

Cromwell Avenue - Jerome Avenue Transportation Study



New York City
Department of City Planning
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INTRODUCTION

Cromwell Avenue-Jerome Avenue Transportation Study

Introduction

The New York City Department of City Planning (DCP) Transportation Division conducted the Cromwell Avenue-Jerome Avenue Transportation Study starting in the spring of 2014. This study is part of the Jerome Avenue Neighborhood Study, which is a broad effort by DCP to revitalize a two-mile stretch of Jerome Avenue with the aim of supporting surrounding neighborhoods in Community Districts (CDs) 4 and 5 in the Bronx. The transportation study complements the broader comprehensive planning effort focused on land use and zoning by identifying problematic locations in the transportation network and opportunities to improve circulation, mobility, safety and access for pedestrians, vehicles and bicyclists.

This transportation study is the result of extensive research including site visits; community consultation; and transportation, socioeconomic and demographic data analysis. It includes two main sections—Existing Conditions and Recommendations—as well as appendices. The Existing Conditions section looks closely at the current state of the study area from a transportation planning perspective. The Recommendations section lays out a series of recommendations that DCP developed in coordination with the community and other city agencies to respond to transportation challenges and improve conditions for all roadway users.

DCP is involved in ongoing discussion with the New York City Department of Transportation (NYCDOT) regarding potential implementation of the recommendations in this report with an eye to both short-term and long-term responses. The recommendations section of this report reflects that discussion. The implementation effort will continue after the publication of this report.



Tremont Avenue and Jerome Avenue

EXECUTIVE SUMMARY

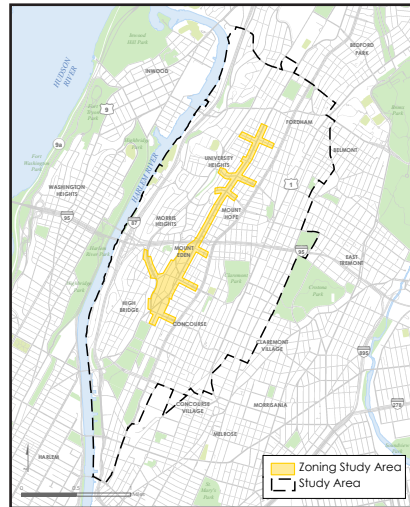
Cromwell Avenue-Jerome Avenue Transportation Study

Executive Summary

Introduction

The goal of the Cromwell Avenue-Jerome Avenue Transportation Study is to improve transportation conditions in and around the study area for all roadway users, including pedestrians, cyclists, motorists and public transportation riders. The study focuses primarily on pedestrian safety issues, the overall pedestrian environment and access to transit. In addition, the report identifies intersections and corridors with challenges related to traffic circulation and operation with an eye to improving the efficiency of the area's roadways. Finally, the study assesses the availability of parking for local residents and workers and provides recommendations for increasing parking availability.

The study area is located along Jerome Avenue, in the southwestern section of the Bronx. The transportation study looks at a portion of the geography that is the focus of DCP's Jerome Avenue Neighborhood Study. That geography will hereinafter be referred to as the "zoning study area." This area runs along Jerome Avenue from 167th Street to 184th Street, straddling Bronx Community Districts 4 and 5. For the purposes of providing a context for the transportation study, an area was defined that extends a half mile further in each direction from the zoning study area and will hereinafter be referred to as the "study area."



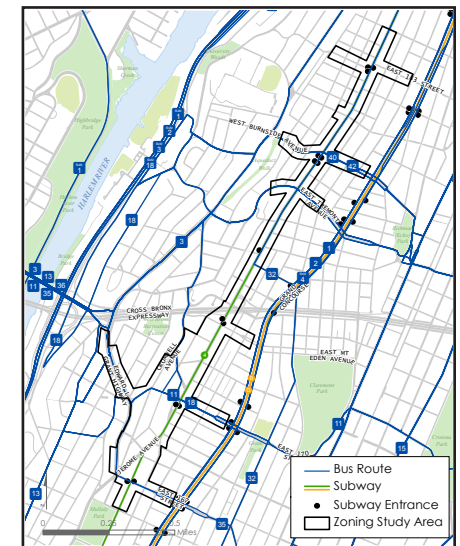
Methods

This report documents and evaluates existing transportation conditions, presents the results of field visits and community meetings and proposes recommendations for improving the zoning study area. As part of the transportation planning process, DCP met with community stakeholders at a series of walking tours, focus groups and visioning workshops, resulting in the development of a list of issues, concerns and opportunities related to the transportation system and the public spaces in the study area. These are provided in detail in Appendix III. DCP also conducted several targeted site visits, analyzed crash data in the zoning study area, conducted traffic counts and level of service analyses at key locations and analyzed Census data in order to determine how best to respond to the transportation challenges in this area.

