QUEENS

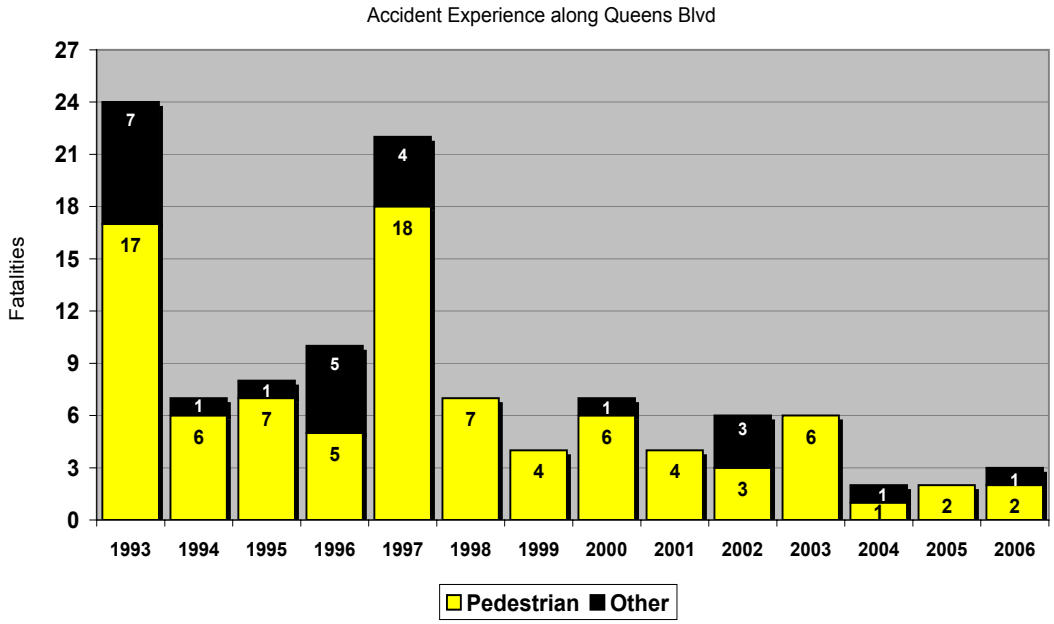
Queens Boulevard

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 pedestrians 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 (G and R) and express subway lines (E, F, V and #7).

Due to these characteristics, there are several locations along the Boulevard that have incidences of high accidents, for both vehicles and pedestrians. Furthermore, 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 goals for the Department has been the reduction of fatalities along the corridor. **Between 1993 and 2006, there have been a total of 112 fatalities, of which 88 (or 79%) were pedestrian fatalities. Total fatalities peaked in 1993 at 24 (17**



of which were pedestrians) and continued to decrease over the next ten 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. In 2005, fatalities remained at two, both of which involved a pedestrian. In 2006, there were three fatalities of which 2 involved a pedestrian. The locations with the greatest number of fatal crashes are 70th Road (eight) and Broadway/Grand Avenue (five). Nearly half of the pedestrian fatalities were elderly persons age 65 or older.

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 4.3 per year, significantly less than the 12.6 fatalities per year for the previous 6 1/2 years.

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 six years to an all-time low of 63 pedestrian accidents in 2002.

Queens Boulevard 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

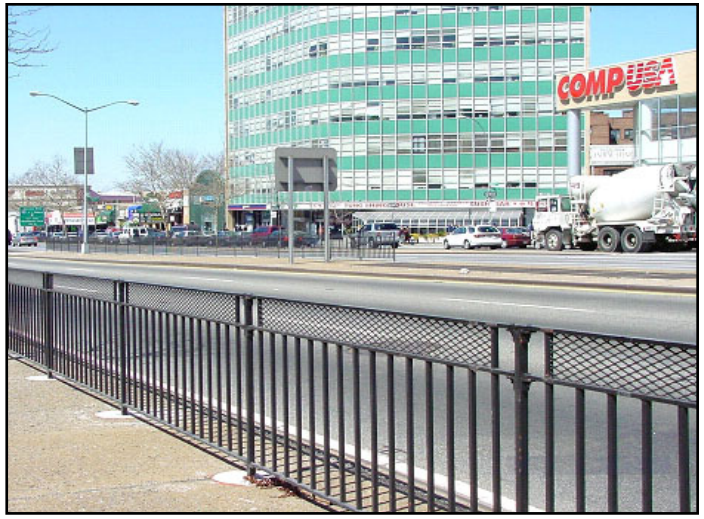
- Installed midblock signalized crossing with high visibility crosswalk markings at three locations:
  - East of 69th Avenue (completed June 1999)
  - East of 68th Avenue (relocated westbound slip ramp, service to main, to east of 68th Road)
  - West of 70th Avenue (relocated eastbound slip ramp, service to main, to east of 67th Road; closed 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 crosswalks at four intersections (all legs):
  - 67th Road
  - 68th Avenue
  - Yellowstone Boulevard
  - 70th Avenue
- Installed 3,700 linear feet of pedestrian barriers (36 inches in height) on the service road 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.

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

All Work was completed in July 2001, with the exception of the 71th Avenue and Continental Avenue Intersection, which was completed in the Fall 2004.

- Extensions on service road medians at seven intersections:
  - 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:
  - 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:
  - 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)



Pedestrian fencing along Queens Boulevard


Neckdown on Queens Boulevard

    - Ascan Avenue (northeast, southwest corners)
    - 76th Road (southwest corner)
- End cap barriers on center median at ten intersections:
    - 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:
    - 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 in 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

Examples of dedicated signage for pedestrians along Queens Boulevard

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.”
- In February 2001, the 35 mph speed limit was reduced to 30 mph between Roosevelt and 51st Avenues making the speed limit on the entire length 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 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 for pedestrians crossing Queens Boulevard, enabling them to complete their crossing in one (as opposed to two) cycle at all intersections except Yellowstone Boulevard.

  The change was monitored by analyzing "before" and "after" vehicular travel times, left-turn spillback and cross 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 - 8 AM (westbound) and 5 - 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 cross street queues. However, most vehicles cleared the approach during the extended 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 nearly 40 intersections.

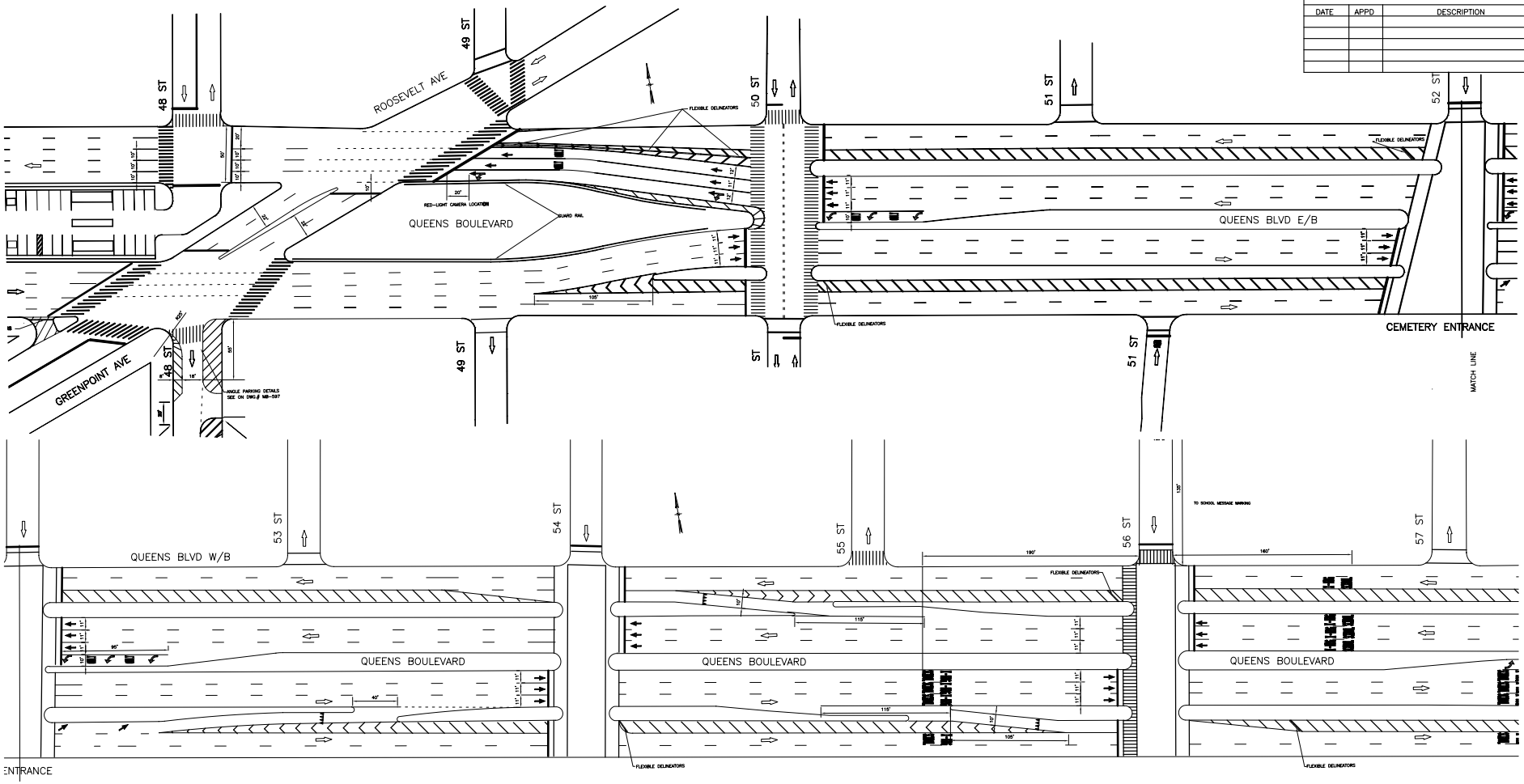
- In June 2001, a new speed calming strategy was completed that allows parking in the left lane of the service road adjacent to the median in a four-mile section of Queens Boulevard between 76th Street/Kneeland Avenue and Union Turnpike. This provided

Top: Pavement Marking advising pedestrians to "Wait for Walk Signal". Middle : Example of parking along the center median. This strategy narrowed the roadway to one lane from two. Bottom: At some locations, parking meters were removed and roadway markings and flexible bollards were installed to improve vehicular and pedestrian safety.

Example of permanently mounted speed detector board to inform motorists of their travel speed

545 additional parking spaces on this section of the Boulevard. The number of travel lanes on the service roads in both the eastbound and westbound directions were reduced from two to one. 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 where 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.
- In spring 2003, additional markings (shown 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.



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

SHEET 3 OF 15

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

QUEENS BOULEVARD
FROM 49 STREET TO 58 STREET

APPROVED
BY

Drawn by ES/VG
Checked by AMT/SB
Borough QUEENS
Scale 1"=40'
Date 1.20.04

DRAWING NO. MD-618-03

Queens Boulevard Pedestrian Safety Study (Phase II)

In 2004, the Department completed 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 identified pedestrian safety and traffic issues and recommended short and long term improvements, the study incorporated a Preliminary Design Investigation (PDI) component that resulted in greater efficiency in advancing the project to the final design stage for implementation of capital improvements. The study began in November 2001 and was completed in July 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 were 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 included 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 was 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/refurbished 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
    - 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)
- Converted 51st Street to one-way southbound between Queens Boulevard and 47th Avenue to improve safety on this narrow roadway. (November 2003)

In addition, the Department 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). This work was completed in September 2003.

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 discourage 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 flexible bollards on the centerline and installing “No U-turn” signs.

The following improvements were implemented in Spring 2004:

- Installed four speed boards at the following locations: westbound between Hillside and 87th Avenues, eastbound at 59th Street, eastbound and westbound at 83rd Avenue.
- Installed 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 temporary treatments including 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 the Queens Boulevard/Van Dam Street, Kew Gardens Road/80th Road, 80th Road/ Queens Boulevard intersections.
- Eliminated uncontrolled right turn onto Greenpoint Avenue from eastbound Queens Boulevard using flexible bollards.
- Converted 48th Street 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.

