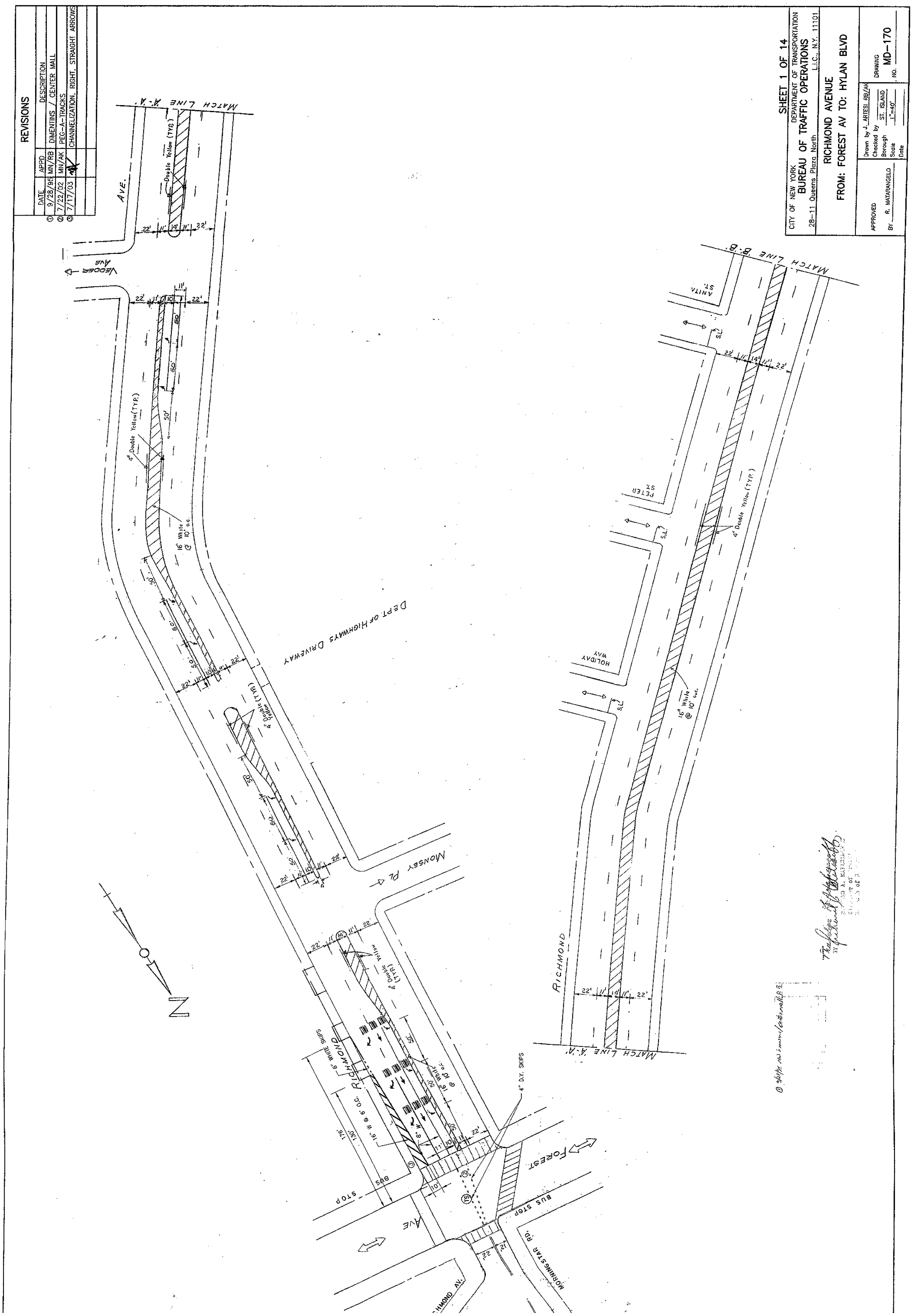
which two involved pedestrians. In 1999, there were a total of 39 accidents, three involving pedestrians. In 2000, there were a total of 41 accidents, three involving pedestrians. ***In 2001, total accidents declined significantly by 27% to 30, of which one involved a bicyclist.***

The Department hopes to improve this trend with the measures implemented in the Fall of 2002 that improved the overall movement of vehicles throughout the intersection and provided for improved safety for motorists.