Existing Conditions

The study area is well-served by both regional highways and public transportation networks. Interstate 95 (I-95), a major regional highway, known as the Cross Bronx Expressway as it runs through the Bronx, bisects the study area and links it to northern Manhattan and New Jersey to the west, and the eastern Bronx and Connecticut to the east. The elevated 4-train line runs along Jerome Avenue and the B and D subway lines run along the Grand Concourse, connecting the study area with Manhattan. Several bus routes run through the study area.

There are also several major and local roadways in the study area,



including Jerome Avenue which provides north-south access. The Grand Concourse, a wide road with service lanes in each direction, runs parallel to Jerome. Edward L. Grant Highway runs along the west side of the study area providing access to the Washington Bridge to Manhattan. There are several east-west connections as well, including 170th Street and Burnside Avenue which serve as important local retail destinations and intermodal transfer points.

The study area's bicycle network largely consists of north-south routes, with one east-west connection running along East 167th Street. Local truck routes run along several streets including Jerome Avenue, while a regional truck route runs along the Cross Bronx Expressway.

A detailed crash analysis revealed several locations throughout the zoning study area where safety is a significant concern. These include 167th Street and Jerome Avenue, 170th Street and Jerome, the entrance to the Cross Bronx Expressway on Jerome, 175th Street and Jerome, Tremont Avenue and Jerome and Burnside Avenue. There are several additional high-crash locations along the Grand Concourse, parallel to the zoning study area.



The zoning study area has a significant concentration of off-street public parking facilities, which a DCP survey showed to have available capacity at current prices.

The study area's population, which has grown modestly in recent years, resides mostly to the east and west of the zoning study area in large residential districts. The population is largely black and Hispanic, with the proportion of Hispanics having increased somewhat in recent years. Median

income in the study area was \$26,226 in 2012, which is less than both the 2012 median income of \$34,300 for the Bronx and \$51,865 for New York City as a whole. Unemployment and poverty statistics for the study area show a similar disparity.

Transportation data reveals that the vast majority of the residential population relies on public transportation to commute. In addition, the vast majority of residents have no vehicles available.

The zoning for the study area includes a mix of commercial and residential districts, along with a manufacturing district and some commercial overlays. The majority of the commercial zones are dominated by auto repair shops, parking lots, and retail stores. On both sides of the zoning study area, there are large residential zoning districts. The manufacturing district consists mostly of warehouses and storage companies, but contains some residential buildings as well.

Recommendations

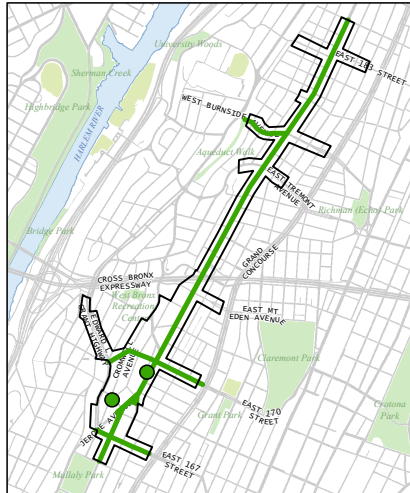
The recommendations fall into four focus areas: enhanced pedestrian space, pedestrian and bicycle safety measures, improved connections to transit and additional traffic control measures. This section provides a brief summary of the recommendations for each location analyzed.

170th Street Corridor

The 170th Street corridor is heavily used by pedestrians on a daily basis and lacks pedestrian amenities. Crash data indicates a high proportion of crashes from 2009 to 2013 involved pedestrians or cyclists. The intersection of 170th Street and Jerome Avenue is an im-