Signage and flexible bollards were used as temporary treatments to eliminate the uncontrolled right turn onto Greenpoint Avenue

- Prohibited northbound and southbound left-turn movements at the 51st Avenue intersection and closed the uncontrolled 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.
- 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 flexible bollards.
- 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 (PDI) was completed in July 2005. The PDI studied the feasibility of implementing the capital improvements recommended in the study. Based upon the PDI, the following capital improvements will be implemented:

- Permanent closure of access to parking areas (39th and 43rd Streets);

- Permanent full closure of the cross streets at 33rd Street and 43rd Street, including upgrading 46th Street;
- One-way cross street curb extensions at 10 locations between 32nd Place and 45th Street;
- Extension of raised medians to crosswalks, median protection , and relocation of some signals and installation of additional pedestrian signals at 10 locations;
- 70th Street left-turn bay extension;
- General pedestrian improvements at Eliot Avenue (including permanent closure of turn-around and pedestrian fencing);
- Union Turnpike “punch-through”;
- Extension of the curb and the west center median at the Van Wyck Expressway Service Road; and
- Hillside Avenue permanent roadway realignment.

Several of these improvements were advanced and completed during the Summer/early Fall 2005:

- Permanent closure of the cross street at the subway station at 33rd Street;
- Permanent closure of the access to the parking area at 39th Street.
- Median extensions and protection at 52nd Street, 54th Street and 56th Street.

In November 2006, the interim closure of the cross street at the subway station at 40th Street was completed. This will be made permanent in the next phase of construction.

This will be followed by the installation of median extensions/ protection at the remaining seven locations (Jacobus Street, 51st Avenue, 55th Avenue, 56th Avenue, 57th Avenue, 78th Avenue, and Woodhaven Boulevard [south side]), as well as

Median extensions and concrete protection devices being constructed along Queens Boulevard

Detailed images and perspectives of full closure of 33rd Street, including signage, reflective bollards, pedestrian fencing and the protected pedestrian plaza

the permanent closure of the free right turn at Greenpoint Avenue, upgrading the existing closure of 46th Street, full closure of 40th Street and the parking area at 43rd Street, 70th Street left-turn bay extension, improvements at Eliot Avenue, the Van Wyck Expressway entrance, Union Turnpike and Hillside Avenue, and construction of neck downs at ten locations. This Phase II work is expected to begin in early fall 2007.

Early Action Phase II Impacts

Upon completion of Phase II projects, the Department conducted a study to gauge the impacts of the mitigation measures. As part of this effort, data was compared for the 9 month period "before" implementation versus the 9 months after implementation. The results of this analysis indicated a:

- 14% reduction in total accidents;
- 50% reduction in fatalities;
- 53% reduction in pedestrian accidents;
- 26% reduction in accidents resulting in an injury;
- Speed stabilized within the 30 mph speed limit; and
- Volume did not change significantly, however there was a shift in volume from the service roads to the main roadway.

Queens Boulevard
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 Street and Thomson Avenue (where reportable accidents reached as high as 63 in 1997) and the intersection of Queens Boulevard with Woodhaven Boulevard and 59th Avenue (where reportable accidents reached a high of 50 in 1997).

As is the case with the entire corridor, the accident history at these problematic locations shows a consistent, significant decline, particularly at Van Dam Street/Thomson Avenue where reportable accidents decreased 68% since 1997 (to 20 in 2005 from 63 in 1997).

Queens Boulevard/ Woodhaven Boulevard/ 59th Avenue

Description

The intersection of Queens Boulevard/Woodhaven Boulevard/59th Avenue 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. In the four years before improvements were implemented (1996-1999), there was an average of 45 reportable accidents per year. In the five years since improvements were made (2001-2005), the average number of reportable accidents dropped by 51.5% to 22 per year.

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.

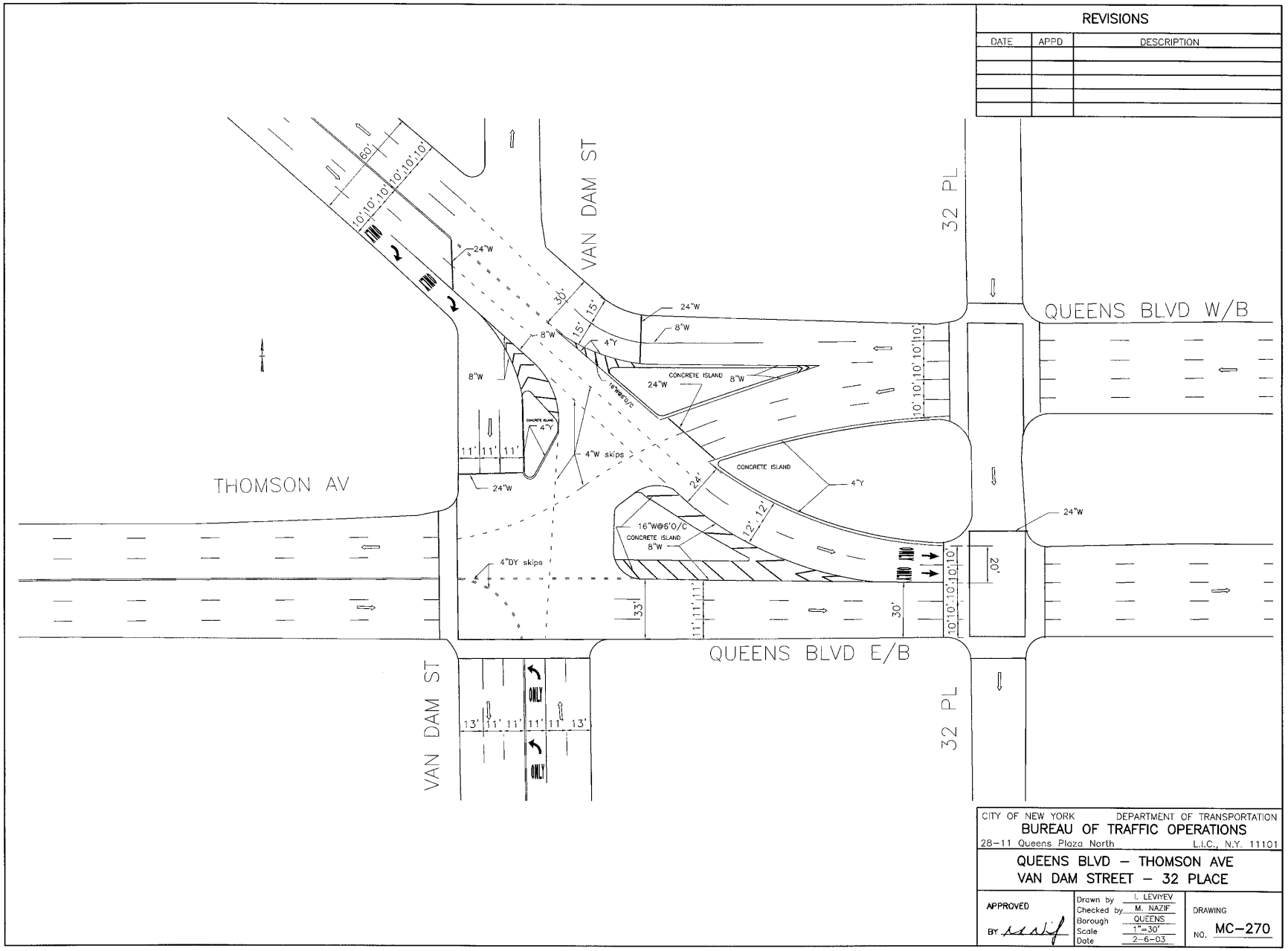
These street directional changes and the associated reconfiguration and realignment of lanes reduced vehicular and pedestrian conflicts and significantly improved safety. In order to enhance pedestrian safety, the curb at the northwest corner of the intersection of Queens Boulevard/ Woodhaven Boulevard/59th Avenue intersection was widened by approximately 40 feet. This reduced 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 included: 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.
- A left-turn phase (for northbound 92nd Street) and a 170 controller (which allows the Department to vary the signal splits throughout the day) was installed at the intersection of 57th Avenue and 92nd Street in April 2001.

Queens Boulevard/ Van Dam Street/ Thomson Avenue

In November 2002, an additional channelization (shown 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 at the convergence of Queens Boulevard, Van Dam Street and Thomson Avenue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CITY OF NEW YORK DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC OPERATIONS
28-11 Queens Plaza North L.I.C., N.Y. 11101
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Drawn by I. LEVIYEV
Checked by M. NAZIF
Borough QUEENS
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DRAWING
NO. MC-270

Shore Front Parkway

Description

Shore Front Parkway begins at Beach 73rd Street to the east and ends at Beach 108th Street to the west. Each end of the roadway has a circular turnaround. On the south, the parkway is bounded by mostly recreational facilities, the boardwalk and the ocean. On the north, it is bounded by homes, apartment buildings and businesses. The roadway has two moving lanes in both directions with an additional parking lane on each curb.

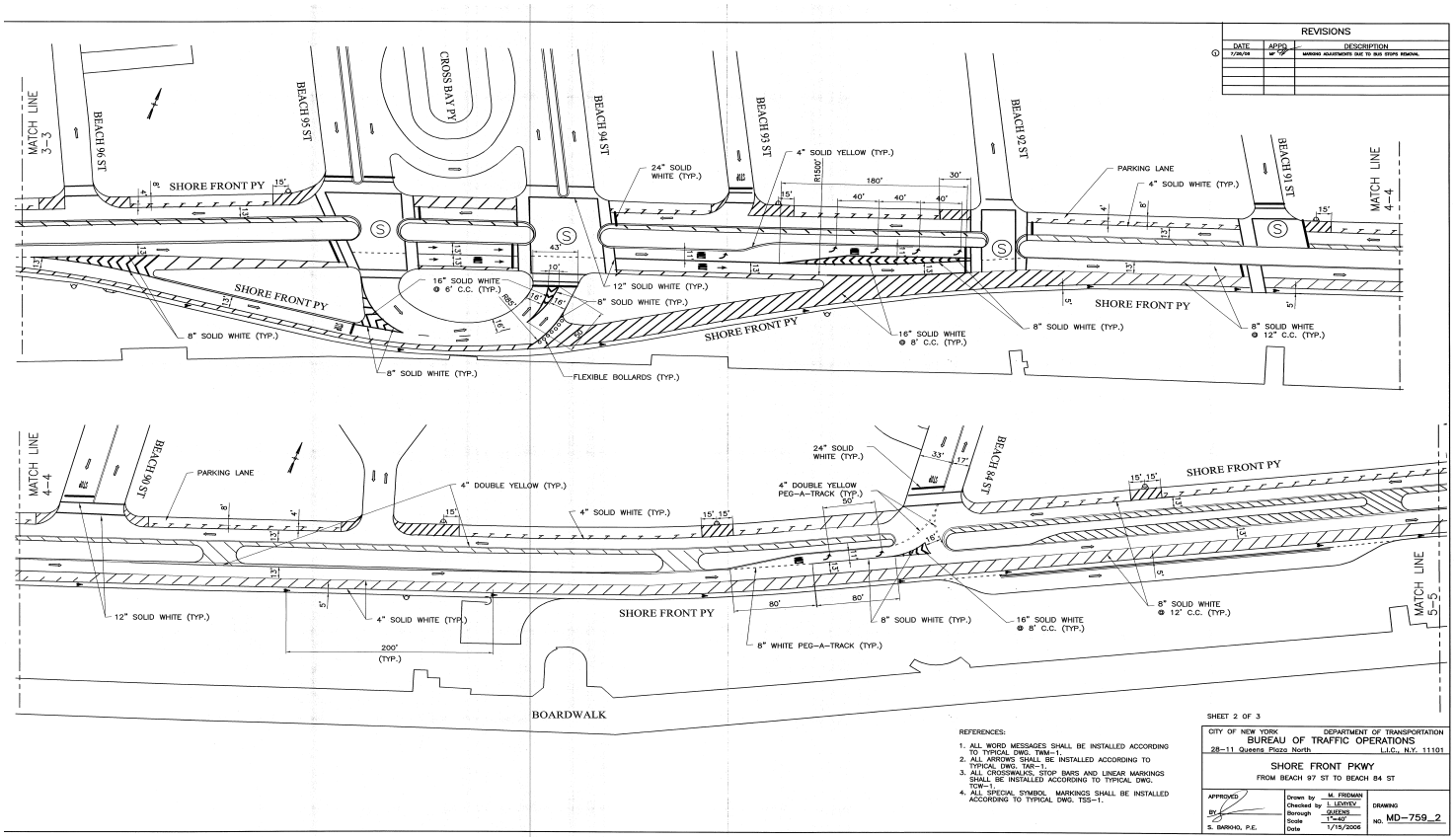
In mid-2005, in response to a series of fatalities and community complaints about excessive speeding and illegal vehicle maneuvers, the Department conducted signal feasibility studies to determine if additional intersections along Shore Front Parkway met traffic signal warrants. While none of the warrants were met, the study did find vehicles traveling at excessive speeds and a problematic geometric roadway design. It was also determined that the median openings did not properly correspond with existing driveways and that left-turn bays were misaligned creating unsafe vehicular movements.

