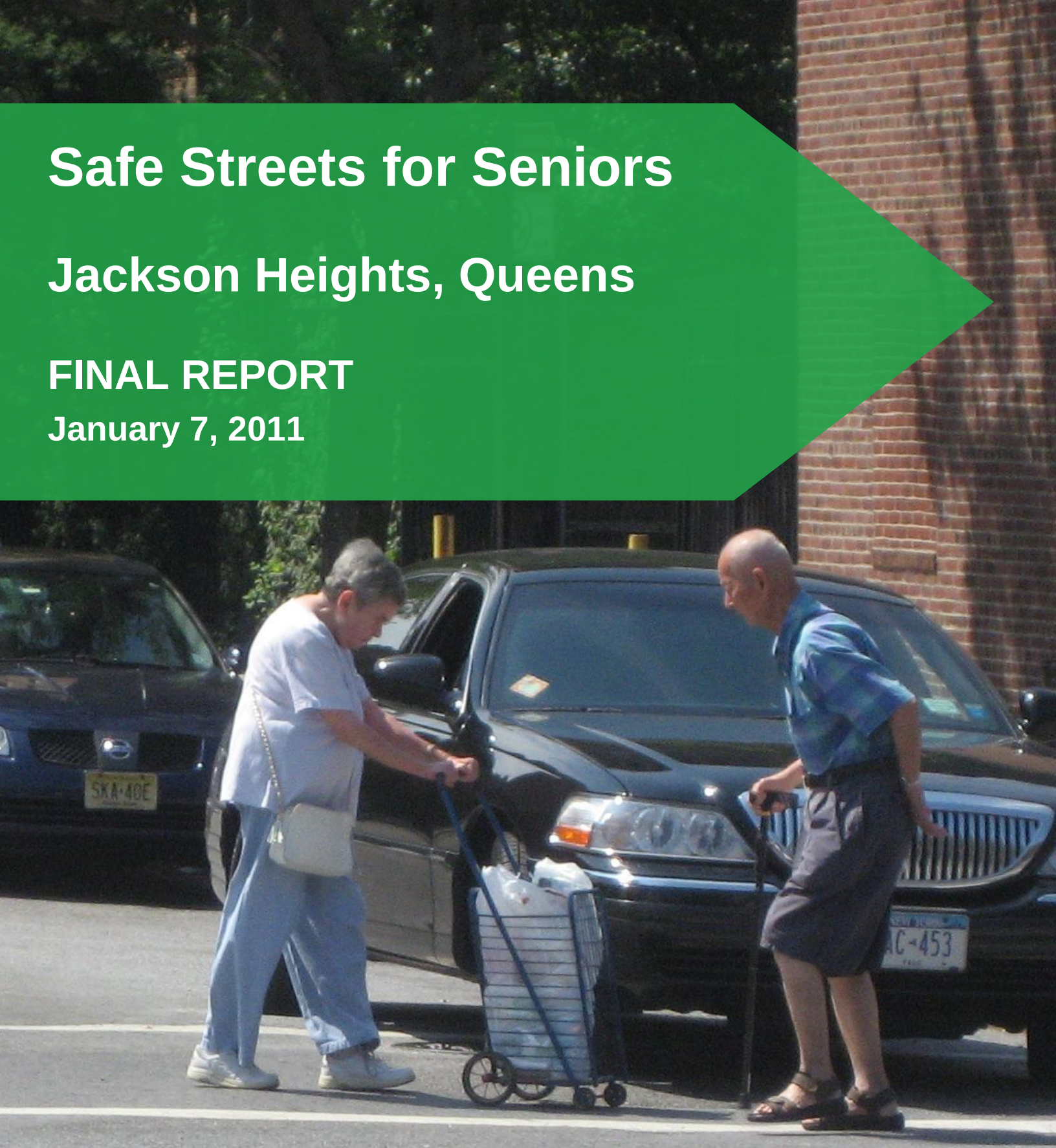
Safe Streets for Seniors

Jackson Heights, Queens

FINAL REPORT

January 7, 2011



NEW YORK CITY DOT

Janette Sadik-Khan, Commissioner

GPI

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Jackson Heights, Queens
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PROJECT DESCRIPTION

Since 1990 the number of pedestrian fatalities in New York City has decreased by 56%. Moreover, prior to 1950, pedestrians accounted for ¾ of all traffic fatalities and since then, that percentage has decreased to account for about ½ of all traffic fatalities. Despite these statistical improvements, pedestrians continue to be the largest at risk mode – with older adults more likely to suffer serious injuries or fatalities from traffic crashes than other pedestrians. The rate of pedestrian fatalities for every 100,000 persons in the City has decreased by nearly half since 1991 – to 2.0 from 3.8 – while the rate of senior pedestrian fatalities per 100,000 seniors has decreased even more sharply – to 6.6 from 13.1. Nevertheless, while seniors make up only 12% of the population in New York City, they still comprise 39% of pedestrian fatalities. The recognition of the disproportional representation of the senior population among severe pedestrian injuries and fatalities led to the development of the Department's **Safe Streets for Seniors** (SSS) program.

The purpose of this project is to address senior pedestrian safety issues at twenty-five **Senior Pedestrian Focus Areas** (SPFAs) in the five boroughs of New York City and to develop and implement mitigation measures to improve the safety of seniors and other pedestrians within the 25 SPFA areas. DOT identified SPFAs to include the top senior pedestrian crash (severe injury and fatality) areas within each borough. Four of the SPFAs are located in the Bronx, seven in Brooklyn, five in Queens, eight in Manhattan and one in Staten Island. The SPFAs have been selected based on the density of senior pedestrian crashes resulting in fatalities or severe injuries in a five-year period. DOT conducted in-house studies for five pilot SPFAs and is utilizing consultant services to perform a comprehensive study of pedestrian safety conditions at intersections and along corridors within twenty selected SPFAs.

The project evaluates the crash history and existing traffic conditions and controls (e.g., roadway geometry, signal timing) at selected intersections and corridors within each SPFA in order to develop short- and long-term measures to reduce pedestrian crashes specifically for seniors, and improve safety and traffic operations for all users. The consultant makes specific safety recommendations consisting of low-cost as well as capital engineering and design improvements for these twenty areas. In addition, the consultant conducts data analysis as needed, prepares engineering and design schematics and related services, as necessary, for capital improvements.

In this report, the Jackson Heights SPFA located in Queens has been studied, evaluated and addressed.

Background

BACKGROUND

Land-use in the Jackson Heights Study Area includes a mixture of commercial, retail and residential buildings. A majority of the commercial buildings are located along the corridors of Roosevelt Avenue and Northern Boulevard. These commercial buildings are usually multi-storied with ground level retail and other floors typically used for residential purposes. The residential buildings within the study area range from single story to apartment buildings that are about six to eight stories high. The study area is a densely populated section of Queens and is considered to be a multi-modal hub of daily traffic and transportation activities. Even on weekends, locations such as 72nd Street to 75th Street along Roosevelt Avenue are crowded with pedestrians and constrained with parking shortfalls due to retail activities as the area is a regional shopping center for the South Asian community.

The Jackson Heights Study Area encompasses a large amount of intermodal activity. The 74th Street subway station which is located on Roosevelt Avenue provides services to the E, F, R, M and # 7 subway lines. This is one of the busiest subway stations in Queens and attracts a significant number of peak hour passengers. The bus operation within the study area includes services for the Q66, Q49, Q47, Q45, Q53, Q33, Q32 and the Q29 bus lines. Pedestrian activity is also generated by several schools located within and around the study area. These schools include: IS 145, PS 212, PS 230, PS 69, PS 222, St. Joan of Arc and the Renaissance Charter School. In addition to these schools, senior pedestrian activity is generated by senior centers that are located in and adjacent to the boundary of the project study area. These senior centers include: the Jewish Association of Senior Aging, 31-36 88th Street Jackson Heights; the BFFY Catherine Sheridan Senior Center, 35-24 83rd Street Jackson Heights; and the Elmhurst Senior Center in Jackson Heights.

Thus, the Jackson Heights Study Area has all of the dominant elements typical of an urban environment including vehicular, bus, subway and pedestrian modes of transportation. During peak traffic hours, these multiple travel modes often compete with each other for the limited available right-of-way. This often conflicts with the vulnerable senior pedestrians that are utilizing the crosswalks and sidewalks in their travels. This project will provide recommendations to improve senior pedestrian safety within the study area.

EXHIBIT 1 – ROADWAY MAP

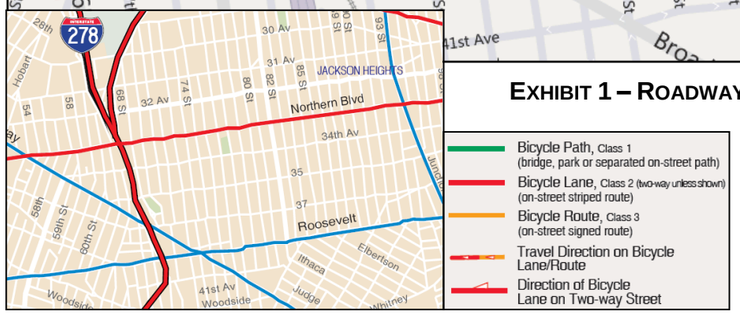


EXHIBIT 2 – TRUCK MAP

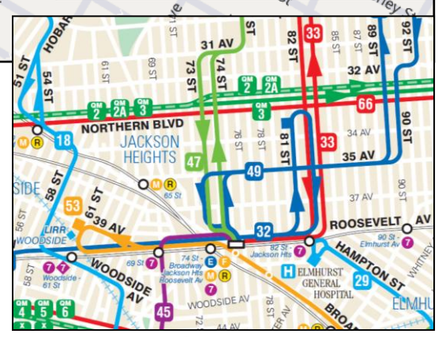


EXHIBIT 3 – TRANSIT MAP

EXHIBIT 4 – BICYCLE ROUTE MAP

EXHIBIT 5 – PEDESTRIAN CRASH STATISTICS (2001-2006)

EXISTING CONDITIONS

The Jackson Heights Senior Pedestrian Focus Study Area was selected for senior pedestrian improvements because it was identified as having a history of senior pedestrian crashes. This study area includes six east-west roadway segments: 32nd Avenue, Northern Boulevard, 34th Avenue, 35th Avenue, 37th Avenue and Roosevelt Avenue. The study area also includes a small segment of Broadway which is sandwiched between 37th Avenue and Roosevelt Avenue. All of these roadways have different roadway characteristics, with Northern Boulevard, 37th Avenue, Broadway and Roosevelt Avenue classified as major arterials and 32nd Avenue, 34th Avenue and 35th Avenue operating as local residential roadways. Each roadway is located within or in close proximity to urban activity centers and major traffic generators. Exhibits 1, 2, 3 and 4 provide area-wide bus, subway and designated truck route information, as well as a roadway map and bicycle map of the study area. Exhibit 5 provides the statistics for senior pedestrian crashes occurring within the study area between 2001 and 2006.