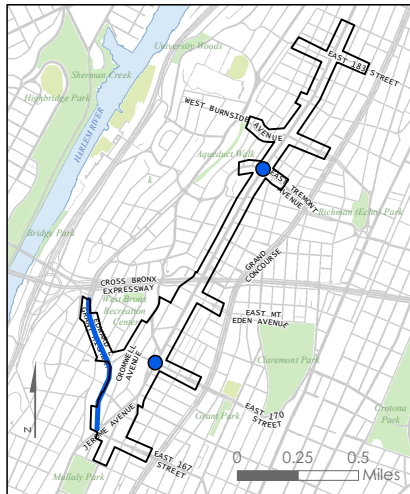
Enhanced Pedestrian Space



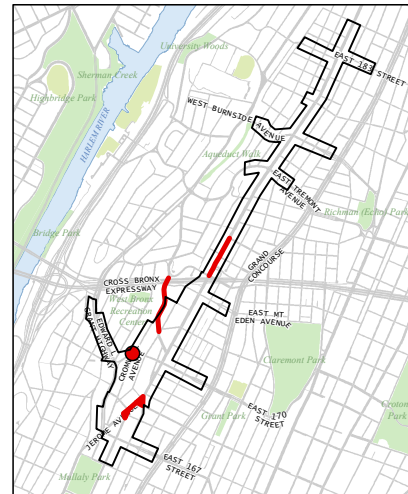
Pedestrian and Bicycle Safety Measures



Improved Connections to Transit



Additional Traffic Control



portant hub that includes an intermodal transfer point between buses and the subway. These locations present transportation challenges along with opportunities to improve efficiency and safety for roadway users. Recommendations for the 170th Street-Jerome Avenue-Plaza Drive area include:

- Close the southern portion of Plaza Drive to traffic and convert it to pedestrian space.
- Build a sidewalk along Jerome Avenue at the Plaza Drive parking area to increase pedestrian safety.
- Add neckdowns at several locations to calm traffic and decrease pedestrian crossing distances.
- Redesign Keltch Park to facilitate greater pedestrian access and circulation.
- Adjust sidewalk widths to improve pedestrian safety.
- Implement additional improvements to increase pedestrian safety and access to public transit.

Additional recommendations along 170th Street include:

- Install a bike route from the Grand Concourse to Edward L. Grant Highway to increase east-west access for cyclists.
- Install neckdowns and a loading zone along East 170th Street between Jerome Avenue and the Grand Concourse in order to ease access to this busy retail corridor.
- Redesign the park at East 170th Street and the Grand Concourse to allow greater pedestrian access and circulation.
- At West 170th Street and Cromwell Avenue, add an additional crosswalk and a pedestrian-only signal phase.

An alternative set of potential recommendations includes keeping Plaza Drive open and building a wide sidewalk in the parking and service lanes on the west side of Jerome to expand the pedestrian space adjacent to the parking lot. Additionally the relocation of the bus stops for both eastbound

and westbound buses on 170th Street could better respond to transit access challenges.

Under the Jerome Avenue Elevated Rail Line

As part of the transportation study, the City looked at ways to promote a more walkable and attractive environment under the elevated rail line on Jerome Avenue. One potential intervention the City is considering is to create an Under the El Opportunity Zone centered on community focal points along the corridor located, for example, at 170th Street and/or Burnside Avenue. Any particular treatments will place an emphasis on pedestrian safety measures. In addition, NYCDOT is currently installing Bus Stops under the El at several locations along Jerome Avenue to enhance safety and the streetscape. These treatments will expand sidewalks into the roadway at bus stops to allow for safer bus boarding.

Edward L. Grant Highway Corridor

Edward L. Grant Highway is a wide road that includes a buffered bicycle lane and a bus route. Pedestrian crossings tend to be long. At the same time, the wide roadway provides opportunities to enhance conditions for roadway users. Recommendations include:

- Move the bicycle lane against the curb and build a protected bike lane with planted islands near intersections for pedestrian and cyclist safety.
- Install raised concrete bus stops in the buffer strip of the bike lane, providing a safe place for bus riders to wait and board the bus.
- Reconfigure the Greenstreet at West 170th Street and add a pedestrian crossing to respond to the desire line that pedestrians have cut through the Greenstreet.
- Add neckdowns and other amenities at West 170th Street.

An alternative option would be to move the bike lane next to the median and leave the bus stops as they are.

East 167th Street Corridor

The intersection of East 167th Street and Jerome Avenue is complex, with four different streets intersecting and a high crash rate relative to the zoning study area. DCP's recommendations span the East 167th Street corridor from Jerome Avenue to Walton Avenue. They include:

- Close the left turn from northbound Cromwell Avenue onto Jerome to simplify the intersection and provide a safer crossing. This area can be converted to a planted pedestrian seating area.
- Add curb extensions and signage at select locations to reduce traffic conflicts.
- At East 167th Street and Walton Avenue, extend the existing pedestrian islands to increase pedestrian safety and paint street markings to better channelize traffic.



Jerome Avenue: East 168th Street to Gerard Avenue

Pedestrians in this part of the study area have to navigate a series of streets where cars are parked on the sidewalk and in pedestrian areas, creating an unpleasant and unsafe environment for pedestrians. At the intersection of Gerard and Jerome Avenues, there is a pedestrian plaza that is largely blocked by parked vehicles. The City has two alternative recommendations for this area. The first alternative includes the following:

- Close off Gerard Avenue to through-traffic between East 169th Street and Jerome Avenue.
- Extend the plaza space north through the closed Gerard Avenue so that it is contiguous with the sidewalk on the northeast corner of the intersection.