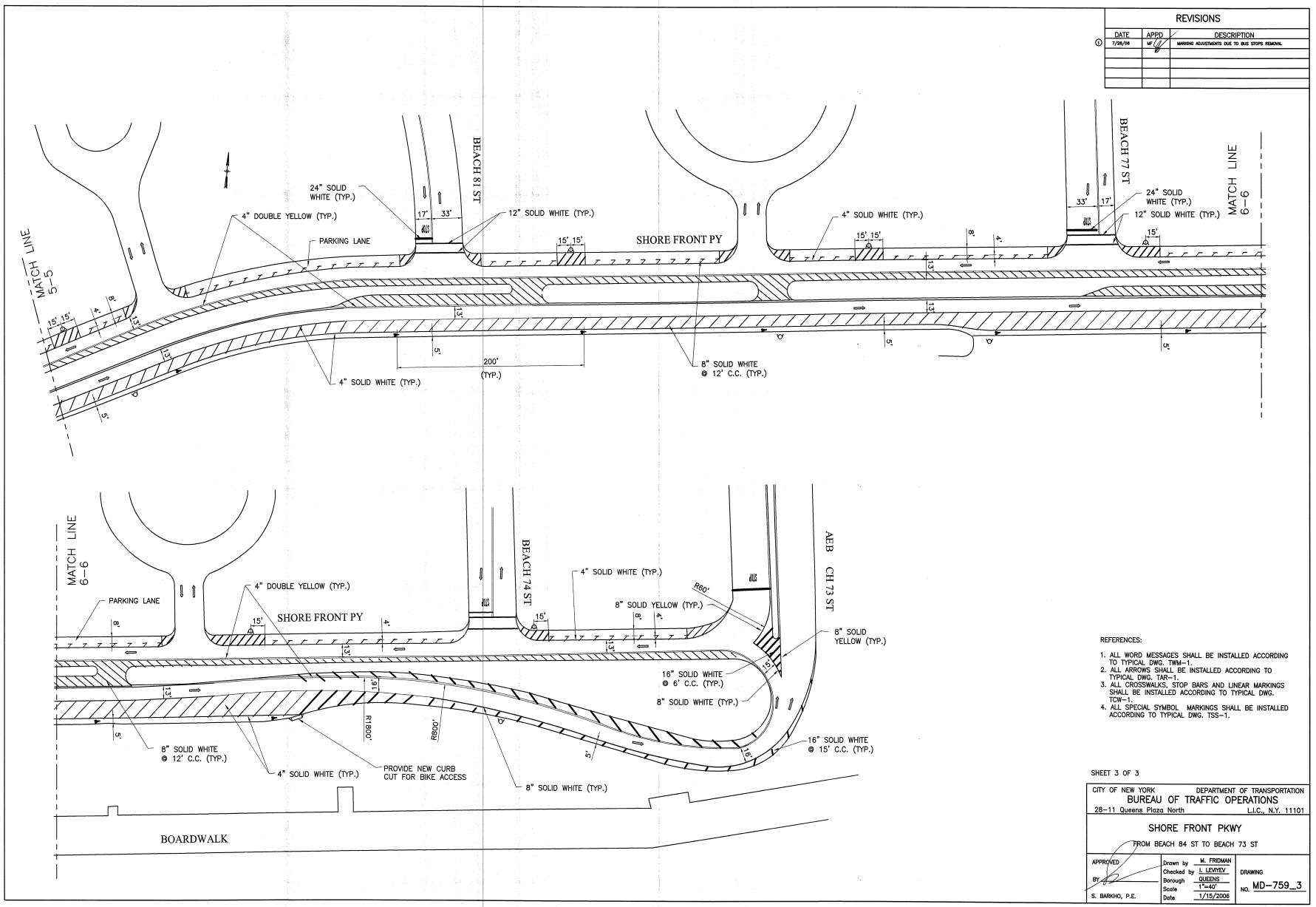
As a result, recommendations were made and subsequently implemented to reduce speeding and make the intersection safer.

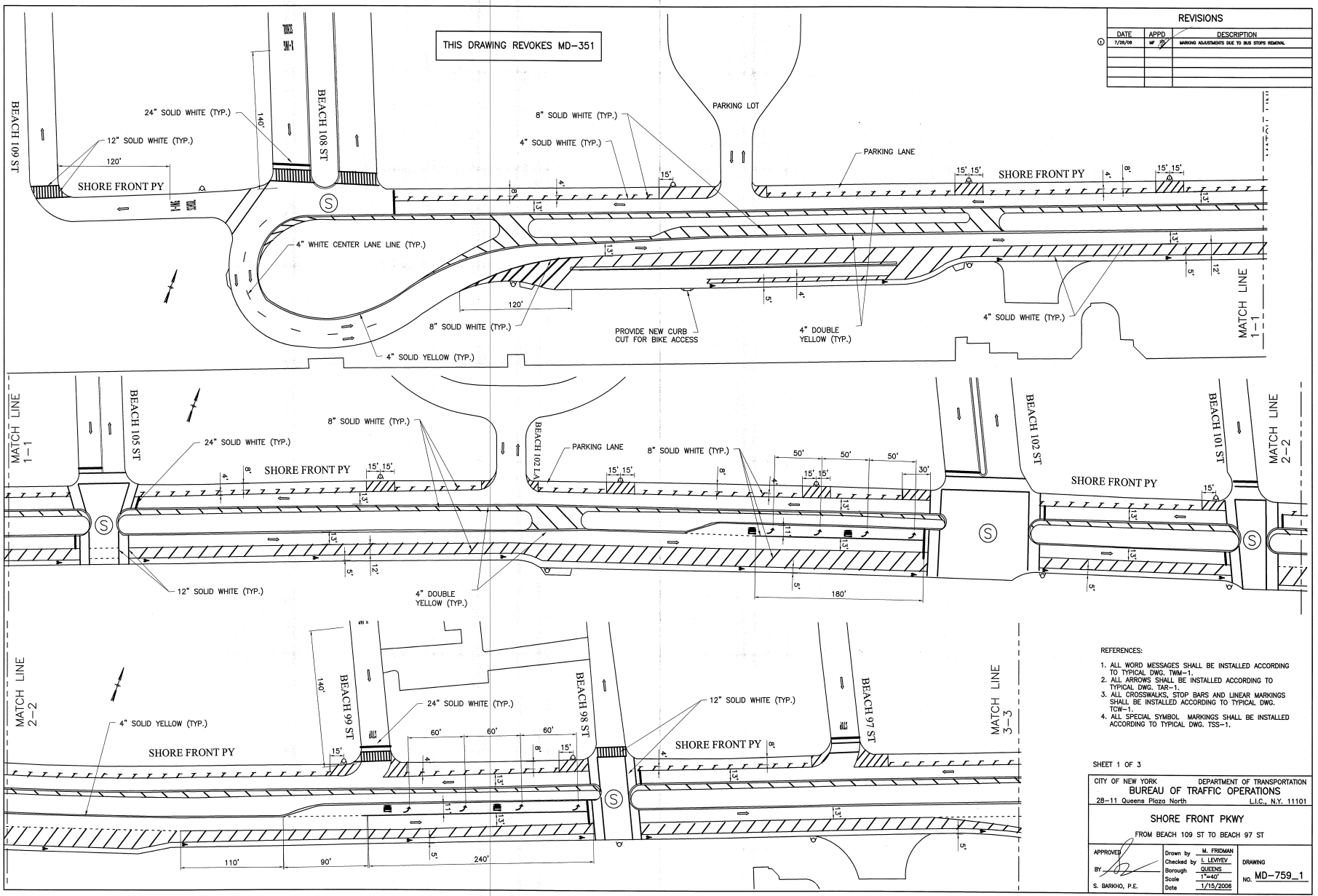
Implemented Improvements in 2006:

- **The left lanes on the eastern and western roadways were eliminated, reducing the number of moving lanes to one from two and effectively slowing traffic while maintaining parking on the right curb lane in both directions.**
- **Thermoplastic markings were used to close the median openings and prevent illegal vehicular maneuvers.**
- **A bicycle lane was installed in the eastbound direction to enhance bicycle mobility and accessibility along this beachfront recreational area.**

The implemented improvements are shown below and on the following pages.




REVISIONS
DATE
APPD
DESCRIPTION
7/28/06
MARKING ADJUSTMENTS DUE TO BUS STOPS REMOVAL
MATCH LINE 5-5
MATCH LINE 6-6
BEACH 81 ST
BEACH 77 ST
BEACH 74 ST
AEB CH 73 ST
SHORE FRONT PY
PARKING LANE
24" SOLID WHITE (TYP.)
12" SOLID WHITE (TYP.)
4" DOUBLE YELLOW (TYP.)
4" SOLID WHITE (TYP.)
8" SOLID WHITE @ 12' C.C. (TYP.)
200' (TYP.)
8" SOLID YELLOW (TYP.)
16" SOLID WHITE @ 6' C.C. (TYP.)
8" SOLID WHITE (TYP.)
16" SOLID WHITE @ 15' C.C. (TYP.)
PROVIDE NEW CURB CUT FOR BIKE ACCESS
R1800'
R800'
R60'
BOARDWALK
REFERENCES:
1. ALL WORD MESSAGES SHALL BE INSTALLED ACCORDING TO TYPICAL DWG. TWM-1.
2. ALL ARROWS SHALL BE INSTALLED ACCORDING TO TYPICAL DWG. TAR-1.
3. ALL CROSSWALKS, STOP BARS AND LINEAR MARKINGS SHALL BE INSTALLED ACCORDING TO TYPICAL DWG. TCW-1.
4. ALL SPECIAL SYMBOL MARKINGS SHALL BE INSTALLED ACCORDING TO TYPICAL DWG. TSS-1.
SHEET 3 OF 3
CITY OF NEW YORK
DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC OPERATIONS
28-11 Queens Plaza North
L.I.C., N.Y. 11101
SHORE FRONT PKWY
FROM BEACH 84 ST TO BEACH 73 ST
APPROVED
BY
S. BARKHO, P.E.
Drawn by M. FRIDMAN
Checked by I. LEVYEV
Borough QUEENS
Scale 1"=40'
Date 1/15/2006
DRAWING NO. MD-759_3