In order to determine, evaluate and recommend measures associated with the safety issues faced by senior pedestrians, numerous site visits and interviews with senior pedestrians were conducted. The issues that were repeatedly observed during field visits and noted during these interviews are listed below:

- Insufficient pedestrian crossing time
- Faded or missing crosswalk striping
- Turning vehicles not yielding to pedestrians with right-of-way at intersections
- Speeding motorists
- Insufficient pedestrian signs
- Sidewalk and crosswalk obstructions
- Poor drainage and ponding
- Missing or non-standard ADA pedestrian ramps
- Potholes and poor surface conditions at crosswalks

A photo log of the site visit is included in Appendix A, while the field investigation forms are presented in Appendix B.

It was noted during the site visits that these operational and geometric issues, coupled with high traffic volumes and significantly high senior pedestrian activity, has made it difficult for these pedestrians to safely cross various roadways within the study area. A description of these observations and findings are discussed below with appropriate safety recommendations.

In addition to the recommendations proposed in this SPFA report which are aimed at senior pedestrian safety improvements, the NYCDOT is concurrently involved in a similar project which is focused on improving pedestrian safety in

the immediate vicinity of 135 “priority” elementary and middle schools located throughout the five boroughs of New York City. Some of these “priority” schools are located within the SPFA projects and thus, the recommendations developed under the school safety projects have also been shown in the ***“Illustrating the Solution”*** section of this report. It is important to note that, in view of the senior pedestrian requirements at some of the common locations, the recommendations made under the SPFA project may further enhance the recommendations proposed under the school safety project.

Research has indicated that the Jackson Heights SPFA has two such “priority” school safety projects, as listed below:

- I.S. 145 (Joseph Pulitzer School), Queens
- St Joan of Arc School, Queens

  (School Safety Engineering Project PIN# 84100MBTR144)

A complete copy of the priority school report for these schools is readily available at the following NYCDOT website:

http://home2.nyc.gov/html/dot/html/safety/saferoutes.shtml

Copies of the recommendations proposed in these school safety reports have been included in Appendix F of this report for reference. These recommendations, coupled with the SPFA recommendations, will present a complete picture of the recommendations within the study area.

RECOMMENDATIONS

32nd Avenue


32nd Avenue (looking west)
Photo No. 1

The study segment of 32nd Avenue is approximately 0.89 miles long and intersects 19 cross streets. Within the study segment, 32nd Avenue is a two-way arterial with one moving lane in each direction and a parking lane along each curb side (Photo No. 1). This corridor provides east-west access, with parking generally permitted on both sides of the arterial within the study area. The cross streets that intersect 32nd Avenue are one-way streets and are mainly categorized as local neighborhood roadways providing north-south access. While 32nd Avenue does not provide bus services or a through-truck route, the cross streets provide bus service for the Q33, Q47 and Q49 lines. This study segment of 32nd Avenue is generally located adjacent to a residential neighborhood with public schools located at either end of the study area.

The field observations and evaluation of traffic data made along this corridor have resulted in various corridor-wide, as well as localized intersection-specific recommendations. These recommendations are shown in the Site 1 illustrations and are described below.

32nd Avenue Corridor-Wide Recommendations

- Install high visibility crosswalks as well as advanced stop bars at key intersections.
- Resurface various sidewalk locations to provide a better and more level surface.
- Install oversized street name signs at key intersecting roadways.

Intersection-Specific Recommendations

The intersection-specific recommendations are in addition to some of the above-noted corridor-wide recommendations.

32nd Avenue between 70th and 75th Streets


32nd Avenue and 71st Street (looking west)

Photo No. 2

- In order to enhance pedestrian safety by calming traffic operations (reducing vehicular speed), it is recommended that a 6 foot wide painted, hatched median island be installed on 32nd Avenue between 70th and 75th Streets. During the initial field visit, higher vehicular speeds were observed along this section of 32nd Avenue (Photo No. 2). These increased vehicular speeds were attributed to the slightly wider roadway width available within this segment, as compared to other roadway segments along 32nd Avenue. As a result of this initial observation, spot speed surveys were conducted during the morning and midday peak hours. These survey results showed higher peak hour vehicular speeds, further confirming that non-peak hour speeds could be even higher, thus, resulting in the above-noted recommendation. Backup spot speed survey data can be found in Appendix E.

32nd Avenue and 86th Street


32nd Avenue and 86th Street (looking northeast)

Photo No. 3

- Under the present condition, this intersection is unsignalized with no crosswalk provisions on 32nd Avenue (Photo No. 3). Consistent with past practice, it is not recommended that crosswalks be installed on 32nd Avenue at this intersection; however, it is recommended that positive guidance be provided to pedestrians so that they are directed to cross 32nd Avenue via the adjacent signalized intersections. It is recommended that pedestrian signs be installed, including "No Pedestrian Crossing" (MUTCD: R9-3a) signs, supplemented with the directional "Use Crosswalk" (with appropriate arrow) (MUTCD: R9-3b) signs, to discourage pedestrians from crossing at this unsignalized intersection. These signs should be appropriately located facing

pedestrians on the intersection corners so that pedestrians are guided to cross 32nd Avenue via the adjacent signalized intersections.

MUTCD: R9-3a

MUTCD: R9-3b

Northern Boulevard


Northern Boulevard (looking east)

Photo No. 4

The study segment of Northern Boulevard is located one block south of 32nd Avenue. It is approximately 0.89 miles long and intersects the same 19 north-south one-way cross streets that intersect 32nd Avenue. Within the study segment, Northern Boulevard is a major two-way arterial with two moving lanes in each direction and a metered parking lane along each curb side (Photo No. 4). This corridor provides east-west access. As per the typical one-way side street setup, left turn lanes (bays) are provided along Northern Boulevard at alternate blocks and, where possible, the traffic is separated by a hatched median island. Northern Boulevard provides a designated through-truck route and bus services for the Q66 bus line. The cross streets provide bus services for the Q32, Q33, Q47 and Q49 lines. Within the study segment, Northern Boulevard is a major east-west arterial with a broad range of retail as well as residential land-use activities that attracts a significant number of pedestrians, including senior citizens.

The field observations and evaluation of traffic data made within this corridor have resulted in various corridor-wide recommendations. These recommendations are shown in the Site 2 illustrations and are described below.

Northern Boulevard Corridor-Wide Recommendations

- Install high visibility crosswalks and advanced stop bars at various signalized intersections.
- Install oversized street name signs at key intersecting roadways.

It is important to note that there are two intersections within this corridor for which pedestrian improvements are also being recommended under the I.S. 145 School Safety Engineering Project. These recommendations are presented in Appendix F.

34th Avenue

The study segment of 34th Avenue is approximately 0.20 miles long and intersects five cross streets. Within the study segment, 34th Avenue is a two-way local roadway with one moving lane, a bicycle lane and a curb side parking lane in each direction (Photo No. 5). This corridor provides east-west access and the traffic is separated by a continuous raised median island. The cross streets that intersect 34th Avenue are one-way streets and are mainly categorized as local neighborhood roadways providing north-south access. While 34th Avenue does not provide any transit or through-truck route services, the cross streets do provide bus services for the Q32 and Q33 lines. This corridor is located adjacent to a residential land use, and is mainly surrounded by four- to seven-story apartment buildings.

The field observations and evaluation of traffic data made within this corridor have resulted in the following intersection-specific recommendations. These recommendations are shown in the Site 3 illustrations.

Intersection-Specific Recommendations

34th Avenue at 81st Street and 82nd Street

- It is recommended that oversized street name signs be installed at the 81st and 82nd Street intersections with 34th Avenue.

35th Avenue


35th Avenue (looking east)
Photo No. 6

The study segment of 35th Avenue is located one block south of 34th Avenue. The segment is approximately 0.20 miles long and intersects the same five north-south one-way cross streets intersected by 34th Avenue. Within the study segment, 35th Avenue is a two-way local roadway with one moving lane in each direction and a parking lane along each curb (Photo No. 6). This corridor provides east-west access. The cross streets that intersect 35th Avenue are one-way streets and are mainly categorized as local neighborhood roadways providing north-south access. The study segment of 35th Avenue provides services to the Q49 bus line and the cross streets provide bus services for the Q32 and Q33 lines. The study segment is located adjacent to a residential land use, and is mainly surrounded by six- to seven-story apartment buildings.

The field observations and traffic data evaluation made within this corridor have resulted in various corridor-wide, as well as localized intersection-specific recommendations. These recommendations are shown in the Site 4 illustrations and are described below.

35th Avenue Corridor-Wide Recommendations

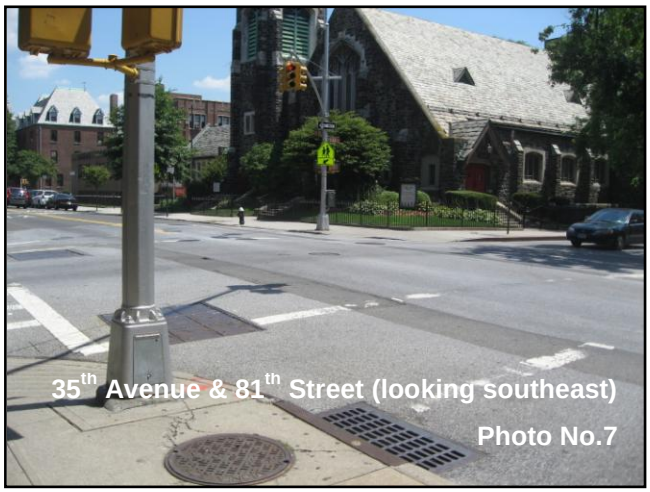
- Install neck-downs at key intersections to reduce pedestrian crossing time. Construction of these neck-downs will be by others under the school safety projects (see Appendix F for details). Installation of neck-downs will also require extending the existing far side bus stops on 35th Avenue at the following two intersections: 35th Avenue and 80th Street, and 35th Avenue and 84th Street. This will require the removal of one parking space from the existing curb-side parking adjacent to the bus-stop.
- Install new ADA (Americans with Disabilities Act) compliant pedestrian ramps at proposed neck-down locations.