- Extend the parking lot at Gerard Avenue and East 169th Street into the closed-off roadway to accommodate precinct-related vehicles.

The second alternative includes the following:

- Build on the existing plaza space by expanding it into Jerome Avenue.
- Add angle parking to formally designate a space for precinct-related vehicles to park.
- Convert West 169th Street between Gerard and Jerome to one-way eastbound.
- Add a neckdown at the northeast corner of Gerard and Jerome to shorten the crossing distance and normalize the intersection.

The City also developed recommendations for the intersection of River and Jerome Avenues:

- Extend the pedestrian space between River and Jerome Avenues north so that it is even with the south corner of East 168th Street.
- Add a planted pedestrian island in the existing striped area.
- Provide a north-south pedestrian crosswalk at the East 168th Street crossing and a traffic signal for northbound cars on Jerome turning right onto East 168th Street.



Jerome Avenue: 174th Street to 175th Street

As part of the Jerome Avenue corridor, the stretch of road from East 174th Street to East 175th Street is an important link connecting neighborhoods north and south of the Cross Bronx Expressway. There are no pedestrian crossings on Jerome Avenue between these two streets. Safety is a concern at East 175th Street and Jerome Avenue as the crash rate is high relative to the rest of the study area. Recommendations include:

- Conduct a warrant analysis for a signalized intersection at Clifford Place and Jerome Avenue.
- Build curb extensions where pedestrians are likely to cross on the north side of the intersection.
- Add a signal at East 175th Street for the currently unsignalized Dunkin' Donuts driveway.

Cross Bronx Expressway Area

The area around the entrance and exit ramps for the Cross Bronx Expressway along Jerome Avenue is congested. The main reason for the congestion is the heavy use of the Cross Bronx. Illegal and unsafe vehicle movements at this location have also been observed. In 2013, NYCDOT completed a transportation study of the area—the Jerome Avenue Transportation Study—which included several recommendations that have already been implemented. To address remaining challenges, the City's recommendations include:

- Add pavement markings and signage at the northbound Cross Bronx ramps to better guide turning movements through this area.



- At this same intersection, stagger the signal timing for northbound and southbound through traffic on Jerome Avenue to help alleviate the congestion.

Tremont and Jerome Avenues

The intersection of Tremont Avenue and Jerome Avenue stands out as one of the intersections with the highest crash rates in the zoning study area. Twelve out of 45 total crashes from 2009 to 2013 at this location involved pedestrians or cyclists. The City's proposal for this intersection is to implement NYCDOT's Bus Stops under the EI program, which would entail building large curb extensions at the northwest and southeast corners to accommodate bus riders who currently have to wait in the roadway. These treatments would also have a traffic calming effect.

NYCDOT plans to implement Bus Stops under the EI at this intersection as well as at five other locations along Jerome Avenue.

Macombs Road: Inwood Avenue to Featherbed Lane

NYCDOT recently did extensive work on Macombs Road, installing several pedestrian refuge islands and striping in the roadbed to guide traffic, improvements that have significantly increased safety. However there are still no pedestrian crossings along Macombs from Inwood Avenue to Featherbed Lane and vehicles continue to speed down Macombs. A warrant analysis to determine whether or not to add a pedestrian crossing was recently conducted at the intersection of Goble Place and Macombs. The City recommends revisiting this warrant analysis to find a suitable pedestrian crossing along this stretch of Macombs and installing additional pedestrian safety improvements along this road.

West 169th Street and Inwood Avenue

Traffic volumes are low at this intersection and several vehicles park at the triangular median or on the sidewalks or double-park in the roadway. The City recommends closing off the small Inwood Avenue slip road just south

of the intersection. This would allow for increased pedestrian space, a treatment similar to other locations in the study area.

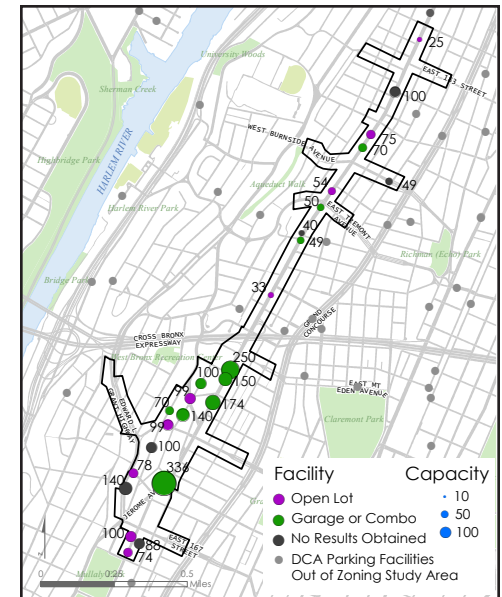
Aqueduct Walk

Aqueduct Walk is located three blocks west of Jerome Avenue. The City's recommendation here is to improve access to this park by adding wayfinding signage along West 183rd Street that can guide visitors from the Jerome Avenue elevated rail line. Additional signage and pavement markings along the walkway would be useful in separating pedestrians from cyclists. In the long term, the City recommends converting this park into a greenway and linking it to the rest of the bicycle network.