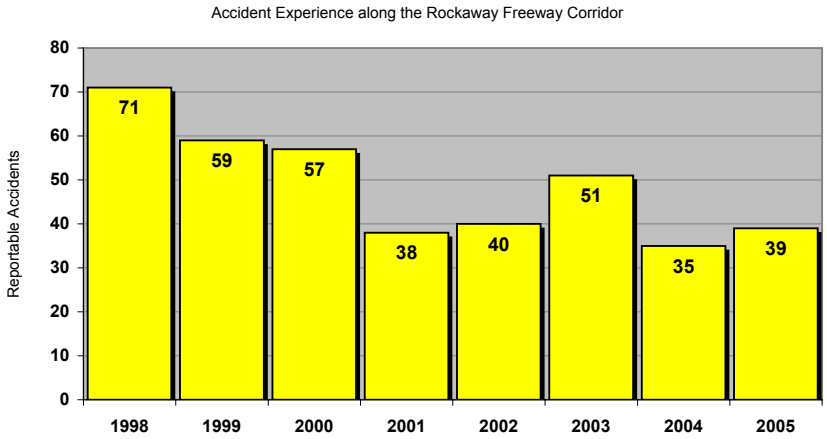

THIS DRAWING REVOKES MD-351
REVISIONS
DATE
APPD
DESCRIPTION
7/28/08
MARKING ADJUSTMENTS DUE TO BUS STOPS REMOVAL
BEACH 109 ST
BEACH 108 ST
BEACH 105 ST
BEACH 102 ST
BEACH 101 ST
BEACH 99 ST
BEACH 98 ST
BEACH 97 ST
BEACH 103 ST
SHORE FRONT PY
PARKING LOT
PARKING LANE
24" SOLID WHITE (TYP.)
12" SOLID WHITE (TYP.)
8" SOLID WHITE (TYP.)
4" SOLID WHITE (TYP.)
4" WHITE CENTER LANE LINE (TYP.)
4" SOLID YELLOW (TYP.)
4" DOUBLE YELLOW (TYP.)
PROVIDE NEW CURB CUT FOR BIKE ACCESS
MATCH LINE 1-1
MATCH LINE 2-2
MATCH LINE 3-3
REFERENCES:
1. ALL WORD MESSAGES SHALL BE INSTALLED ACCORDING TO TYPICAL DWG. TWM-1.
2. ALL ARROWS SHALL BE INSTALLED ACCORDING TO TYPICAL DWG. TAR-1.
3. ALL CROSSWALKS, STOP BARS AND LINEAR MARKINGS SHALL BE INSTALLED ACCORDING TO TYPICAL DWG. TCW-1.
4. ALL SPECIAL SYMBOL MARKINGS SHALL BE INSTALLED ACCORDING TO TYPICAL DWG. TSS-1.
SHEET 1 OF 3
CITY OF NEW YORK
DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC OPERATIONS
28-11 Queens Plaza North
L.I.C., N.Y. 11101
SHORE FRONT PKWY
FROM BEACH 109 ST TO BEACH 97 ST
APPROVED BY
S. BARKHO, P.E.
Drawn by M. FRIDMAN
Checked by I. LEVYEV
Borough QUEENS
Scale 1"=40'
Date 1/15/2006
DRAWING NO. MD-759_1

Rockaway Freeway

Description

Rockaway Freeway is a major east-west corridor in the Far Rockaways. This corridor has an elevated ("el") subway line above the roadway and support columns located in the raised island that separates opposing traffic flows. The roadway is generally 25 feet wide in each direction and the primary area of concern was 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 and the lack of pedestrian refuge space and visibility. Although not a highly ranked accident corridor, the corridor experienced 12 fatal accidents between 1990 and 1998, which was 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, reportable accidents decreased 17%, to 59 from 71 in from 1998. By 2001, reportable accidents had decreased to 38, a 46% decline since 1998. Despite a small increase in 2002 and 2003, the 35 reportable accidents in 2004 was the lowest number recorded since 1998. By 2005, accidents had declined by 45%. Even more encouraging is the decline in the number of fatalities along the corridor. Since safety measures

were implemented in August 1998, there was one fatality on the corridor in 1999, one in 2000, two in 2001, none in 2002 or 2003 and only two fatalities in 2004 resulting from a single accident which killed both the driver and the passenger. **There were no fatalitites in 2005 or 2006.**

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.

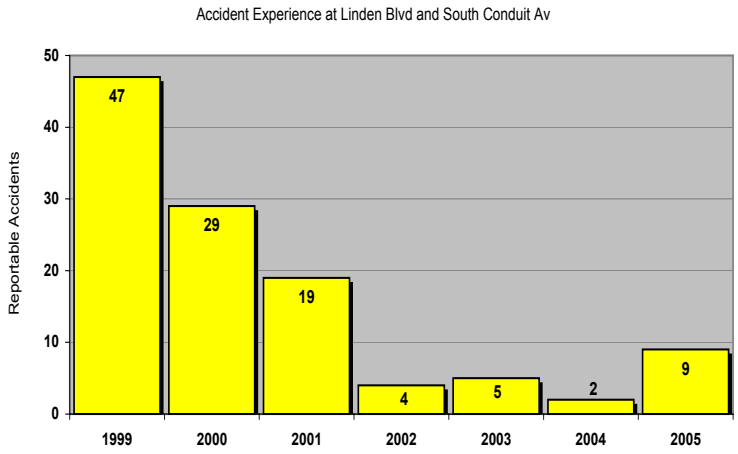
Improvements Implemented in September 2003

- 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 lane 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 Avenue from Linden Boulevard were observed taking unreasonable risks in order to move into the left lane through often congested traffic.



The accident experience at this intersection indicated a downward trend since the high of 47 reportable accidents in 1999. In 2000, accidents declined substantially to 29, a 38% decrease. In August 2001, the Department implemented a series of improvements to address the primary vehicular concerns. Accidents continued to decline to 19 in 2001, a 34% decrease since the previous year. By 2002, reportabale accidents fell to as low as four, a 91% decrease from three years earlier in 1999. In both 2003 and 2004 there were only five and two accidents, respectively, remaining at this low level. There was an increase to nine reportable accidents in 2005, but this is still 81% lower than the accidents in 1999.

Implemented Improvements

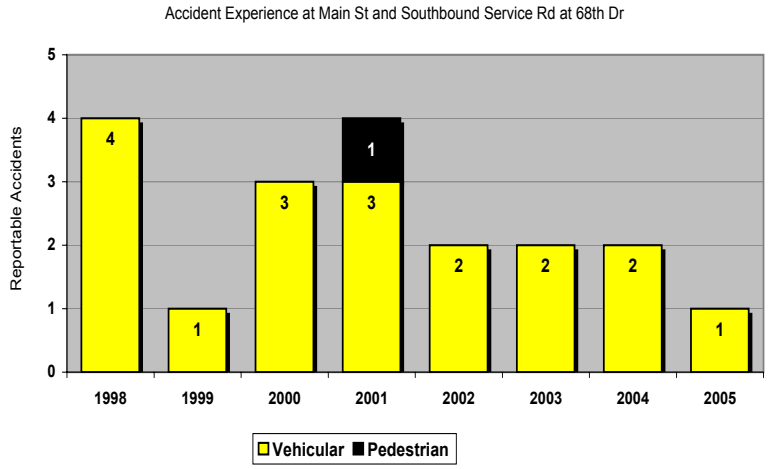
- Installed a new traffic signal in August 2001 to separate conflicts and eliminate unsafe merging and lane changing.
- Scarified existing gore markings and lane lines that allowed only two travel lanes from each of the two approaches in advance of the intersection. Re-marked the approaches to permit 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 Service Road @ 68th Drive

Description

Main Street is a major north-south corridor that runs through central Queens. At this particular intersection, the roadway consists of a three lane (two moving, one parking) northbound roadway and a three lane (two moving, one parking) southbound roadway separated by a concrete center median. There are left turn bays for both directions. There is also a southbound service road that is separated from the main roadway by a concrete median that ends at 68th Drive. The convergence of these roadways causes poor alignment and motorists frequently make unsafe merges onto the mainline roadway. In addition, motorists frequently fail to obey the traffic signals. For pedestrians, the unique geometry of the intersection causes the crosswalks to be misaligned with the pedestrian signals.

Aerial view of intersection



Acccident 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 four reportable accidents at the Main Street/68th Drive intersection. In 1999, accidents decreased sharply by 75% to one. In 2000, accidents tripled to three. 2001 also had three vehicular accidents, but it also had one pedestrian accident. Based upon the unique geometry of this intersection and the increasing accident experience, the Department implemented safety initiatives in December 2001. This improvement provides for the safer movement of vehicles through the intersection and mitigation of the rising accident trends. **Reportable accidents decreased to two in 2002, 2003 and 2004, and declined even further to one in 2005.**

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.

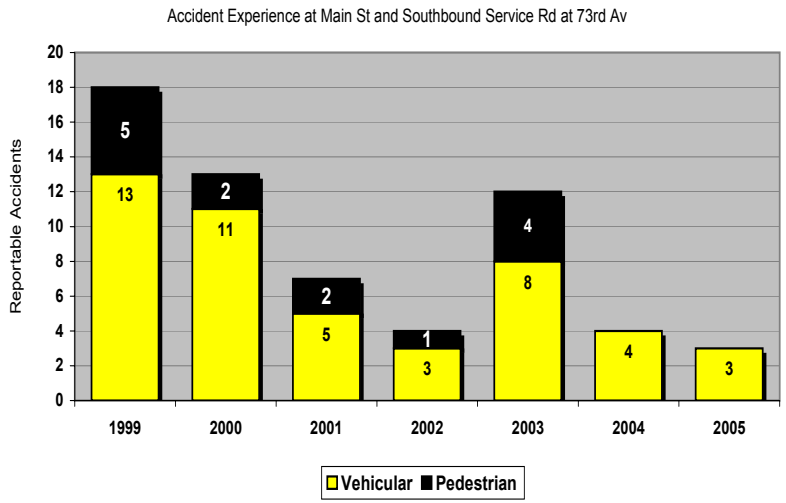
Main Street
Southbound Service Road @ 73rd Avenue

Aerial view of intersection

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, the service road ends. This causes poor roadway alignment and dangerous movements as the service road and mainline traffic merge in an unsafe manner.

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 10 reportable accidents at the Main Street/73rd Avenue intersection of which four involved pedestrians. In 1999, reportable accidents increased sharply to 18, with five involving pedestrians.



The accident experience shows a downward trend in reportable accidents beginning in the year 2000. In 2001 and 2002, reportable accidents decreased to seven and four, respectively. Although there was a spike in accidents in 2003, they continued to decline in both 2004 and 2005 with no pedestrian accidents. The overall downward trend in accidents parallels the general decline in accidents citywide during this time period.

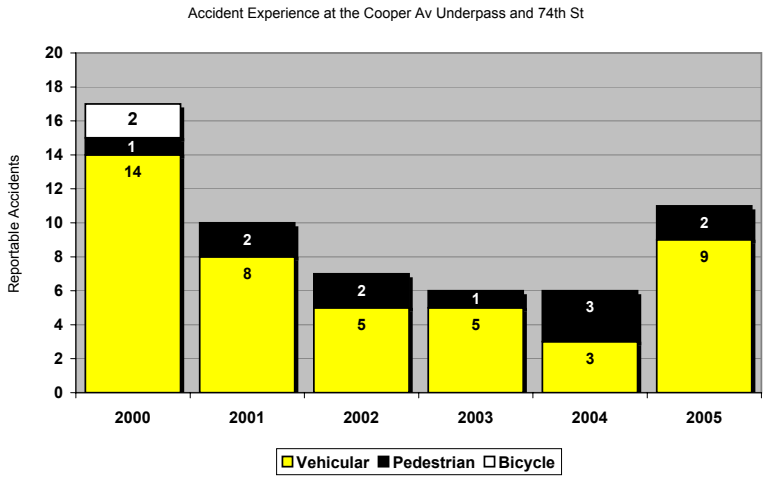
Improvements Implemented in December 2001

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 number of students must make this crossing twice daily.