Intersection-Specific Recommendations

The intersection-specific recommendations are in addition to some of the above-noted corridor-wide recommendations.

35th Avenue and 81st Streets

- It is recommended that the northbound nearside bus stop on 81st Street be moved to the far side and that one parking space be removed in advance of the south crosswalk on the east side of the street by installing a "No Standing Any Time" sign. These recommendations are mainly proposed in order to make pedestrians more visible to approaching drivers. Under the present conditions, pedestrians crossing the side streets are often hidden behind parked cars and stopped buses at this intersection (Photo No. 7).


35th Avenue & 81th Street (looking southeast)
Photo No.7

35th Avenue and 84th Street

- It is recommended that new high visibility crosswalks be installed on all approaches to this intersection (Photo No. 8).


35th Avenue & 84th Street (looking east)
Photo No.8

It should be noted that some of the intersections within this corridor are also recommended for pedestrian improvements under the St. Joan of Arc, Queens, School Safety Engineering Project.

37th Avenue

The study segment of 37th Avenue is approximately 0.82 miles long and intersects 18 north-south one-way cross streets. Within the study segment, 37th Avenue is a two-way roadway with one moving lane in each direction and a parking lane along each curb (Photo No. 9). This corridor provides east-west access. The cross streets that intersect 37th Avenue are one-way streets and are mainly categorized as local neighborhood roadways providing north-south access. While 37th Avenue does not provide transit or through-truck route services, the cross streets provide service to the Q47, Q49, Q32, Q33 and Q53 bus lines. The study segment is located adjacent to a mixed residential and retail land use area. It is predominantly surrounded by apartment buildings whose ground floors are mainly utilized by neighborhood shops, restaurants and other retail activity.

The field observations and traffic data evaluation made within this corridor have resulted in various corridor-wide, as well as localized intersection-specific recommendations. These recommendations are shown in the Site 5 illustrations and are described below.

37th Avenue Corridor-Wide Recommendations

- Install neck-downs at key intersections to reduce pedestrian crossing time. Construction of these neck-downs will be by others under the school safety projects (see Appendix F for details).
- Install oversized street name signs at key intersecting roadways.
- Install new ADA-compliant pedestrian ramps at proposed neck-down locations.

Intersection-Specific Recommendations

The intersection-specific recommendations are in addition to some of the above-noted corridor-wide recommendations.

37th Avenue and 82nd Streets

- Due to the large number of retail stores in this area, pedestrian activity is very prominent. Southbound buses Q32 and Q33 stop at the nearside corner on 82nd Street at 37th Avenue. It is recommended that the location of this bus stop be moved to the far side corner. This recommendation is mainly proposed to improve pedestrian visibility while crossing the side street (Photo No. 10).

37th Avenue & 82nd Street (looking northeast)
Photo No.10

It should be noted that some of the intersections within this corridor are also recommended for pedestrian improvements under the St. Joan of Arc, Queens, School Safety Engineering Project

Roosevelt Avenue


Roosevelt Avenue (looking east)

Photo No. 11

The study segment of Roosevelt Avenue is approximately 0.90 miles long and intersects 19 north-south one-way cross streets. Within the study segment, Roosevelt Avenue is a two-way arterial with one moving lane in each direction and a metered parking lane along each curb side (Photo No. 11). This corridor provides east-west access. Roosevelt Avenue is a designated local truck route and provides bus services to the Q53, Q32, Q33, Q45, Q49 and Q47 bus lines. This corridor also has elevated and underground subway lines (7, E, F, R, and M) that provide convenient services to Manhattan and Brooklyn. The sidewalks along this roadway have steel columns at frequent intervals to support the elevated subway line running above Roosevelt Avenue. The 74th Street subway station located on Roosevelt Avenue is one of the busiest subway stations in Queens and it attracts a significant number of subway passengers. Roosevelt Avenue is a busy commercial strip with a broad range of retail activities that attract a significant number of pedestrians including senior citizens. It also supports residential apartment buildings and can be considered a densely populated area. It is one of the more heavily travelled roadways within the study area.

The field observations and traffic data evaluation made within this corridor have resulted in various corridor-wide recommendations and intersection-specific recommendations. These recommendations are shown in the Site 6 illustrations and are described below.

Roosevelt Avenue Corridor-Wide Recommendations

- Install high visibility crosswalks, as well as advanced stop bars at various intersections.
- Install “Yield to Pedestrian” signs with specific arrows and positioning at various intersections.
- Install new ADA-compliant pedestrian ramps at various intersections.
- Install “No Pedestrian Crossing” (MUTCD: R9-3a) signs, supplemented with the directional “Use Crosswalk” with appropriate arrow (MUTCD: R9-3b) signs to discourage pedestrians from crossing at unsignalized intersections. These signs should be appropriately located facing pedestrians on the intersection corners so that pedestrians are guided to

cross Roosevelt Avenue from the adjacent signalized intersections (where it is safe to cross). In addition, the existing crosswalks crossing Roosevelt Avenue at any unsignalized intersection should be removed from the study segment.

Intersection-Specific Recommendations

The intersection-specific recommendations are in addition to some of the above-noted corridor-wide recommendations.

Roosevelt Avenue/39th Avenue and 65th Street/65thPlace

- Install Do Not Block Intersection pavement markings at this intersection. It is also recommended that the uneven intersection crosswalks be resurfaced (specifically, the four crosswalks on Roosevelt Avenue and 65th Street).

Roosevelt Avenue and 73rd Street

- Remove one parking space in advance of the west and south crosswalks by installing "No Standing Any Time" signs. These recommendations are proposed to make pedestrians more visible to approaching drivers.
- Close off the north leg of the intersection (73rd Street) between Roosevelt Avenue and Broadway. This will be a full street closure with concrete. This recommendation is proposed in order to improve pedestrian safety at this location, which has both bus and subway stops nearby. This measure will also reduce the traffic activity and pedestrian-vehicular conflicts at this intersection.

Roosevelt Avenue and Broadway/74th Street

- Install Do Not Block Intersection pavement markings at these closely spaced intersections (Photo No. 12).

Roosevelt Avenue & Broadway (looking southeast) Photo No. 12

Roosevelt Avenue and 75th Street

- It is recommended that one parking space be removed in advance of the east and west crosswalks by installing "No Standing Any Time" signs. These recommendations are mainly proposed to make pedestrians more visible to approaching drivers (Photo No. 13).

Roosevelt Avenue & 75th Street (north crosswalk)

Photo No. 13

Roosevelt Avenue and 77th Street

Roosevelt Avenue & 77th Street (south crosswalk)

Photo No. 14

- It is recommended that one parking space be removed in advance of the west crosswalk by installing a "No Standing Any Time" sign (Photo No. 14).

Other Key Locations

Broadway and 72nd Street

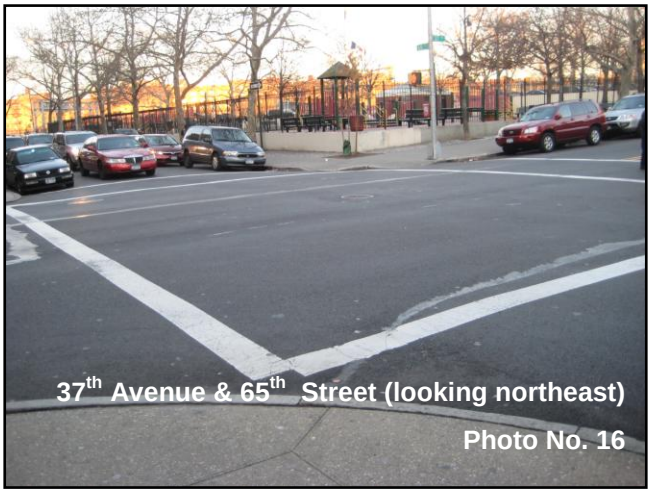
- This is a four-legged intersection that is surrounded by residential buildings and restaurants (Photo No. 15). During field visits, a sizable number of pedestrians were observed crossing Broadway at this unsignalized intersection. The NYCDOT, however, has since installed a traffic signal at this location to increase pedestrian safety. It is recommended that new pedestrian ramps be constructed on the southeast and northeast corners of this intersection to facilitate the Broadway pedestrian crossings. These recommendations are shown on the Site 7 illustration.

Broadway & 72nd Street (looking northwest)

Photo No. 15

37th Avenue and 65th Street

- This is a four-legged intersection that is surrounded by multi-story residential buildings and a playground (Photo No. 16). At this intersection, the installation of high visibility crosswalks is warranted on all four approaches. It is also recommended that standard 24 inch wide stop bars be installed on the west, east and north legs of this intersection. A new pedestrian ramp should also be constructed on the southeast corner of this intersection to facilitate the 37th Street pedestrian crossings. These recommendations are shown on the Site 7 illustration.



37th Avenue & 65th Street (looking northeast)

Photo No. 16

It is anticipated that these proposed recommendations, when implemented within each corridor of the Jackson Heights SPFA, will help improve senior pedestrian safety within the study area.