Parking Survey

In response to community concerns about the availability of parking, DCP conducted a parking survey as part of the transportation study. The goal of the survey was to ascertain utilization rates at Department of Consumer Affairs-licensed facilities, who uses the facilities and how much different facilities are used. DCP obtained results for 19 of 24 parking lots and garages. Results include the following:

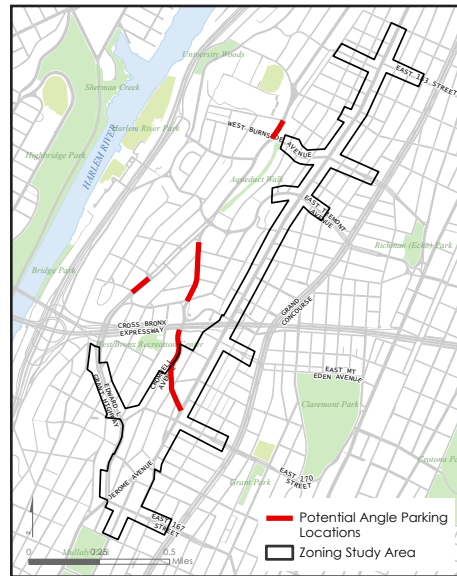
- Department of Consumer Affairs parking capacity is significantly higher south of the Cross Bronx Expressway than to the north.
- Parking is priced at a similar level to the nearby high-density Bronx neighborhoods, and at a much lower level than northern Manhattan.



- There is substantial excess capacity of off-street parking spaces at the current prices, especially in the southern portion of the study area where capacity is higher.
- The majority of customers are local residents, with others including teachers, hospital workers, police officers and taxi drivers.

Angle Parking

In response to community concerns over the availability of parking, DCP studied ways to increase parking supply in and around the zoning study area. Implementing angle parking, which involves drivers parking their cars at a 60-degree angle to the curb, as opposed to parallel parking, would be the best way to increase parking supply. When implemented properly, 60-degree angle parking provides up to twice as many parking spaces as typical parallel parking does. DCP surveyed the streets in and around the zoning study area to find those with the most optimal conditions to implement angle parking. The streets that were found most optimal for angle parking included two road segments on Macombs Road and two on University Avenue.



Conclusions and Next Steps

This package of recommendations will help improve traffic circulation for all roadway users in the study area. The City will be involved in ongoing discussions with the community in order to identify high-priority projects that can be implemented in the short-term as well as projects that require a longer-term focus.

EXISTING CONDITIONS

Cromwell Avenue-Jerome Avenue Transportation Study

Study Area Context

Region

The area around Cromwell and Jerome Avenues is in the southwestern section of the Bronx. This transportation study focuses on a portion of this area currently being evaluated by DCP in a neighborhood study, a geography that will hereinafter be referred to as the “zoning study area.” This area runs along Jerome Avenue from 167th Street to 184th Street, spanning the neighborhoods of Fordham, University Heights, Mount Hope, Morris Heights, Mount Eden, High Bridge and Concourse, and straddling Bronx Community Districts (CD) 4 and 5. Its southern boundaries extend west to Cromwell Avenue and Edward L. Grant Highway and east to the Grand Concourse.

For the purposes of this study, an area extending a half mile further in each direction from the zoning study area has also been defined. Herein after referred to as the “study area,” this larger geography is bounded by to the Harlem River to the west, Claremont Village to the east, Kingsbridge Heights to the north and the Bronx Civic Center along 161st Street to the south. While the transportation study is focused on the zoning study area, the larger study area is included to provide a context for the transportation analysis, and to acquire more accurate socioeconomic, demographic and transportation data for analytical purposes.

The study area is well served by both regional highways and existing public transportation networks. Interstate 95 (I-95), a major regional highway, known as the Cross Bronx Expressway in the Bronx, bisects the study area and links it to northern Manhattan and New Jersey to the west, and the eastern Bronx and Connecticut to the east. The elevated 4-train line runs along Jerome Avenue and the B and D subway lines run along the Grand Concourse, connecting the study area with Manhattan. Several bus routes also run through the study area.