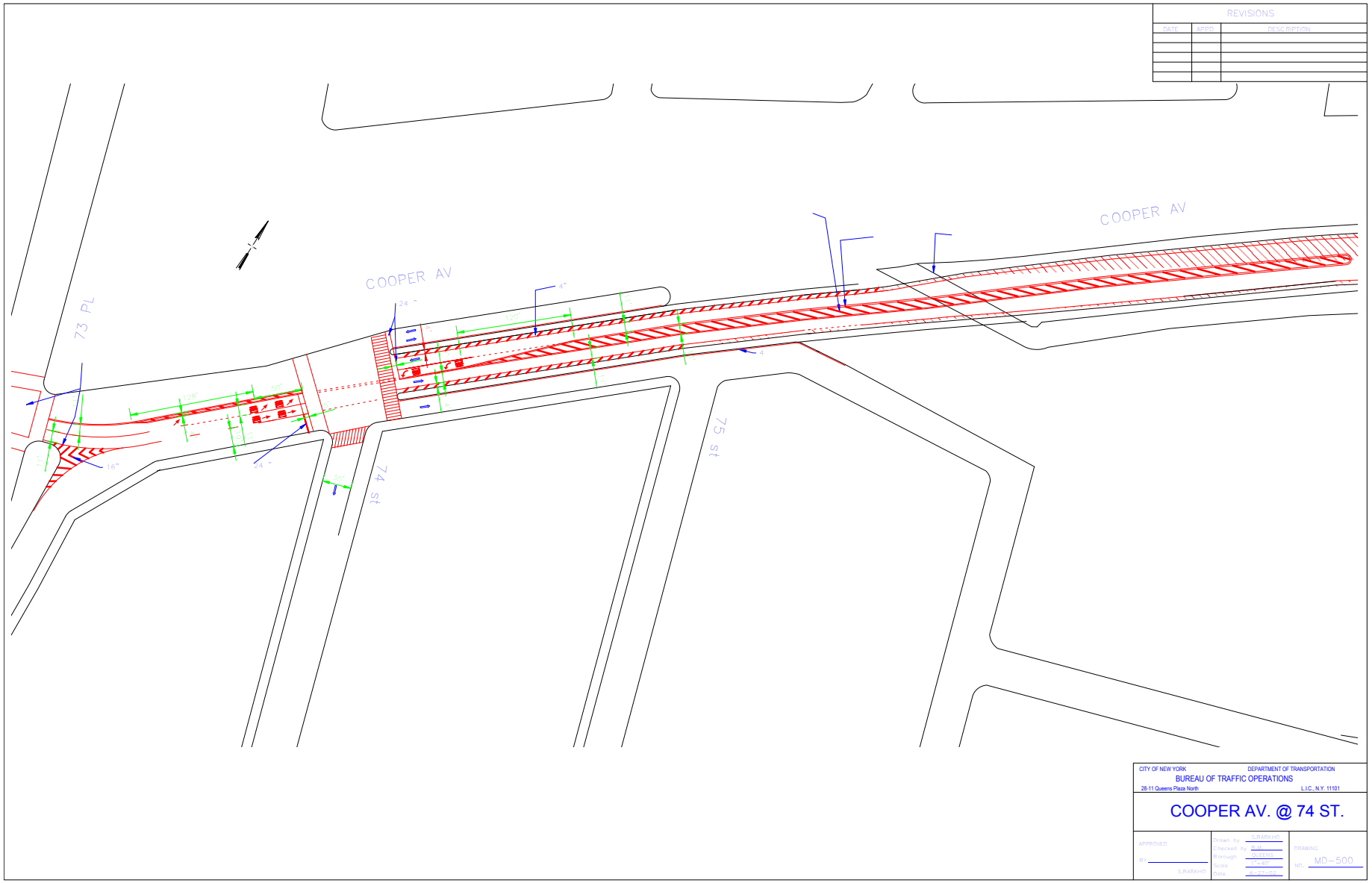


In 2000, the accident experience at this location reached a peak of 17 reportable accidents of which two involved a bicyclist. In 2001, total accidents decreased 41% (to 10 from 17), two of which involved a pedestrian. The improvement in accident occurrences in 2001 predates the treatments implemented in September 2002. However, this decline parallels the overall trends citywide. Accidents continued to decline slightly in 2003 and 2004. Accidents increased in 2005 to 11, two of which involved a pedestrian.

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.

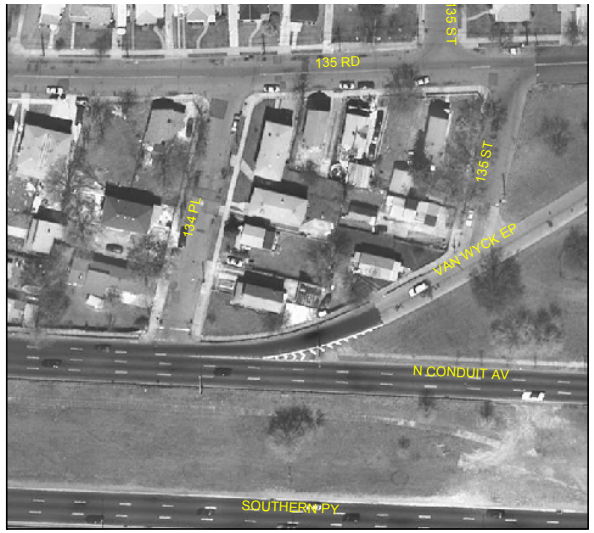
The improvements are shown on the following page.


REVISIONS
DATE
APPD.
DESCRIPTION
COOPER AV
COOPER AV
73 PL
74 st
75 st
CITY OF NEW YORK
DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC OPERATIONS
28-11 Queens Plaza North
L.I.C., N.Y. 11101
COOPER AV. @ 74 ST.
APPROVED
BY
TRAFFIC
Drawn by
Checked by
Borough
Scale
Date
DRAWING
NO.
MD-500

Van Wyck Expressway/ North Conduit Avenue

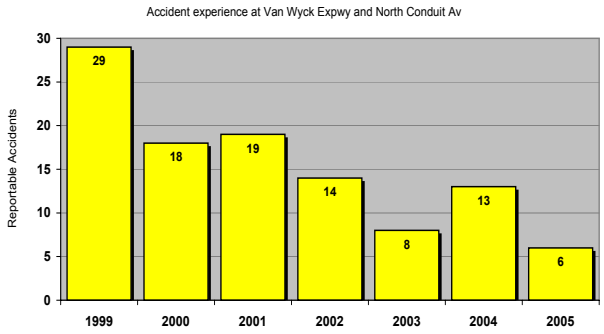
Description

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 and community concern.



Original configuration and roadway markings at merge

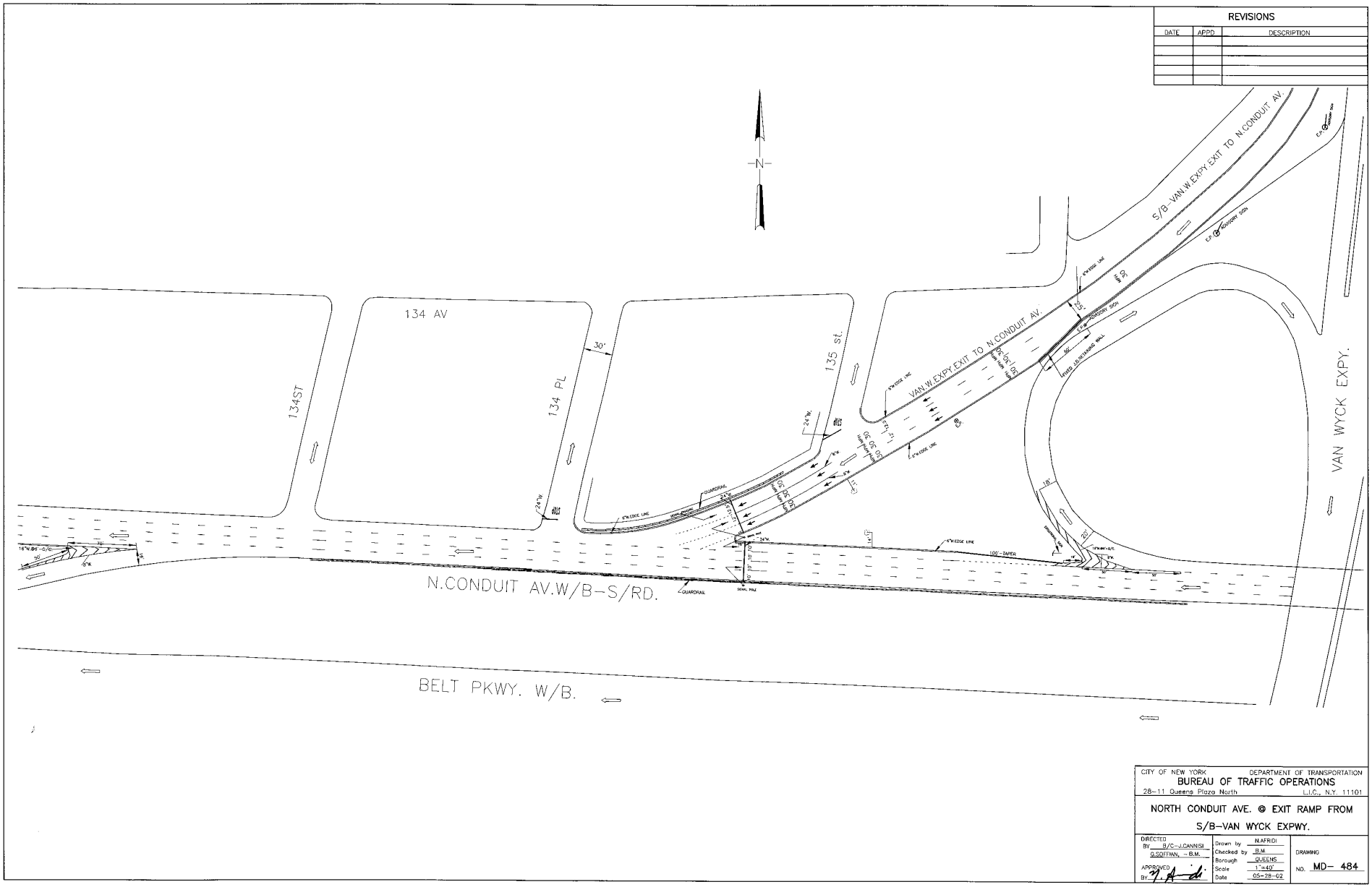
The accident experience at this intersection showed high numbers of reportable accidents in 1999, but then dropped 38%, to 18 in 2000 from 29 in 1999. While accidents levels remained similar in the following year, they began a fairly steady decline after 2001 and expect for an increase in 2004, accidents reached their lowest level of 6 in 2005.



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 installed 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.


REVISIONS
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134 AV
134ST
134 PL
135 st.
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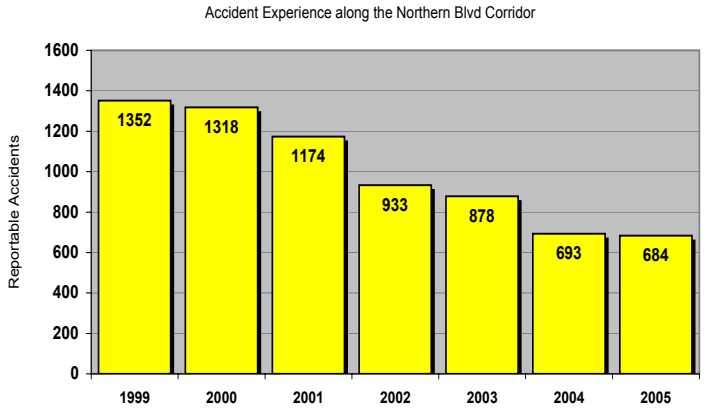
S/B-VAN.W.EXPY.EXIT TO N.CONDUIT AV.
VAN.W.EXPY.EXIT TO N.CONDUIT AV.
VAN WYCK EXPY.
N.CONDUIT AV.W/B-S/RD.
BELT PKWY. W/B.
GUARDRAIL
100'-TAPER
CITY OF NEW YORK
DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC OPERATIONS
28-11 Queens Plaza North
L.I.C., N.Y. 11101
NORTH CONDUIT AVE. @ EXIT RAMP FROM
S/B-VAN WYCK EXPWY.
DIRECTED BY B/C-J.CANNISI
G.SOFFIAN, -B.M.
APPROVED BY
Drawn by N.AFRIDI
Checked by B.M.
Borough QUEENS
Scale 1"=40'
Date 05-28-02
DRAWING NO. MD- 484

Northern Boulevard Corridor

Description

Northern Boulevard is a major arterial roadway that traverses the entire length of northern Queens 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.