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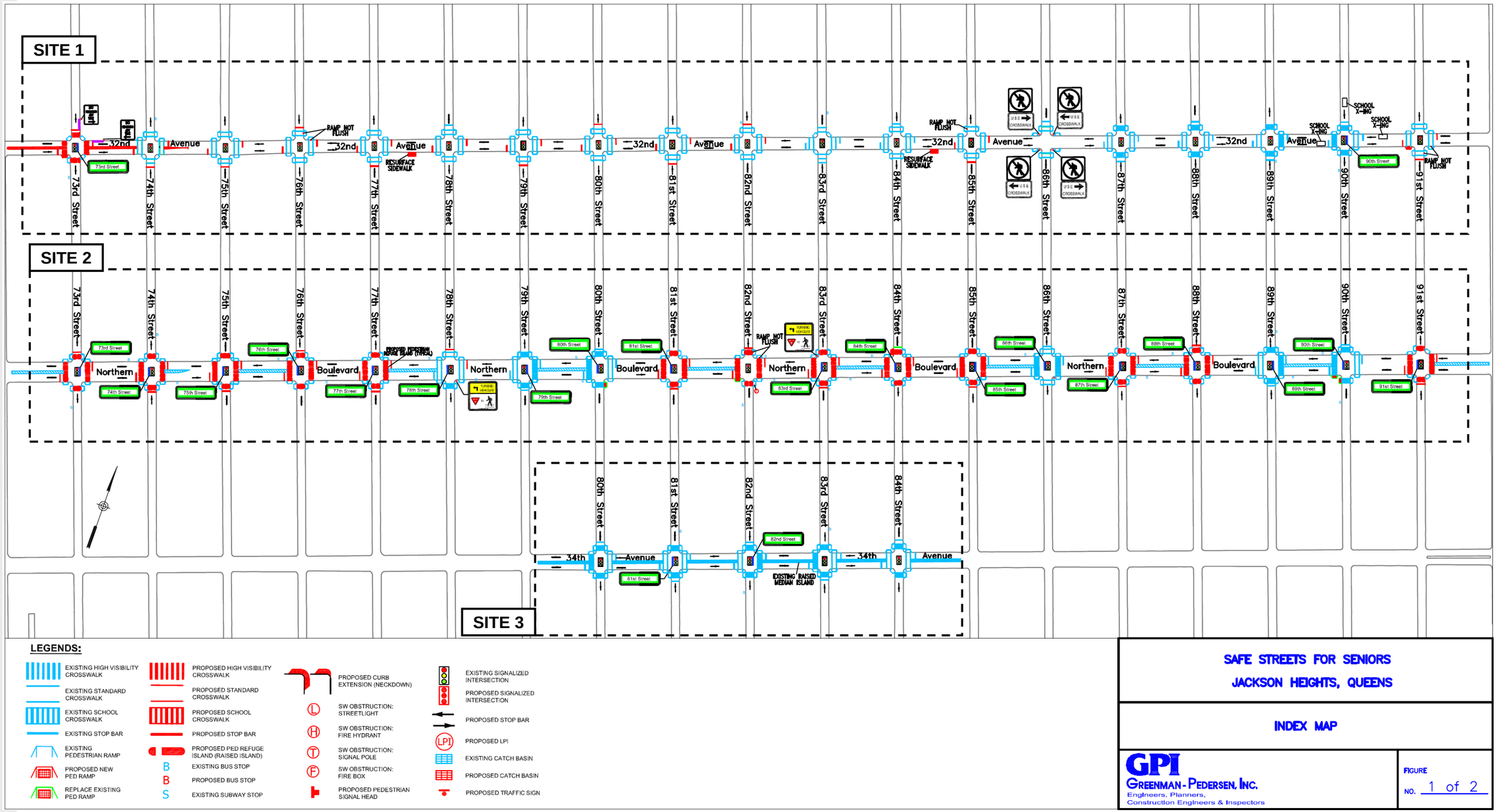
Illustrating the Solution



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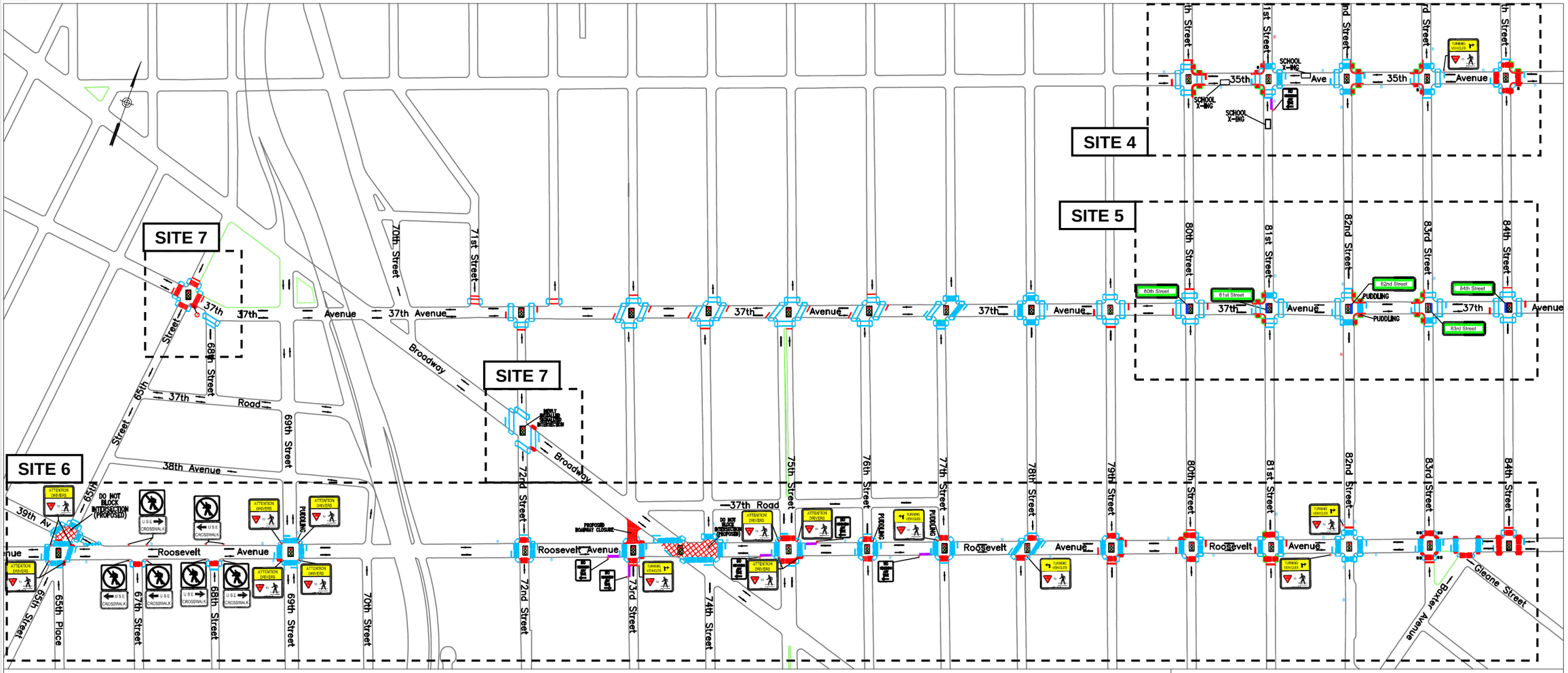
Illustrating the Solution



LEGENDS:

- EXISTING HIGH VISIBILITY CROSSWALK
- EXISTING STANDARD CROSSWALK
- EXISTING SCHOOL CROSSWALK
- EXISTING STOP BAR
- EXISTING PEDESTRIAN RAMP
- PROPOSED NEW PED RAMP
- REPLACE EXISTING PED RAMP
- PROPOSED HIGH VISIBILITY CROSSWALK
- PROPOSED STANDARD CROSSWALK
- PROPOSED SCHOOL CROSSWALK
- PROPOSED STOP BAR
- PROPOSED PED REFUGE ISLAND (RAISED ISLAND)
- B EXISTING BUS STOP
- B PROPOSED BUS STOP
- S EXISTING SUBWAY STOP
- PROPOSED CURB EXTENSION (NECKDOWN)
- L SW OBSTRUCTION: STREETLIGHT
- H SW OBSTRUCTION: FIRE HYDRANT
- T SW OBSTRUCTION: SIGNAL POLE
- F SW OBSTRUCTION: FIRE BOX
- PROPOSED PEDESTRIAN SIGNAL HEAD
- EXISTING SIGNALIZED INTERSECTION
- PROPOSED SIGNALIZED INTERSECTION
- PROPOSED STOP BAR
- LPI PROPOSED LPI
- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- PROPOSED TRAFFIC SIGN

SAFE STREETS FOR SENIORS
JACKSON HEIGHTS, QUEENS

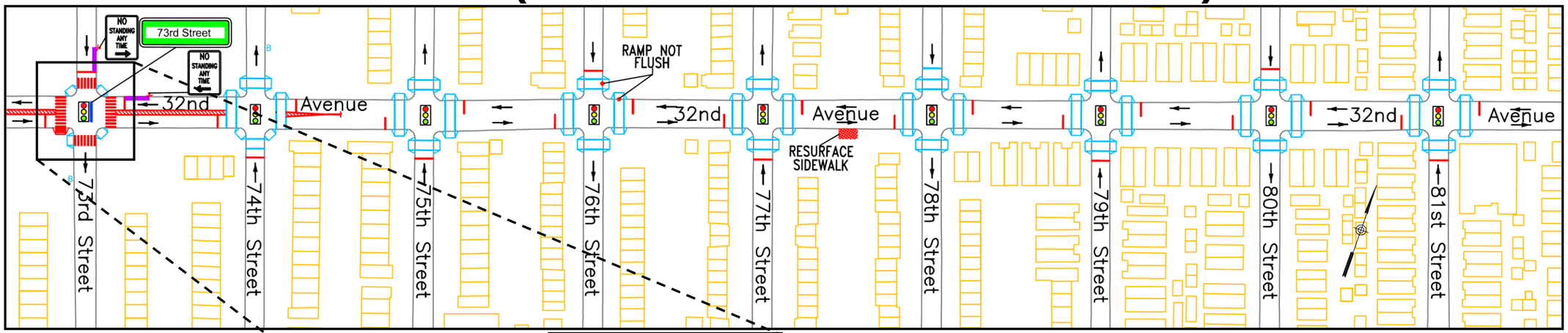
INDEX MAP

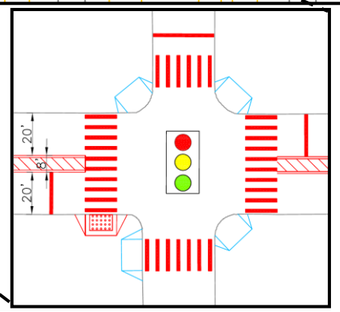
GPI
GREENMAN-PEDERSEN, INC.
Engineers, Planners, Construction Engineers & Inspectors

FIGURE NO. 2 of 2

Illustrating the Solution

SITE 1: PLAN 1 - 32ND AVENUE (FROM 73RD STREET TO 81ST STREET)





LEGENDS:

- EXISTING HIGH VISIBILITY CROSSWALK
- EXISTING STANDARD CROSSWALK
- EXISTING SCHOOL CROSSWALK
- EXISTING STOP BAR
- EXISTING PEDESTRIAN RAMP
- PROPOSED NEW PED RAMP
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- PROPOSED HIGH VISIBILITY CROSSWALK
- PROPOSED STANDARD CROSSWALK
- PROPOSED SCHOOL CROSSWALK
- PROPOSED STOP BAR
- PROPOSED PED REFUGE ISLAND (RAISED ISLAND)
- B EXISTING BUS STOP
- B PROPOSED BUS STOP
- S EXISTING SUBWAY STOP
- PROPOSED CURB EXTENSION (NECKDOWN)
- (L) SW OBSTRUCTION: STREETLIGHT
- (H) SW OBSTRUCTION: FIRE HYDRANT
- (T) SW OBSTRUCTION: SIGNAL POLE
- (F) SW OBSTRUCTION: FIRE BOX
- PROPOSED PEDESTRIAN SIGNAL HEAD
- EXISTING SIGNALIZED INTERSECTION
- PROPOSED SIGNALIZED INTERSECTION
- PROPOSED STOP BAR
- LPI PROPOSED LPI
- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- PROPOSED TRAFFIC SIGN