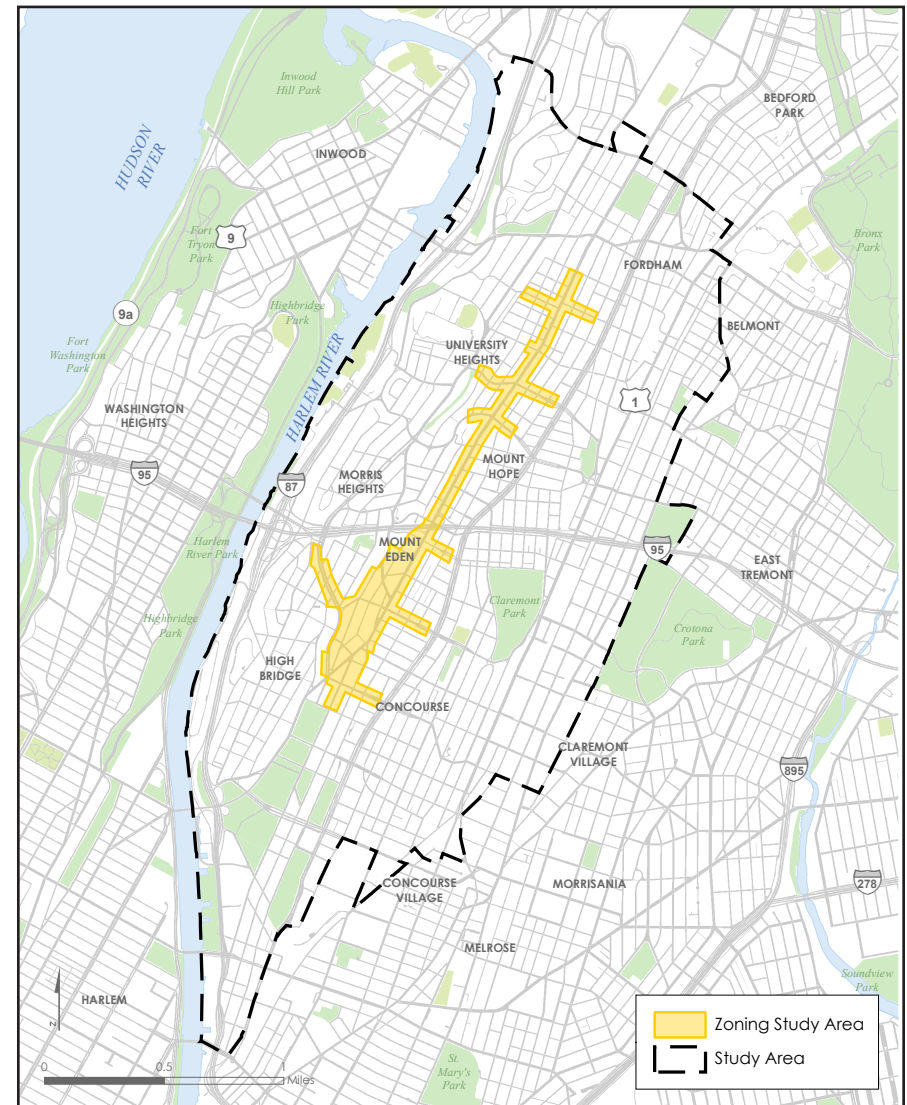


Figure 3.1: Cromwell Avenue-Jerome Avenue study area in regional context

History

While the earliest settlement in the Bronx can be traced back to mid-1600s, the borough experienced a major boom in population only after the first railroad connecting to Manhattan, the New York and Harlem Railroad (later Metro-North's Harlem line), was completed in 1841.

While Manhattan's street grid design was recreated in most of the Bronx, the irregular street network in the study area is primarily the result of hilly terrain. The western part of the Bronx is characterized by a series of parallel ridges running from north to south. The zoning study area lies in a valley between two such ridges: one immediately west of Cromwell Avenue and the other running along the Grand Concourse.

Jerome Avenue was completed in 1874, and was originally known as Central Avenue.¹ The IRT Woodlawn Line, commonly known today as the 4-train line, was completed in 1917 with elevated stations along this corridor, allowing for faster settlement of the surrounding area and making Jerome Avenue a major road and commercial center. Transit access also spurred the development of middle-income housing in the study area.

By the end of the 1920s, the South Bronx had experienced significant residential growth. But from the end of World War II to the 1970s, a substantial amount of "white flight" occurred, as Irish-Catholic and Jewish working class families moved out of the area, leaving behind mostly relatively poor Hispanic and black people. A further blow to the South Bronx came with the building of the Cross Bronx Expressway in the 1950s, which displaced approximately 5,000 families and demolished entire neighborhoods.²

The South Bronx fell into a prolonged economic depression from the 1970s to the '80s. As of July 2013, the neighborhood was still part of one of the five poorest congressional districts in the United States.³ However, in the last 20 years, the population of Bronx CD4, which encompasses the southern portion of the study area, has increased by over 26,000 people, a growth of about 22 percent over that period. The population of CD5 has increased 8 percent over the same period.