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. 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.

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 1999, the corridor was ranked fourth in the city for highest accidents with a total of 1,352 reportable accidents. While 2000 started a downward trend and accidents decreased to 1,318, the ranking went up to third. Reportable accidents continue to decrease, and by 2005, there were as few as 684 on the entire corridor, a % decrease since 1999 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)

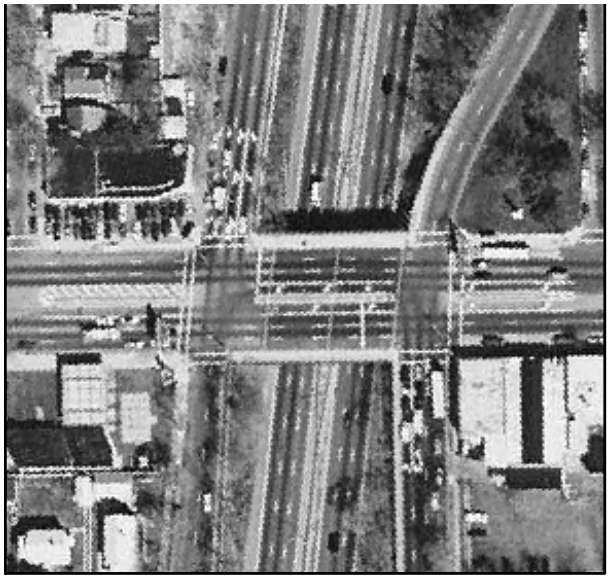
Since calendar year 2000, new signals have been installed at:

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

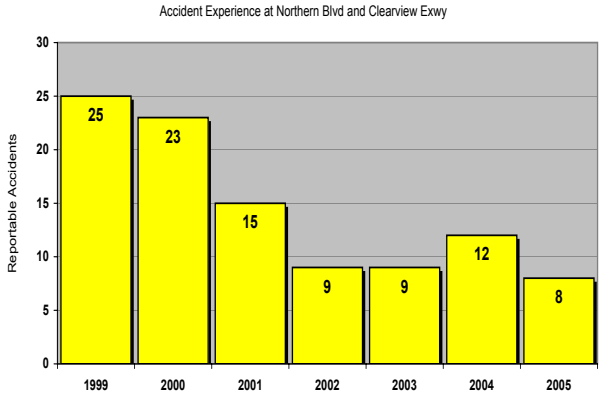
Beginning in June 2003, the Department began replacing the existing electro-

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 February 2006, 1,019 controllers were installed throughout the five boroughs. By borough, this includes 253 locations in Queens, 204 locations in Brooklyn 509 locations in Staten Island, 43 locations in the Bronx and 10 locations in Manhattan.

Northern Boulevard/ Clearview Expressway



Aerial view of original configuration and roadway markings



Description

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.

Since 1999, reportable accidents at this location have been declining. In that year, there were 25 reportable accidents. In 2000, accidents began to decrease slightly to 23, and in 2001, decreased even further to 15, one of which involved a pedestrian. By 2002, accidents decreased to nine, a 64% decline since 1999, and remained the same for 2003. Althought reportable accidents increased slightly to 12 in 2004, they decreased to their lowest level in 2005, a 68% decrease to eight from 25 in 1999. There have been no fatalities reported during the past seven years. This downward trend parallels the basic trend taking place citywide over this time period.

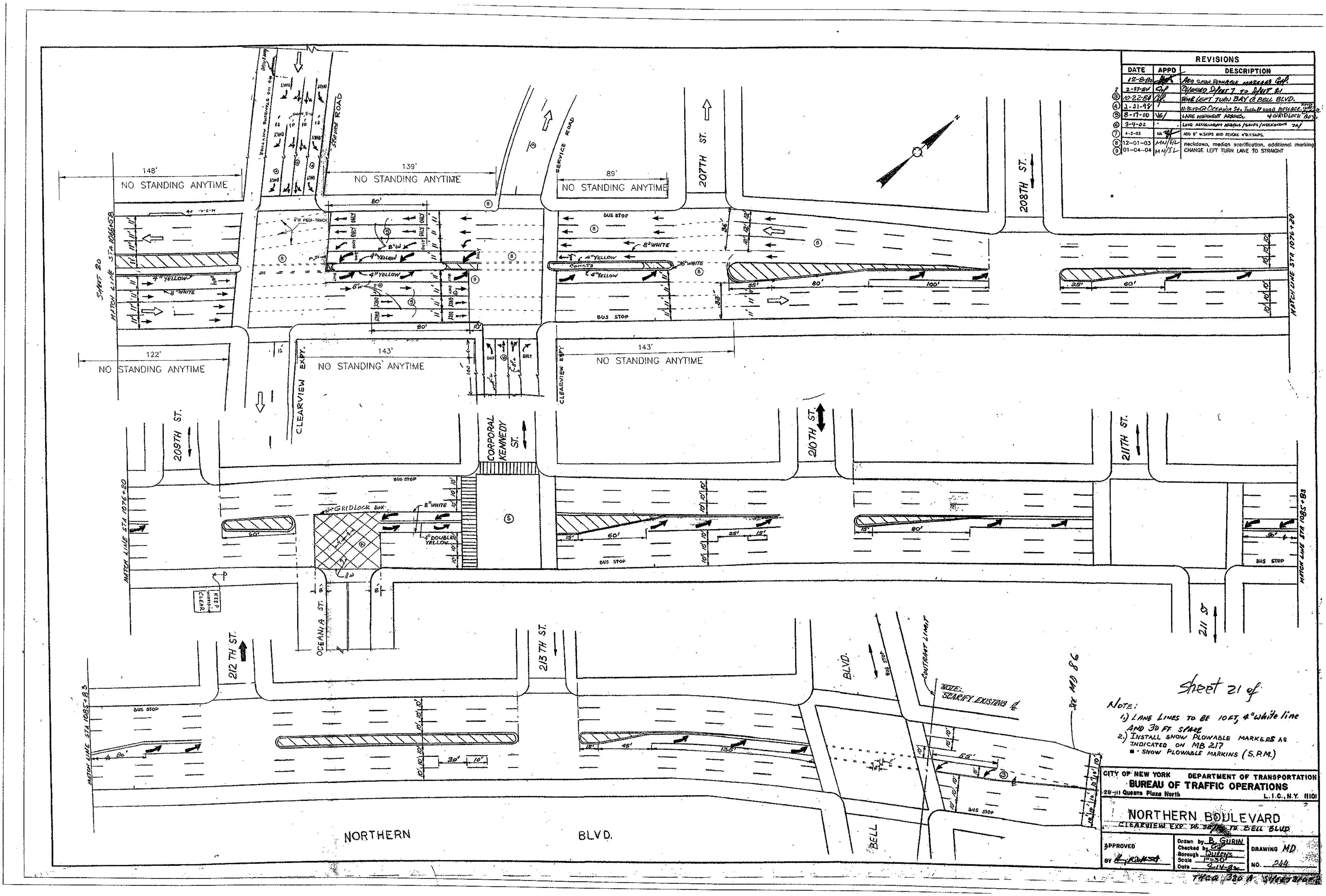
Improvements Implemented in Spring 2003

- 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.


REVISIONS
DATE
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DESCRIPTION
NO STANDING ANYTIME
148'
139'
89'
122'
143'
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207TH ST.
208TH ST.
SERVICE ROAD
CLEARVIEW EXPY.
BUS STOP
209TH ST.
CORPORAL KENNEDY ST.
210TH ST.
211TH ST.
GRIDLOCK BOX
OCEANIA ST.
212 TH ST.
213 TH ST.
BLVD.
BELL
NORTHERN
BLVD.
CONTRACT LIMIT
Sheet 21 of
CITY OF NEW YORK
DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC OPERATIONS
L.I.C., N.Y. 11101
NORTHERN BOULEVARD
APPROVED
DRAWING MD
NO. 244

Francis Lewis Boulevard

Between 120th Avenue/220th Street & 125th Avenue/232nd Street

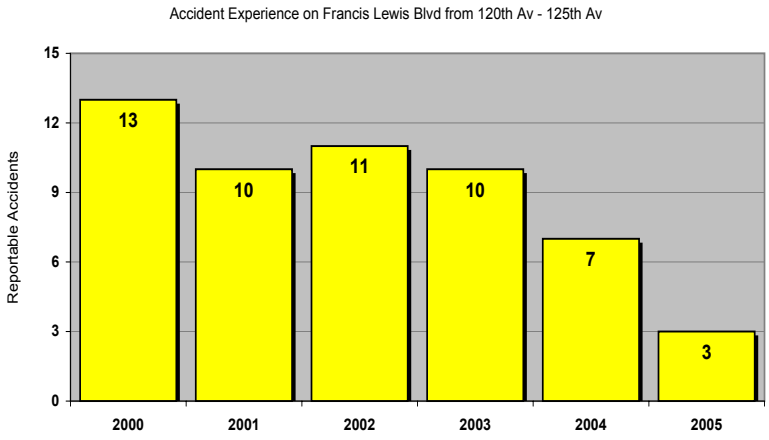
Description

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.

In 2000, accidents had reached a high of 13, but from 2001 to 2003, accidents leveled off between 10 and 11. In 2004, accidents decreased to seven and by 2005 they were as low as three. This downward trend can be attributed to the improvements made in 2003.