Implemented Improvements

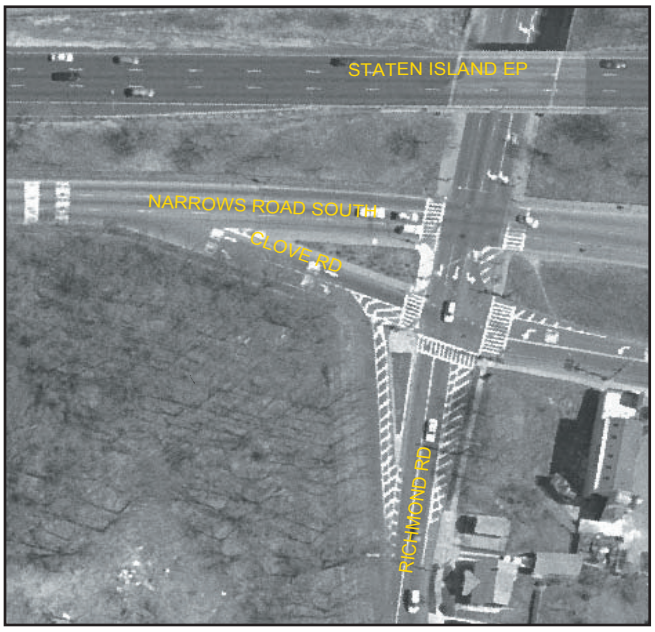
- Qwick Kurb center divider was installed in September 2002 to prevent vehicles from illegally crossing painted center median while entering or exiting ShopRite Plaza parking lot.
- Installed peg-a-trac roadway markings in September 2002 to identify transition from the wider Richmond Avenue to the narrower Morningstar Road.
- Additional lane assignments were installed on Forest Avenue, Morningstar Road and Richmond Avenue in August 2003.

The improvements are shown on the following page.


SHEET 1 OF 14
CITY OF NEW YORK DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC OPERATIONS
28-11 Queens Plaza North L.I.C., N.Y. 11101
RICHMOND AVENUE
FROM: FOREST AV TO: HYLAN BLVD
MD-170
REVISIONS
MATCH LINE 'A-A'
MATCH LINE 'B-B'
MONSEY PL
FOREST
RICHMOND
DEPT OF HIGHWAYS DRIVEWAY
BUS STOP
N

Narrows Road South/ Richmond Road

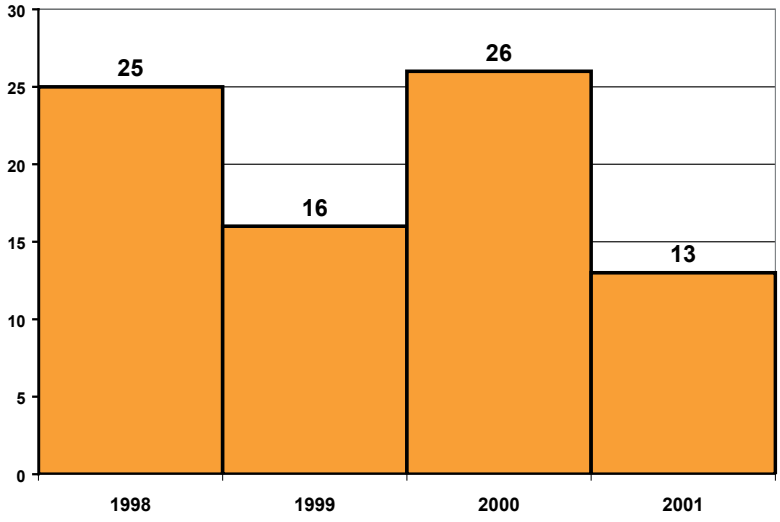
Description



Aerial view of intersection

At this location, Narrows Road South functions as a service road for the Staten Island Expressway. Prior to the intersection, Narrows Road South splits providing access to Clove Road and for vehicles wishing to travel on Clove Road and southbound on Richmond Road. On the southern approach along Richmond Road, vehicles traveling southbound vehicles have the option to turn onto Narrows Road South or proceed a short distance further to turn onto Clove Road. Overall, the roadway configuration and geometry of the split led to confusion for motorist regarding lane assignments for both Narrows Road South and Clove Road.

Accident Experience 1998 - 2001



The accident experience at this intersection varied between 1998 and 2001. In 1998, there were a total of 25 accidents. Total accidents decreased to 16 in 1999. In November 1999, the Department installed advanced lane assignment signs and although accidents increased 26 on 2000, total accidents declined significantly by 50% to 12 in 2001.

Implemented Improvements

- Additional directional/lane assignment signs were installed prior to the intersection to guide the motorist in the proper direction in November 1999.
- ***Additional lane assignment signs were installed on the overpass at Richmond Road and Narrows Road North in November 2002.***