Transportation Network

Roadways and Street Networks

The New York City street network is comprised of three types of roadways: limited access highways that join local communities with the metropolitan region, major roadways that connect local communities with adjacent local communities and local roadways that provide access to businesses and residences within local communities.

Limited Access Expressway

The Cross Bronx Expressway, the only limited access highway in the study area, extends from the eastern end of the Bronx to Manhattan via the Washington Bridge. As part of I-95, it also leads directly to the George Washington Bridge to the west, providing a link between New York City and New Jersey. To the east, I-95 connects New York with Connecticut and other northeastern states.

Major Roadways

Jerome Avenue is a major north-south corridor that extends from Van Cortlandt Park to the Major Deegan Expressway near the Macombs Dam Bridge. Serving as the dividing line for east-west streets in the Bronx, it has two travel lanes and a parking lane in each direction. Much of the roadway contains columns supporting the elevated 4-train structure, which divide the two moving lanes in each direction from each other. The train stations generate significant pedestrian traffic. Several bus routes also cross and run along Jerome Avenue and provide transfer points to the 4-train. Adding to foot traffic are retail uses and the New Settlement Community Campus, whose three public schools are located at Jerome Avenue and 172nd Street. North of Macombs Road, auto-related businesses predominate on Jerome Avenue, generating a significant number of auto trips.

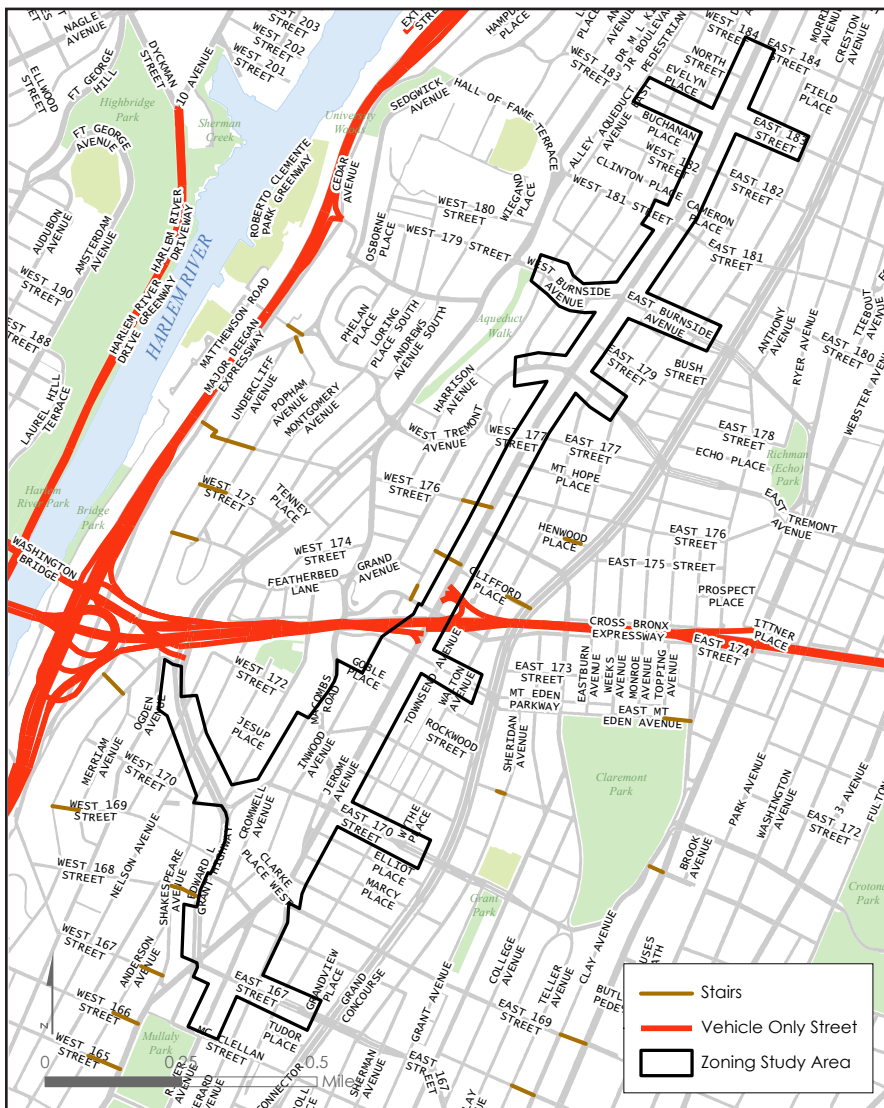


Figure 3.2: Cromwell Avenue-Jerome Avenue zoning study area street network

The Grand Concourse, which lies in the eastern portion of the study area and runs parallel to Jerome Avenue, is another major north-south roadway. Lined with large apartment buildings and local retail uses, it runs from Mosholu Parkway to East 138th Street. The Grand Concourse is a wide two-lane road with a median-separated service road in each direction. The service road is comprised of a parking lane, a buffered bike lane along most of its extent, and a travel lane in each direction. The B and D subway lines have several stations along this street.