Pedestrian concerns in this area are:

- Speeding vehicles
- Turning vehicles not yielding to pedestrians
- Non-standard pedestrian ramps without safety surface

Recommended improvements include:

- Install new painted hatched median by replacing the existing solid double yellow line along 32nd Avenue between 70th Street and 75th Street
- Install new high visibility crosswalks
- Install new advanced stop bars
- Install oversized street name signs at the intersection of 32nd Avenue and 73rd Street. The signs are to be located on the signal mast arm facing 32nd Avenue traffic in both directions
- Install new pedestrian ramp on southwest corner of 32nd Avenue and 73rd Street. Where proposed, align the ramp to the proposed crosswalk
- Resurface uneven or broken sidewalk pavement

Additional Information:

- Parking regulations for the project area have been collected and are shown in Appendix C
- This study area was visited on July 25th, 2008 and August 12, 2008

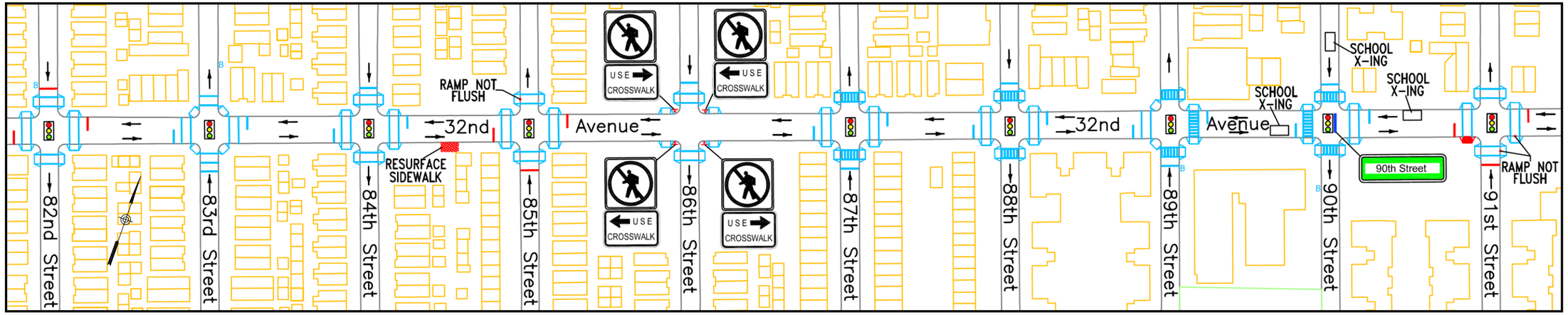
Traffic Analysis:

Speed study on 32nd Avenue between 72nd Street & 73rd Street

- 85th Percentile = 34 mph (eastbound), 36 mph (westbound)
- Spot Speed Data is shown in Appendix E

Illustrating the Solution

SITE 1: PLAN 2 - 32ND AVENUE (FROM 82ND STREET TO 91ST STREET)



LEGENDS:

- EXISTING HIGH VISIBILITY CROSSWALK
- EXISTING STANDARD CROSSWALK
- EXISTING SCHOOL CROSSWALK
- EXISTING STOP BAR
- EXISTING PEDESTRIAN RAMP
- PROPOSED NEW PED RAMP
- REPLACE EXISTING PED RAMP
- PROPOSED HIGH VISIBILITY CROSSWALK
- PROPOSED STANDARD CROSSWALK
- PROPOSED SCHOOL CROSSWALK
- PROPOSED STOP BAR
- PROPOSED PED REFUGE ISLAND (RAISED ISLAND)
- B EXISTING BUS STOP
- B PROPOSED BUS STOP
- S EXISTING SUBWAY STOP
- PROPOSED CURB EXTENSION (NECKDOWN)
- L SW OBSTRUCTION: STREETLIGHT
- H SW OBSTRUCTION: FIRE HYDRANT
- T SW OBSTRUCTION: SIGNAL POLE
- F SW OBSTRUCTION: FIRE BOX
- PROPOSED PEDESTRIAN SIGNAL HEAD
- EXISTING SIGNALIZED INTERSECTION
- PROPOSED SIGNALIZED INTERSECTION
- PROPOSED STOP BAR
- LPI PROPOSED LPI
- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- PROPOSED TRAFFIC SIGN

Pedestrian concerns in this area are:

- Speeding vehicles
- Turning vehicles not yielding to pedestrians
- Non-standard pedestrian ramps without safety surface

Additional Information:

- Parking regulations for the project area have been collected and are shown in Appendix C
- This study area was visited on July 25th, 2008 and August 12, 2008

Recommended improvements include:

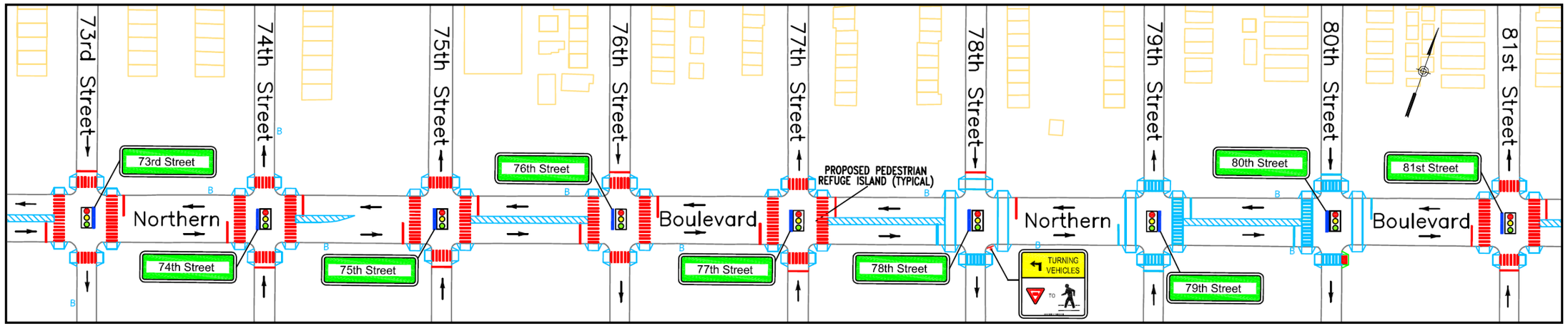
- Install new advanced stop bars
- Resurface uneven or broken crosswalk and sidewalk pavement
- Install oversized street name signs at the intersection of 32nd Avenue and 90th Street. The signs are to be located on the signal mast arm facing 32nd Avenue traffic in both directions
- Install new pedestrian ramp on southwest corner of 32nd Avenue and 91st Street. Where proposed, align the ramp to the proposed crosswalk
- Install “No Pedestrian Crossing” and “Use Crosswalk” (with appropriate arrow) signs at the intersection of 32nd Avenue and 86th Street

Traffic Analysis:

- Turning Movement Counts at
  - 32nd Avenue and 90th Street

  Traffic count data is shown in Appendix D

SITE 2: PLAN 1 - NORTHERN BOULEVARD (FROM 73RD STREET TO 81ST STREET)



LEGENDS:

- EXISTING HIGH VISIBILITY CROSSWALK
- EXISTING STANDARD CROSSWALK
- EXISTING SCHOOL CROSSWALK
- EXISTING STOP BAR
- EXISTING PEDESTRIAN RAMP
- PROPOSED NEW PED RAMP
- REPLACE EXISTING PED RAMP
- PROPOSED HIGH VISIBILITY CROSSWALK
- PROPOSED STANDARD CROSSWALK
- PROPOSED SCHOOL CROSSWALK
- PROPOSED STOP BAR
- PROPOSED PED REFUGE ISLAND (RAISED ISLAND)
- B EXISTING BUS STOP
- B PROPOSED BUS STOP
- S EXISTING SUBWAY STOP
- PROPOSED CURB EXTENSION (NECKDOWN)
- L SW OBSTRUCTION: STREETLIGHT
- H SW OBSTRUCTION: FIRE HYDRANT
- T SW OBSTRUCTION: SIGNAL POLE
- F SW OBSTRUCTION: FIRE BOX
- PROPOSED PEDESTRIAN SIGNAL HEAD
- EXISTING SIGNALIZED INTERSECTION
- PROPOSED SIGNALIZED INTERSECTION
- PROPOSED STOP BAR
- LPI PROPOSED LPI
- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- PROPOSED TRAFFIC SIGN

Pedestrian concerns in this area:

- Signal timing (insufficient crossing time)
- Non-standard pedestrian ramps
- Vehicles not yielding to pedestrians

Recommended improvements include:

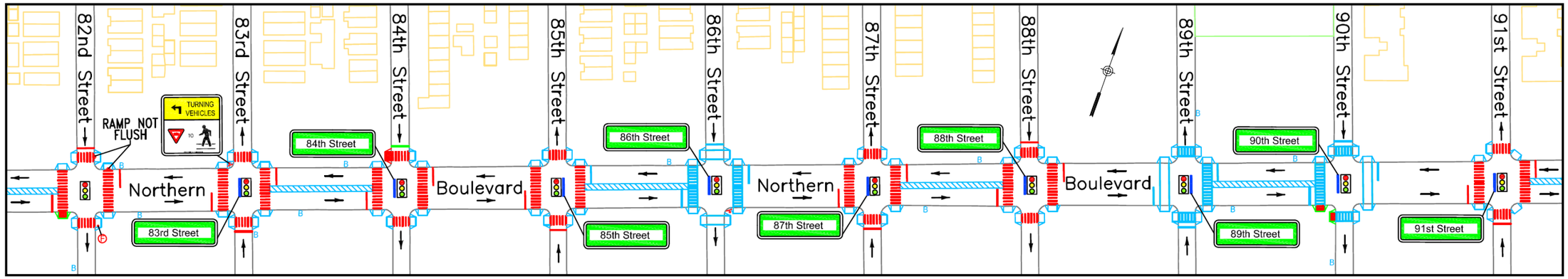
- Install new high visibility crosswalks
- Install new advanced stop bars
- Time all signals for seniors and where feasible, the crossing time will be extended
- Install new “Yield to Pedestrian” sign at the intersection shown in the illustration
- Install new pedestrian ramp on the southeast corner of Northern Boulevard and 80th Street. Where proposed, align the ramp with the crosswalk
- Install oversized street name signs at various intersections along Northern Boulevard. The signs are to be located on the signal mast arm facing Northern Boulevard traffic in both directions