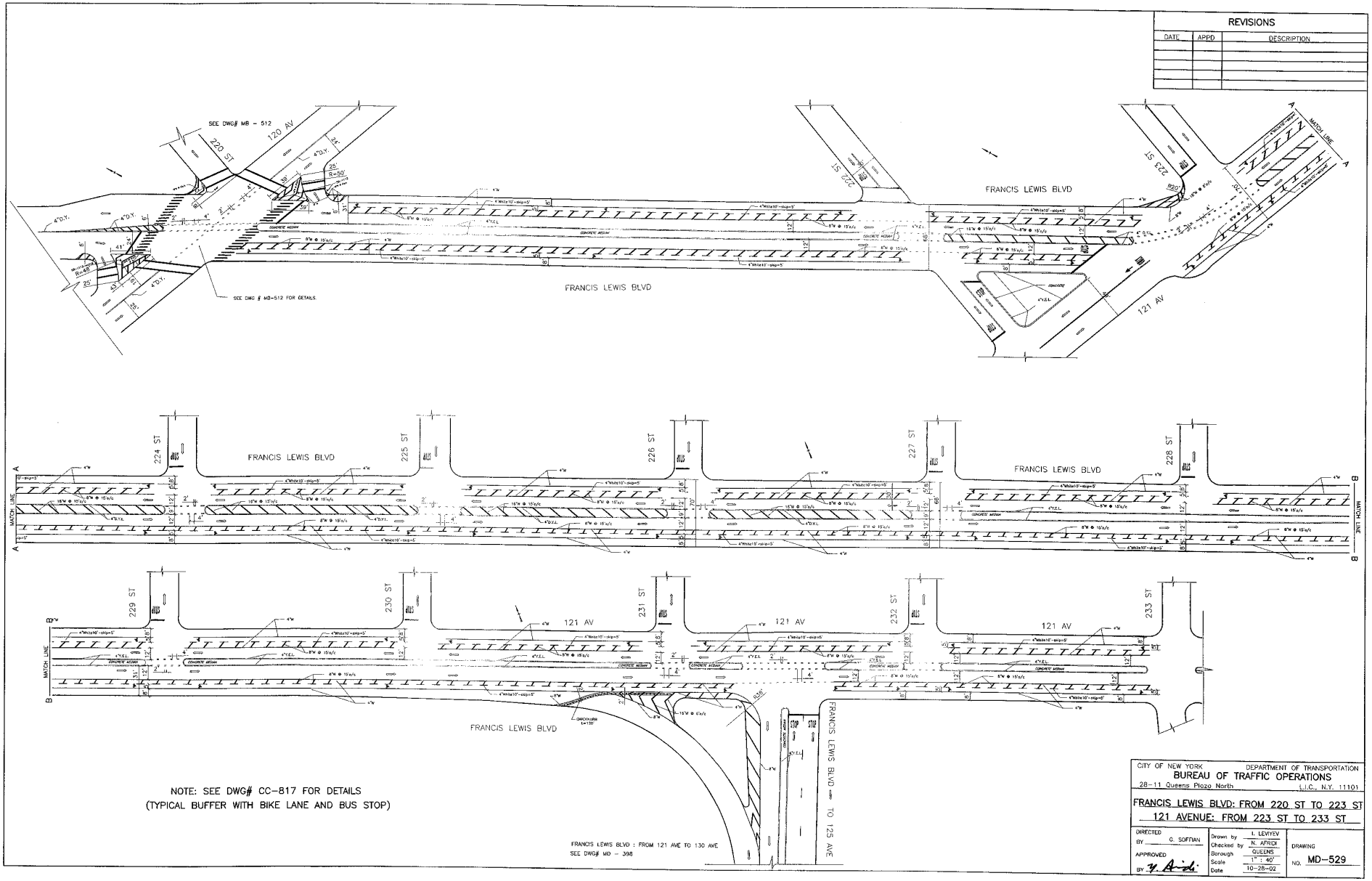
In addition, the Department believes this proactive approach to addressing the community concerns at this location will continue to improve safety along this stretch of Francis Lewis Boulevard.



Improvements Implemented in 2003

- In June 2003, new thermoplastic bicycle lane markings were installed on Francis Lewis Boulevard from 120th Avenue to 233rd Street. This improvement reduced 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 flexible bollards 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
DATE
APPD
DESCRIPTION
SEE DWG# MB - 512
220 ST
120 AV
FRANCIS LEWIS BLVD
SEE DWG # MB-512 FOR DETAILS.
222 ST
223 ST
121 AV
MATCH LINE
224 ST
225 ST
226 ST
227 ST
228 ST
229 ST
230 ST
231 ST
232 ST
233 ST
121 AV
FRANCIS LEWIS BLVD : FROM 121 AVE TO 130 AVE
SEE DWG# MD - 398
FRANCIS LEWIS BLVD TO 125 AVE
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. SOFFIAN
APPROVED BY Y. Aidi
Drawn by I. LEVIYEV
Checked by N. AFRIDI
Borough QUEENS
Scale 1" : 40'
Date 10-28-02
DRAWING NO. MD-529

Francis Lewis Boulevard

Between Springfield Boulevard & 120th Avenue/220th Street

Roadway markings were utilized to improve geometry of roadway, narrow the roadway into one travel lane and provide parking

Description

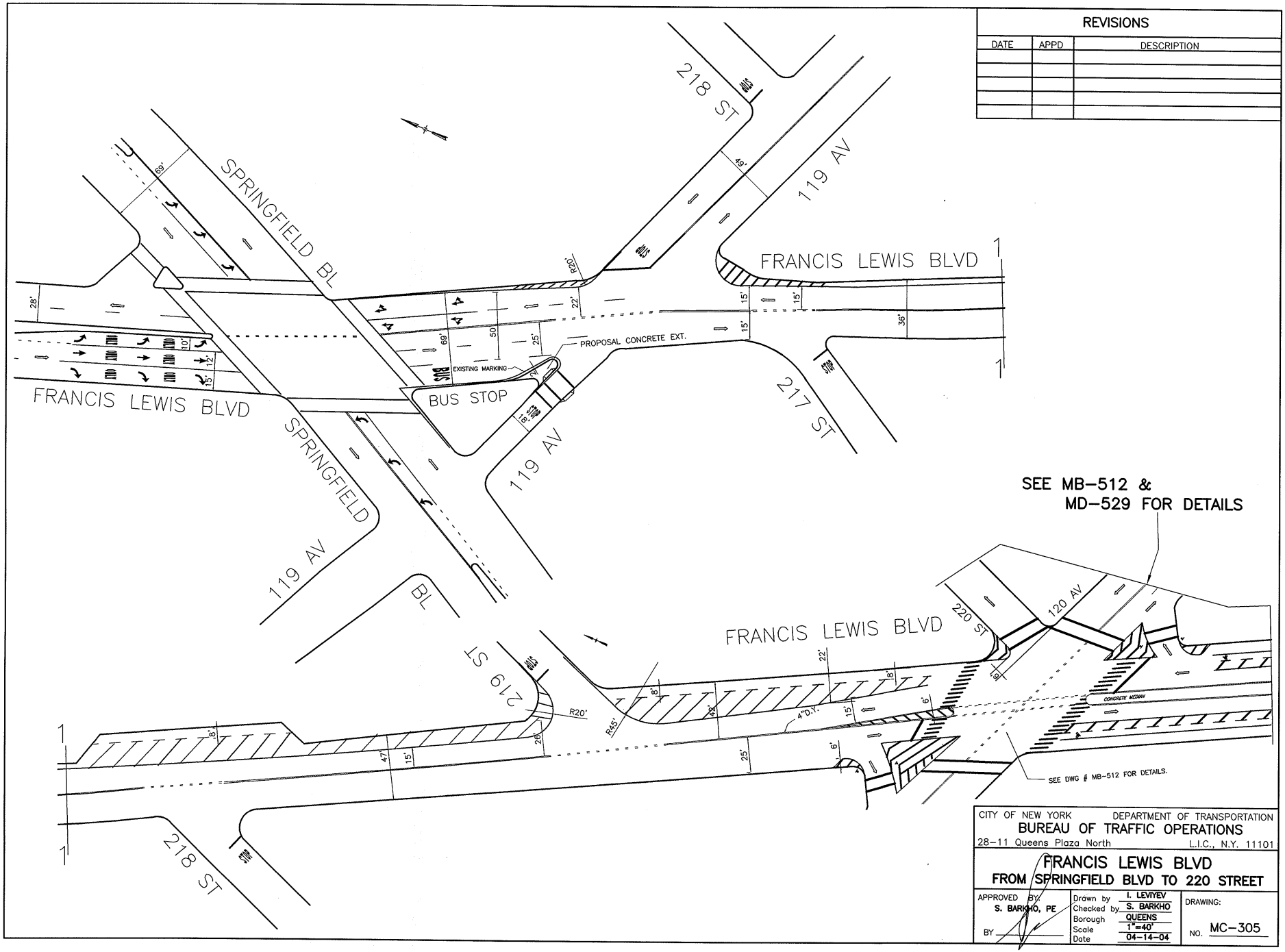
As indicated previously, Francis Lewis Boulevard is a major north-south thoroughfare through Queens, characterized by its wide width and unusual geometry with off-set intersections. Along this portion of Francis Lewis Boulevard, from Springfield Boulevard to 220th Street, the roadway width is uneven along the eastern curb, as well as lacking sidewalks. This section of Francis Lewis Boulevard also directly abuts the stretch of roadway where the Department completed a significant traffic calming project in 2003.

In 2004, at the request of elected officials and continuing community concern about the unsafe conditions and speeding issues, most notably the fact that vehicles would speed on wider areas and then try to get back into the flow of traffic. In addition, several offset intersections contributed to safety and operational concerns.

Improvements implemented in November 2005

Building upon the previous improvements instituted along Francis Lewis Boulevard, the Department developed a marking plan to address the geometric issues along this corridor. Through the use of roadway markings, the Department normalized traffic into a consistent single lane of travel between 218th Street and 120th Avenue. Portions of the excess roadway were also converted into designated parking spaces. In addition, cross-hatch markings were utilized at intersections to normalize their geometry and provide for safer turning movements.

The improvements are shown on the following page.


REVISIONS
DATE
APPD
DESCRIPTION
218 ST
119 AV
SPRINGFIELD BL
FRANCIS LEWIS BLVD
PROPOSAL CONCRETE EXT.
EXISTING MARKING
BUS STOP
217 ST
SPRINGFIELD
119 AV
BL
219 ST
220 ST
120 AV
CONCRETE MEDIAN
SEE MB-512 & MD-529 FOR DETAILS
SEE DWG # MB-512 FOR DETAILS.
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 SPRINGFIELD BLVD TO 220 STREET
APPROVED BY:
S. BARKHO, PE
BY
Drawn by I. LEVIYEV
Checked by S. BARKHO
Borough QUEENS
Scale 1"=40'
Date 04-14-04
DRAWING:
NO. MC-305

69TH STREET/GRAND AVENUE/ LONG ISLAND EXPRESSWAY

Aerial view of intersection

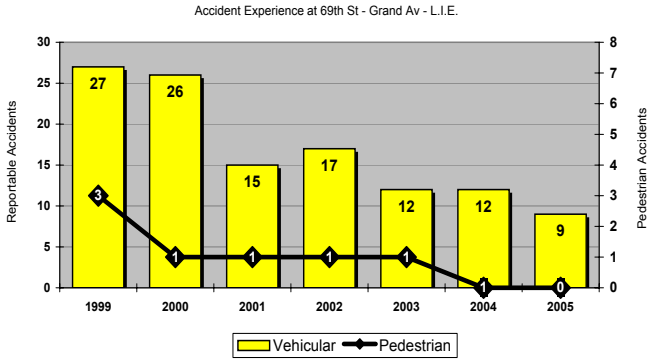
Description

The interchange of 69th Street, Grand Avenue and the Long Island Expressway (LIE) service roads forms a complex set of five closely spaced intersections. This configuration is due to the unusual roadway created by 69th Street and Grand Avenue crossing each other, the LIE, and the eastbound and westbound LIE service roads. Speeding, heavy truck traffic exiting the LIE and large numbers of vehicles using this complex intersection contributed to the safety concerns

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 signals, installing LED displays and improving 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.

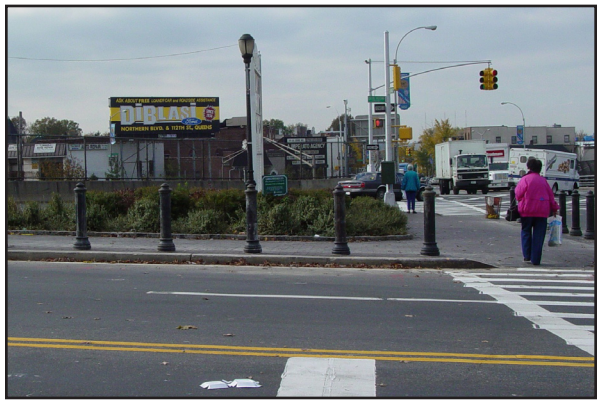
Overall, there has been a downward trend in reportable and pedestrian accidents at this location between 1999 and 2005. In 1999, there were a total of 30 accidents at this complex intersection, of which three were pedestrians. From 2000 to 2003 there was only one pedestrian accident per year at this location and vehicular accidents declined 54%, to 12 from 26. The improvements made in 2003 successfully brought the number of pedestrian accidents down to zero for both 2004 and 2005, and in 2005 the number of reportable accidents continued to decline to nine.