Additional Information:

- Parking regulations for the project area have been collected and are shown in Appendix C
- This study area was visited on July 25th, 2008 and August 12, 2008

Illustrating the Solution

SITE 2: PLAN 2 - NORTHERN BOULEVARD (FROM 82ND STREET TO 91ST STREET)



LEGENDS:

- EXISTING HIGH VISIBILITY CROSSWALK
- EXISTING STANDARD CROSSWALK
- EXISTING SCHOOL CROSSWALK
- EXISTING STOP BAR
- EXISTING PEDESTRIAN RAMP
- PROPOSED NEW PED RAMP
- REPLACE EXISTING PED RAMP
- PROPOSED HIGH VISIBILITY CROSSWALK
- PROPOSED STANDARD CROSSWALK
- PROPOSED SCHOOL CROSSWALK
- PROPOSED STOP BAR
- PROPOSED PED REFUGE ISLAND (RAISED ISLAND)
- B EXISTING BUS STOP
- B PROPOSED BUS STOP
- S EXISTING SUBWAY STOP
- PROPOSED CURB EXTENSION (NECKDOWN)
- L SW OBSTRUCTION: STREETLIGHT
- H SW OBSTRUCTION: FIRE HYDRANT
- T SW OBSTRUCTION: SIGNAL POLE
- F SW OBSTRUCTION: FIRE BOX
- PROPOSED PEDESTRIAN SIGNAL HEAD
- EXISTING SIGNALIZED INTERSECTION
- PROPOSED SIGNALIZED INTERSECTION
- PROPOSED STOP BAR
- LPI PROPOSED LPI
- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- PROPOSED TRAFFIC SIGN

Pedestrian concerns in this area:

- Signal timing (insufficient crossing time)
- Non-standard pedestrian ramps
- Vehicles not yielding to pedestrians

Traffic Analysis:

- Turning Movement Counts at
  - Northern Boulevard and 82nd Street

Traffic count data is shown in Appendix D

Recommended improvements include:

- Install new high visibility crosswalks
- Install new advanced stop bars
- Time all signals for seniors and where feasible, the crossing time will be extended
- Install new “Yield to Pedestrian” sign at the intersection shown in the illustration
- Install new pedestrian ramps. Where proposed, align the ramps with the crosswalks
- Install oversized street name signs at various intersections along Northern Boulevard. The signs are to be located on the signal mast arm facing Northern Boulevard traffic in both directions
- Relocate sidewalk obstructions
  - Fire box on the southeast corner of Northern Boulevard and 82nd Street

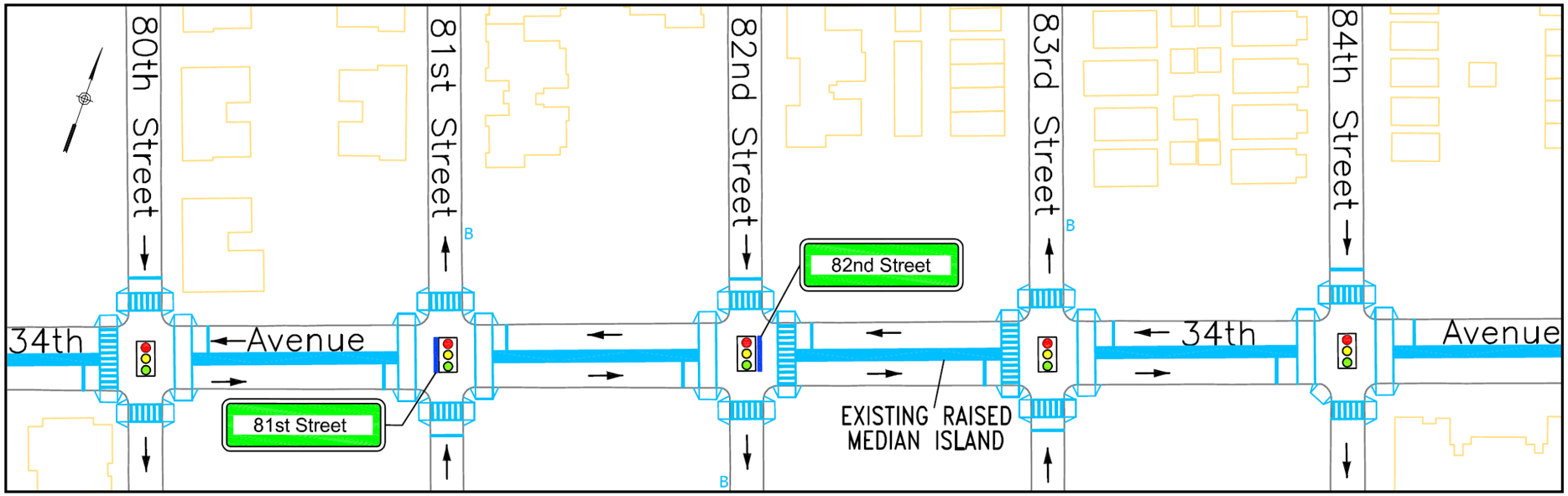
Additional Information:

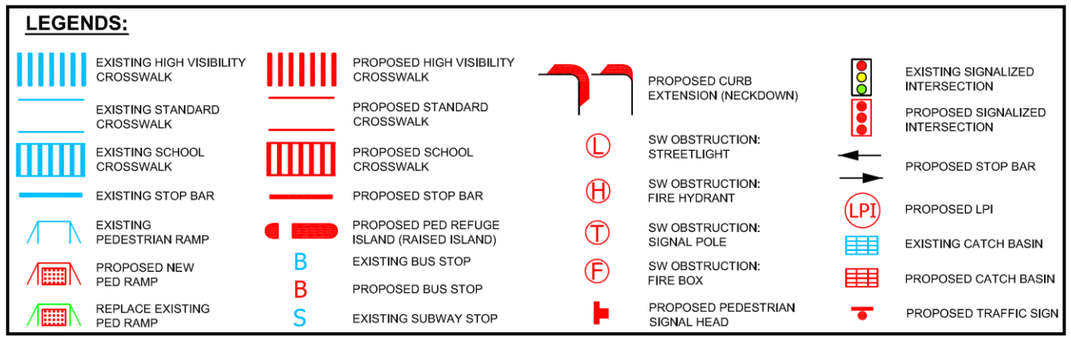
- Parking regulations for the project area have been collected and are shown in Appendix C
- This study area was visited on July 25th, 2008 and August 12, 2008

Illustrating the Solution

Illustrating the Solution

SITE 3: 34TH AVENUE (FROM 80TH STREET TO 84TH STREET)





Pedestrian concerns in this area:

- Vehicles not yielding to pedestrians

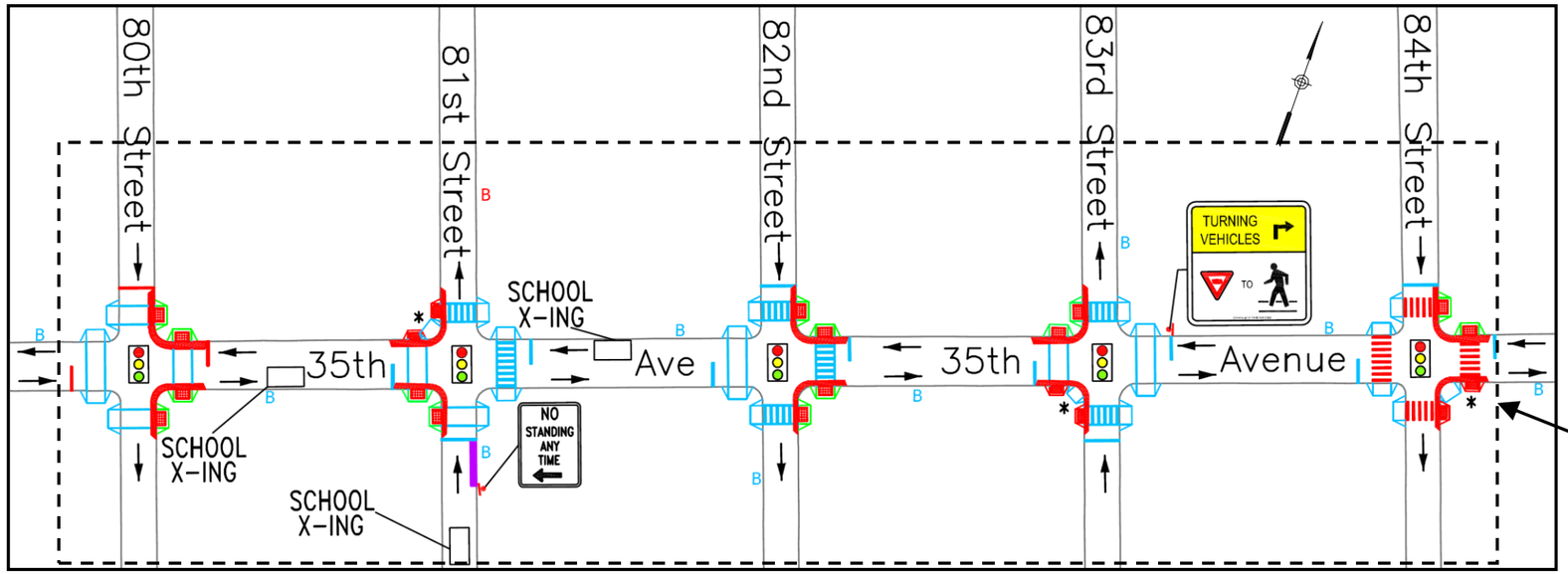
Recommended improvements include:

- Install oversized street name signs at various intersections along 34th Avenue. The signs are to be located on the signal mast arm facing 34th Avenue traffic in both directions

Additional Information:

- Parking regulations for the project area have been collected and are shown in Appendix C
- Recommendations developed for I.S. 145 are shown in Appendix F
- This study area was visited on July 25th, 2008 and August 12, 2008

SITE 4: 35TH AVENUE (FROM 80TH STREET TO 84TH STREET)



LEGENDS:

- EXISTING HIGH VISIBILITY CROSSWALK
- EXISTING STANDARD CROSSWALK
- EXISTING SCHOOL CROSSWALK
- EXISTING STOP BAR
- EXISTING PEDESTRIAN RAMP
- PROPOSED NEW PED RAMP
- REPLACE EXISTING PED RAMP
- PROPOSED HIGH VISIBILITY CROSSWALK
- PROPOSED STANDARD CROSSWALK
- PROPOSED SCHOOL CROSSWALK
- PROPOSED STOP BAR
- PROPOSED PED REFUGE ISLAND (RAISED ISLAND)
- B EXISTING BUS STOP
- B PROPOSED BUS STOP
- S EXISTING SUBWAY STOP
- PROPOSED CURB EXTENSION (NECKDOWN)
- (L) SW OBSTRUCTION: STREETLIGHT
- (H) SW OBSTRUCTION: FIRE HYDRANT
- (T) SW OBSTRUCTION: SIGNAL POLE
- (F) SW OBSTRUCTION: FIRE BOX
- PROPOSED PEDESTRIAN SIGNAL HEAD
- EXISTING SIGNALIZED INTERSECTION
- PROPOSED SIGNALIZED INTERSECTION
- PROPOSED STOP BAR
- LPI PROPOSED LPI
- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- PROPOSED TRAFFIC SIGN

Pedestrian concerns in this area:

- Non-standard pedestrian ramps
- Vehicles not yielding to pedestrians

Additional Information:

- Parking regulations for the project area have been collected and are shown in Appendix C
- Recommendations developed for Saint Joan of Arc School are shown in Appendix F
- This study area was visited on July 25th, 2008 and August 12, 2008

Recommended improvements include:

- Install new high visibility crosswalks on all approaches at the intersection of 35th Avenue and 84th Street
- Install new advanced stop bars
- Install new pedestrian ramps. Where proposed, align the ramps with the crosswalks
- Relocate the bus-stop on the northbound approach at the intersection of 35th Avenue and 81st Street from the near side to the far side of the intersection
- Install a neck-down or a curb extension (to be constructed by others):

  - On the northeast and the southeast corners of 35th Avenue and 80th Street. Due to the extension of the far side bus-stop on 35th Avenue, this may require removal of one parking space from the existing curb-side parking

  - On the northwest and southwest corners of 35th Avenue and 81st Street

  - On the northeast and southeast corners of 35th Avenue and 82nd Street

  - On the northwest and southwest corners of 35th Avenue and 83rd Street

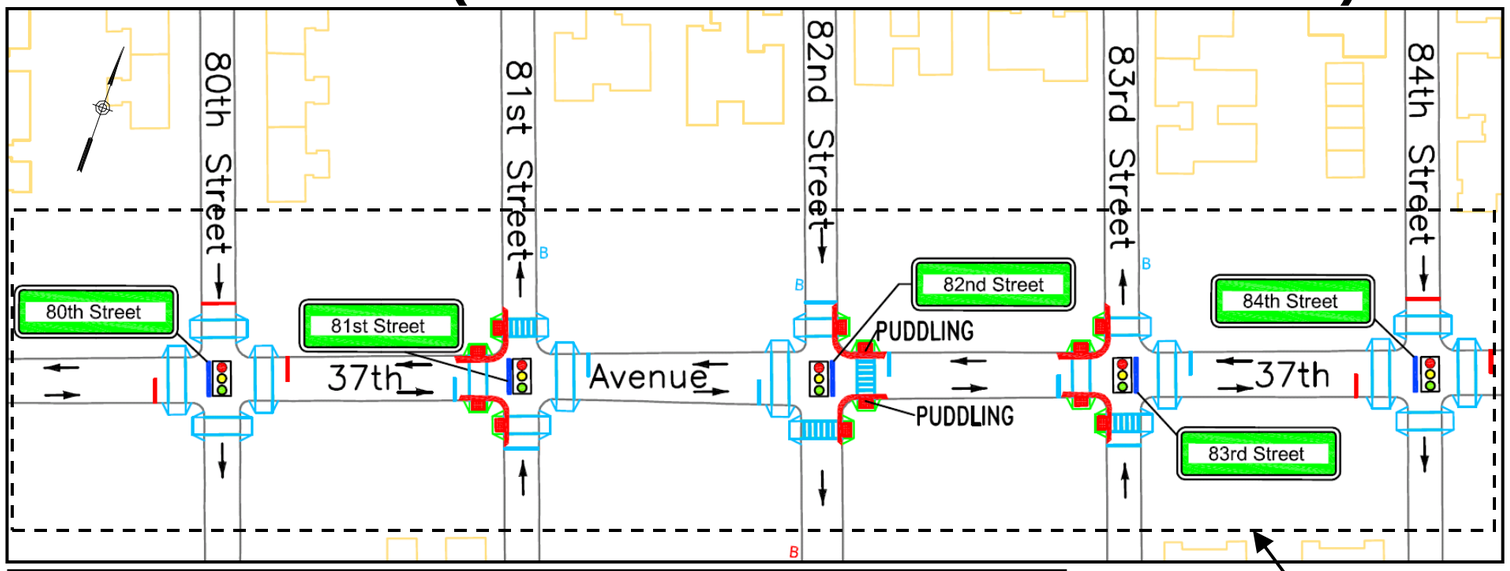
  - On the northeast and southeast corners of 35th Avenue and 84th Street. Due to the extension of the far side bus-stop on 35th Avenue, this may require the removal of one parking space from the existing curb-side parking

- Remove one parking space on the southeast corner of 81st Street
- Install new “Yield to Pedestrian” sign at the intersection shown in the illustration
- * Remove existing apex ramps

Illustrating the Solution

Illustrating the Solution

SITE 5: 37TH AVENUE (FROM 80TH STREET TO 84TH STREET)



NECKDOWN CONSTRUCTION UNDER SCHOOL SAFETY PROJECT (APPENDIX-F)

LEGENDS:

- EXISTING HIGH VISIBILITY CROSSWALK
- EXISTING STANDARD CROSSWALK
- EXISTING SCHOOL CROSSWALK
- EXISTING STOP BAR
- EXISTING PEDESTRIAN RAMP
- PROPOSED NEW PED RAMP
- REPLACE EXISTING PED RAMP
- PROPOSED HIGH VISIBILITY CROSSWALK
- PROPOSED STANDARD CROSSWALK
- PROPOSED SCHOOL CROSSWALK
- PROPOSED STOP BAR
- PROPOSED PED REFUGE ISLAND (RAISED ISLAND)
- B EXISTING BUS STOP
- B PROPOSED BUS STOP
- S EXISTING SUBWAY STOP
- PROPOSED CURB EXTENSION (NECKDOWN)
- L SW OBSTRUCTION: STREETLIGHT
- H SW OBSTRUCTION: FIRE HYDRANT
- T SW OBSTRUCTION: SIGNAL POLE
- F SW OBSTRUCTION: FIRE BOX
- PROPOSED PEDESTRIAN SIGNAL HEAD
- EXISTING SIGNALIZED INTERSECTION
- PROPOSED SIGNALIZED INTERSECTION
- PROPOSED STOP BAR
- LPI PROPOSED LPI
- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- PROPOSED TRAFFIC SIGN

Recommended improvements include:

- Install new advanced stop bars
- Install oversized street name signs at various intersections along 37th Avenue. The signs are to be located on the signal mast arm facing 37th Avenue traffic in both directions
- Install new pedestrian ramps. Where proposed, align the ramps with the crosswalks
- Relocate the bus-stop on the southbound approach at the intersection of 37th Avenue and 82nd Street from the near side to the far side of the intersection
- Install a neck-down or a curb extension (to be constructed by others):

  - On the northwest and southwest corners of 37th Avenue and 81st Street

  - On the northeast and southeast corners of 37th Avenue and 82nd Street

  - On the northwest and southwest corners of 37th Avenue and 83rd Street

Additional Information:

- Parking regulations for the project area have been collected and are shown in Appendix C
- Recommendations developed for Saint Joan of Arc School are shown in Appendix F
- This study area was visited on July 25th, 2008 and August 12, 2008

Pedestrian concerns in this area:

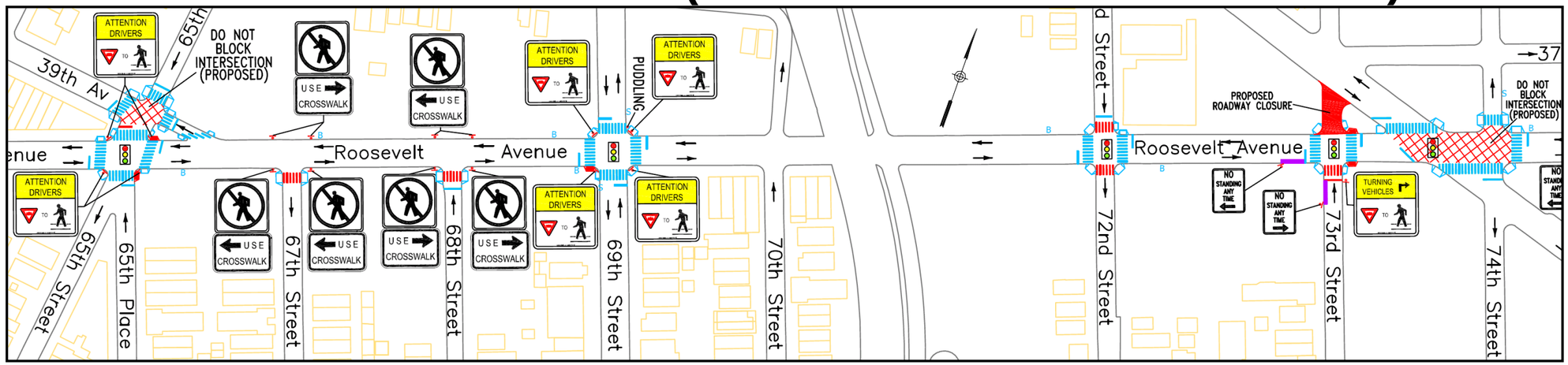
- Non-standard pedestrian ramps
- Drainage and ponding issues
- Vehicles not yielding to pedestrians

Traffic Analysis:

Turning Movement Counts at
- 37th Avenue and 82nd Street

Traffic count data is shown in Appendix D

SITE 6: PLAN 1 - ROOSEVELT AVENUE (FROM 65TH STREET TO 74TH STREET)



Recommended improvements include:

- Install new high visibility crosswalks
- Install new advanced stop bars
- Time all signals for seniors and where feasible, the crossing time will be extended
- Install new "Yield to Pedestrian" signs at the intersections shown in the illustration
- Install new pedestrian ramps. Where proposed, align the ramps with the crosswalks
- Install "No Pedestrian Crossing" and "Use Crosswalk" (with appropriate arrow) signs at the intersections noted in the illustration
- Remove one parking space along the south side of Roosevelt Avenue in advance of the west crosswalk at 73rd Street, and remove one parking space along the west side of 73rd Street in advance of the south crosswalk at Roosevelt Avenue
- Provide new 'Do Not Block Intersection' striping at the intersection of 65th Street and 39th Avenue and at the intersection of Roosevelt Avenue and Broadway/74th Street
- Close off the north leg of the intersection of Roosevelt Avenue and 73rd Street between Roosevelt Avenue and Broadway

LEGENDS:

- EXISTING HIGH VISIBILITY CROSSWALK
- EXISTING STANDARD CROSSWALK
- EXISTING SCHOOL CROSSWALK
- EXISTING STOP BAR
- EXISTING PEDESTRIAN RAMP
- PROPOSED NEW PED RAMP
- REPLACE EXISTING PED RAMP
- PROPOSED HIGH VISIBILITY CROSSWALK
- PROPOSED STANDARD CROSSWALK
- PROPOSED SCHOOL CROSSWALK
- PROPOSED STOP BAR
- PROPOSED PED REFUGE ISLAND (RAISED ISLAND)
- B EXISTING BUS STOP
- B PROPOSED BUS STOP
- S EXISTING SUBWAY STOP
- PROPOSED CURB EXTENSION (NECKDOWN)
- L SW OBSTRUCTION: STREETLIGHT
- H SW OBSTRUCTION: FIRE HYDRANT
- T SW OBSTRUCTION: SIGNAL POLE
- F SW OBSTRUCTION: FIRE BOX
- PROPOSED PEDESTRIAN SIGNAL HEAD
- EXISTING SIGNALIZED INTERSECTION
- PROPOSED SIGNALIZED INTERSECTION
- PROPOSED STOP BAR
- LPI PROPOSED LPI
- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- PROPOSED TRAFFIC SIGN

Pedestrian concerns in this area:

- Signal timing (insufficient crossing time)
- Non-standard pedestrian ramps
- Drainage and ponding issues
- Vehicles not yielding to pedestrians

Additional Information:

- Parking regulations for the project area have been collected and are shown in Appendix C
- This study area was visited on July 25th, 2008 and August 12, 2008

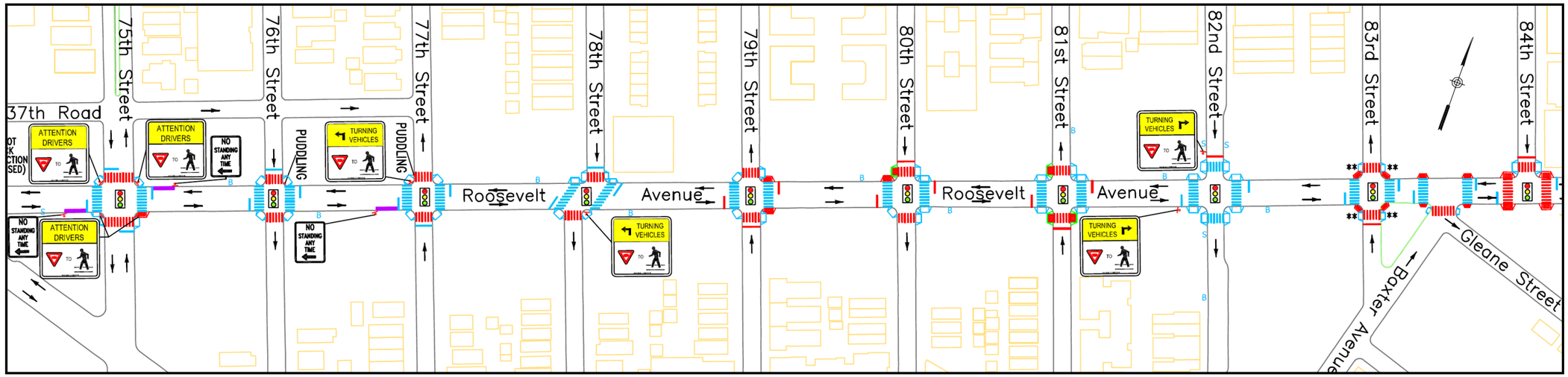
Traffic Analysis:

- Turning Movement Counts at
  - Roosevelt Avenue and 73rd Street
  - Roosevelt Avenue and Broadway/74th Street

  Traffic count data is shown in Appendix D

Illustrating the Solution

SITE 6: PLAN 2 - ROOSEVELT AVENUE (FROM 75TH STREET TO 84TH STREET)



LEGENDS:

- EXISTING HIGH VISIBILITY CROSSWALK
- EXISTING STANDARD CROSSWALK
- EXISTING SCHOOL CROSSWALK
- EXISTING STOP BAR
- EXISTING PEDESTRIAN RAMP
- PROPOSED NEW PED RAMP
- REPLACE EXISTING PED RAMP
- PROPOSED HIGH VISIBILITY CROSSWALK
- PROPOSED STANDARD CROSSWALK
- PROPOSED SCHOOL CROSSWALK
- PROPOSED STOP BAR
- PROPOSED PED REFUGE ISLAND (RAISED ISLAND)
- EXISTING BUS STOP
- PROPOSED BUS STOP
- EXISTING SUBWAY STOP
- PROPOSED CURB EXTENSION (NECKDOWN)
- SW OBSTRUCTION: STREETLIGHT
- SW OBSTRUCTION: FIRE HYDRANT
- SW OBSTRUCTION: SIGNAL POLE
- SW OBSTRUCTION: FIRE BOX
- PROPOSED PEDESTRIAN SIGNAL HEAD
- EXISTING SIGNALIZED INTERSECTION
- PROPOSED SIGNALIZED INTERSECTION
- PROPOSED STOP BAR
- PROPOSED LPI
- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- PROPOSED TRAFFIC SIGN

Pedestrian concerns in this area:

- Signal timing (insufficient crossing time)
- Non-standard pedestrian ramps
- Drainage and ponding issues
- Vehicles not yielding to pedestrians

Additional Information:

- Parking regulations for the project area have been collected and are shown in Appendix C
- This study area was visited on July 25th, 2008 and August 12, 2008

Traffic Analysis:

- Turning Movement Counts at
  - Roosevelt Avenue and 75th Street
  - Roosevelt Avenue and 77th Street
  - Roosevelt Avenue and 82nd Street

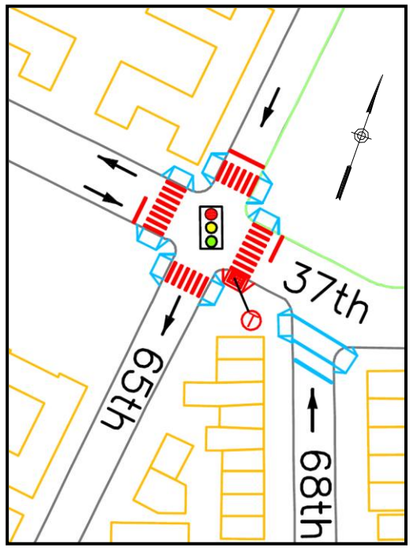
Traffic count data is shown in Appendix D

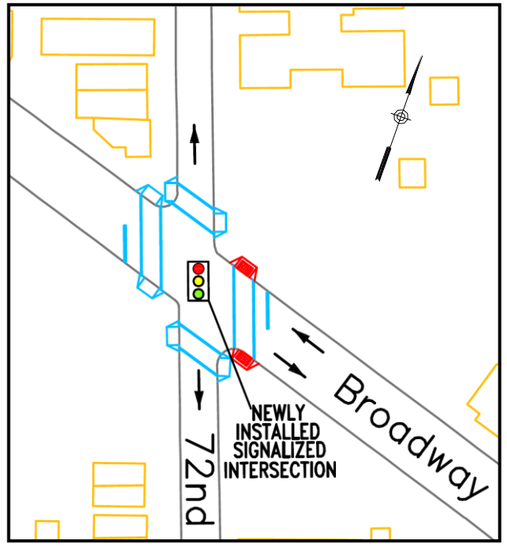
Recommended improvements include:

- Install new high visibility crosswalks
- Install new advanced stop bars
- Time all signals for seniors and where feasible, the crossing time will be extended
- Install new “Yield to Pedestrian” signs at the intersections shown in the illustration
- Install new pedestrian ramps. Where proposed, align the ramps with the crosswalks. Due to the presence of subway columns, some of the ramps on Roosevelt Avenue can only be proposed as apex ramps
- Remove one parking space along Roosevelt Avenue on the southwest and northeast corners at the intersection of 75th Street, and remove one parking space along Roosevelt Avenue on the southwest corner at the intersection of 77th Street
- ** Remove existing pedestrian ramps

Illustrating the Solution

SITE 7: BROADWAY & 72ND STREET AND 37TH AVENUE & 65TH STREET





LEGENDS:

- EXISTING HIGH VISIBILITY CROSSWALK
- EXISTING STANDARD CROSSWALK
- EXISTING SCHOOL CROSSWALK
- EXISTING STOP BAR
- EXISTING PEDESTRIAN RAMP
- PROPOSED NEW PED RAMP
- REPLACE EXISTING PED RAMP
- PROPOSED HIGH VISIBILITY CROSSWALK
- PROPOSED STANDARD CROSSWALK
- PROPOSED SCHOOL CROSSWALK
- PROPOSED STOP BAR
- PROPOSED PED REFUGE ISLAND (RAISED ISLAND)
- B EXISTING BUS STOP
- B PROPOSED BUS STOP
- S EXISTING SUBWAY STOP
- PROPOSED CURB EXTENSION (NECKDOWN)
- (L) SW OBSTRUCTION: STREETLIGHT
- (H) SW OBSTRUCTION: FIRE HYDRANT
- (T) SW OBSTRUCTION: SIGNAL POLE
- (F) SW OBSTRUCTION: FIRE BOX
- PROPOSED PEDESTRIAN SIGNAL HEAD
- EXISTING SIGNALIZED INTERSECTION
- PROPOSED SIGNALIZED INTERSECTION
- PROPOSED STOP BAR
- LPI PROPOSED LPI
- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- PROPOSED TRAFFIC SIGN

Recommended improvements include:

- Install new high visibility crosswalks at the intersection of 37th Avenue and 65th Street
- Install new advanced stop bars at the intersection of 37th Avenue and 65th Street
- Install new pedestrian ramps. Where proposed, align the ramps with the crosswalks
- Relocate sidewalk obstructions

  - Pole on the southeast corner of 37th Avenue and 65th Street

Pedestrian concerns in this area:

- Non-standard pedestrian ramps
- Vehicles not yielding to pedestrians

Additional Information:

- Parking regulations for the project area have been collected and are shown in Appendix C
- This study area was visited on July 25th, 2008 and August 12, 2008

Illustrating the Solution