Improvements Implemented in October 2003

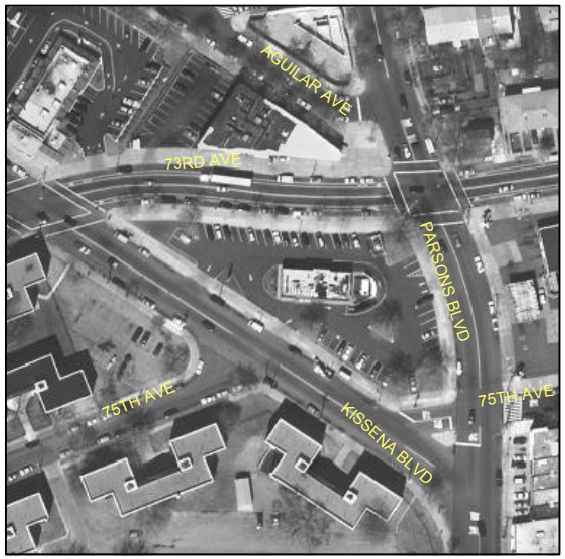
- Installed bollards at the north end of the traffic island at 69th Street and Grand Avenue.
- Placed a stop sign on the slip roadway of the LIE's eastbound service road at Grand Avenue.
- Posted "No Left Turn" signs on northbound 69th Street at Grand Avenue.
- Upgraded all pedestrian crosswalks to high 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.
- 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.

Roadway markings including peg-a-tracs



Detail of bollards and high visibility crosswalks

Parsons Boulevard/ Kissena Boulevard



Aerial view of the original configuration of the intersection

Description

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 explored ways to improve this intersection and has worked with NYPD's 109th Precinct 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 further addressed the concerns at this location.

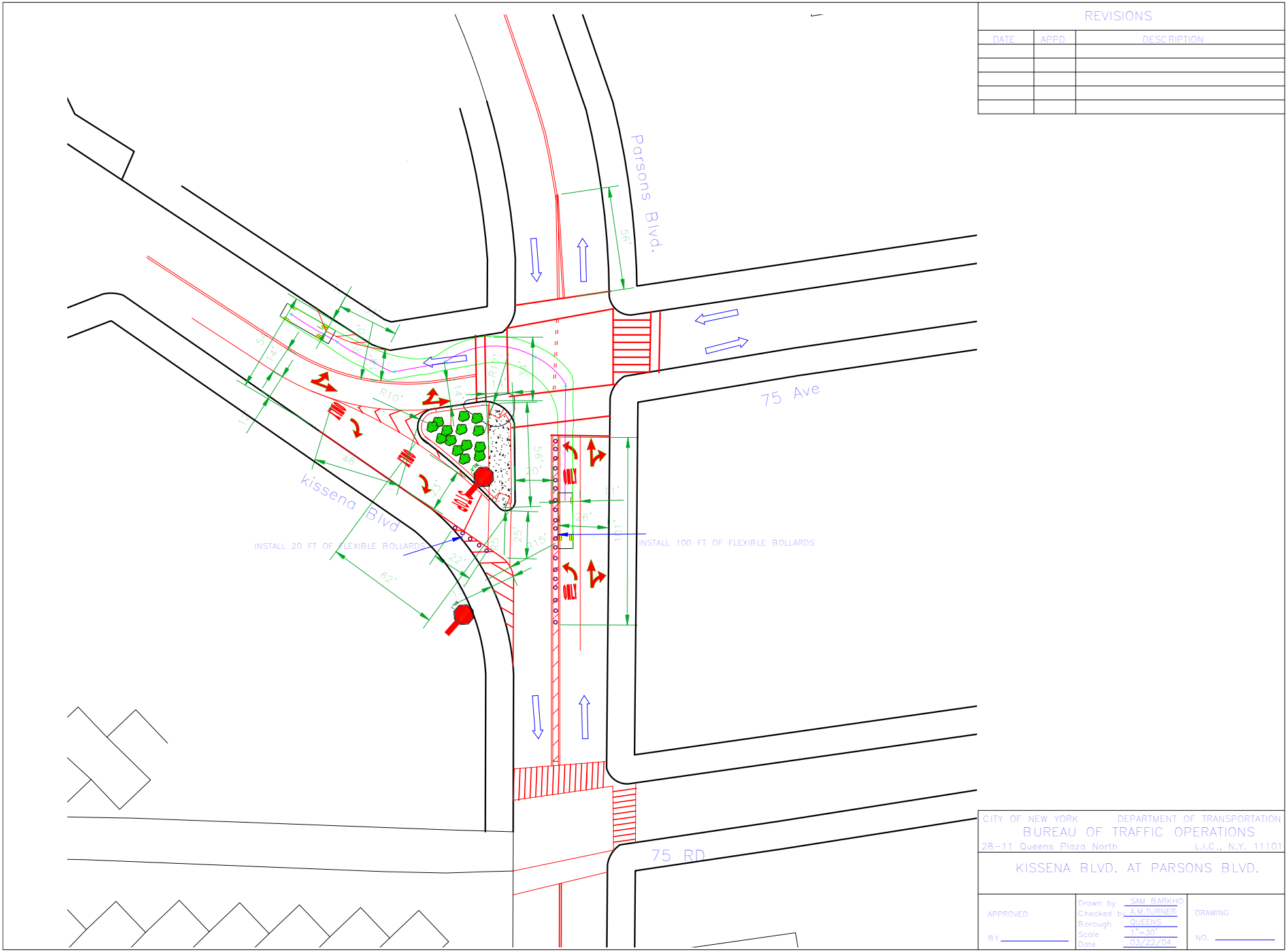
Improvements Implemented in July 2004

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 are now required 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.



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

KISSENA BLVD. AT PARSONS BLVD.

APPROVED
BY

Drawn by SAM BARKHO
Checked by A.M.TURNER
Borough QUEENS
Scale 1"=30'
Date 03/22/94

DRAWING
NO.

80TH AVENUE

Description

80th Avenue is a wide two-way roadway through the residential communities of Floral Park, Bellerose and Glen Oaks. The roadway, which runs from 251st Street and Union Turnpike east to the Nassau/ Queens County Line at Langdale Street has been frequently identified as problematic by the Police Department due to excessive speeding. In its original configuration, 80th Avenue was characterized by excessively wide lane widths and stop controls only on the minor approaches. Parking was permitted on both curbs and land use was entirely residential. In addition, a single speed reducer was installed in 1998 between 258th and 259th Streets.

The original configuration and roadway markings

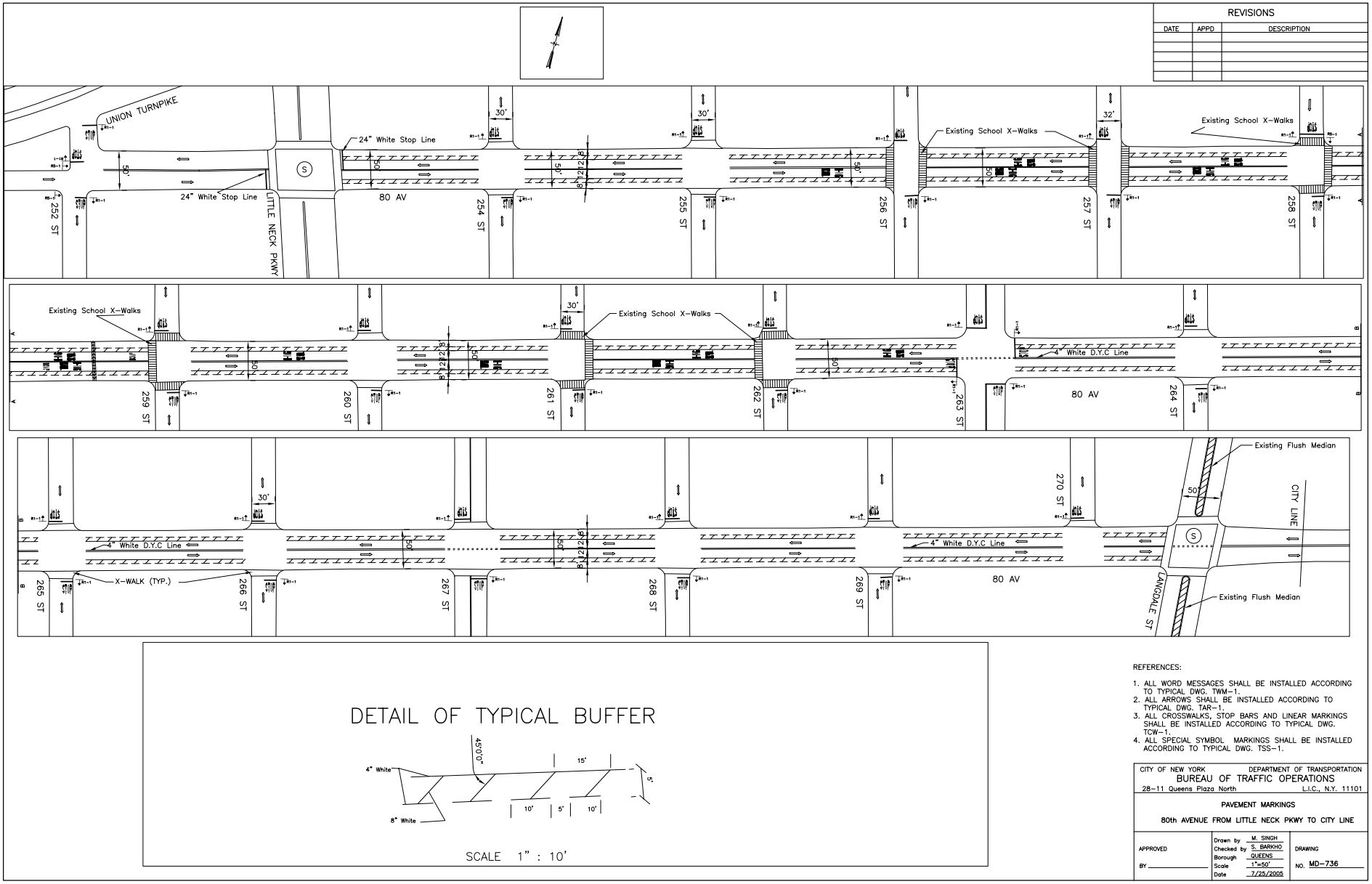
In response to a fatality that occurred on 80th Avenue and 260th Street in November 2003 and community and NYPD concerns about speeding, the Department investigated the feasibility of installing traffic calming measures along the corridor. The Department's investigation identified a speeding problem and a subsequent traffic calming program for the entire corridor was developed.

Roadway markings effectively narrowed 80th Avenue to one lane in each direction

Improvements Implemented in August 2005

- Installed a painted buffer in each direction adjacent to the parking lane to narrow the effective width of the roadway between Little Neck Parkway and Langdale Street, an 18-block segment.
- Stop messages and Stop lines were installed at each intersection approaching 80th Avenue within this roadway segment.

These improvements are shown on the following page.



REFERENCES:

1. ALL WORD MESSAGES SHALL BE INSTALLED ACCORDING TO TYPICAL DWG. TWM-1.
2. ALL ARROWS SHALL BE INSTALLED ACCORDING TO TYPICAL DWG. TAR-1.
3. ALL CROSSWALKS, STOP BARS AND LINEAR MARKINGS SHALL BE INSTALLED ACCORDING TO TYPICAL DWG. TCW-1.
4. ALL SPECIAL SYMBOL MARKINGS SHALL BE INSTALLED ACCORDING TO TYPICAL DWG. TSS-1.

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

PAVEMENT MARKINGS

80th AVENUE FROM LITTLE NECK PKWY TO CITY LINE

APPROVED
BY

Drawn by M. SINGH
Checked by S. BARKHO
Borough QUEENS
Scale 1"=50'
Date 7/25/2005

DRAWING NO. MD-736