East 167th Street extends east-west from Edward L. Grant Highway to Westchester Avenue. Running through the southern portion of the study area, East 167th Street has one travel lane, a bicycle lane that is striped or shared at different locations, and a parking lane in each direction. The 4-train stops at East 167th Street and River Avenue, bringing significant pedestrian activity. Additional pedestrian traffic is generated by a variety of retail establishments; two public schools (P.S. 114 – Luis Llorens Torres Schools located at East 167th Street and Jerome Avenue and P.S./I.S. 218 located at East 167th Street and Gerard Avenue); and the Bx35 bus route, which connects the neighborhood to Manhattan.

170th Street is one of the busiest transportation corridors in the study area. It is a major roadway running east-west from Dr. Martin Luther King Jr. Boulevard to Charlotte Street, intersecting Jerome Avenue and Edward L. Grant Highway. 170th Street has one travel lane and one parking lane in each direction. Both the number and variety of retail businesses along this road draw pedestrians from the surrounding residential districts. Most of this pedestrian traffic occurs between Jerome Avenue and the Grand Concourse, as west of Jerome Avenue, most of the businesses are oriented towards automotive uses. In addition, both the Bx11 and Bx18 buses run along 170th Street, bringing pedestrians into the area and providing transfers to the 4 train on Jerome Avenue.

Tremont Avenue is a major roadway running east-west from near the Throgs Neck Expressway to around the Major Deegan Expressway. It traverses the study area and consists of a wide travel lane and a parking lane in each direction.

Edward L. Grant Highway is a major north-south roadway with two travel lanes separated by a planted median, a buffered bicycle lane and a parking lane in each direction. Linking the Cross Bronx Expressway to Jerome Avenue and East 167th Street, it is characterized by a sharp increase in elevation from south to north. This roadway runs through High Bridge, the residential neighborhood in the western portion of the study area. Moderate pedestrian activity is generated by residential and retail land uses on this street. The Bx11, Bx13 and Bx35 bus lines run along this corridor and connect to Manhattan.

Burnside Avenue is a strong and vibrant local commercial corridor and a major pedestrian destination in the study area. Running east-west from Valentine Avenue to University Avenue, this roadway consists of a travel lane and a parking lane in each direction. The Bx40 and Bx42 bus lines run along this corridor, providing a transfer point to the 4 train at Burnside Avenue and Jerome Avenue. The many retail businesses and convenient public transportation services draw a significant number of pedestrians to this corridor.

181st Street, which runs east-west from Dr. Martin Luther King Jr. Boulevard to Bryant Avenue, is a one-way westbound street with one travel lane and two parking lanes. It is largely residential, but has some small pockets of retail consisting of grocery stores and beauty salons.

183rd Street is a local commercial corridor which runs east-west from Southern Boulevard to Sedgwick Avenue. It is a two-way roadway consisting of one travel lane and one parking lane in each direction. Like many other east-west streets traversing the study area, 183rd Street is split into east and west sections by Jerome Avenue. However, East and West 183rd Streets are not directly connected to each other. Instead, the two street sections are offset and create two T-intersections at Jerome Avenue. The Bx32 bus and the 4 train stop at 183rd Street and Jerome Avenue. This connection generates significant pedestrian activity.

Local Roadways

Cromwell Avenue is a north-south local roadway running parallel to Jerome Avenue from Macombs Road to McClellan Street. It is one-way southbound and consists of two travel lanes and two parking lanes. While Cromwell Avenue is not a significant draw for pedestrians, it generates significant auto traffic due to its numerous auto-related businesses.

Step Streets

As a result of its hilly terrain, the study area contains several “step streets,” stairways built on steep hills. These passageways, scattered throughout New York City, are for pedestrian use and provide both connectivity between neighborhoods and a distinctive neighborhood character. The step streets in the zoning study area include West 168th Street on the west side of Edward L. Grant Highway, West 176th Street on the west side of Jerome Avenue and Clifford Place West on the west side of Jerome Avenue.

Bicycle Network

The New York City bicycle network is comprised of three types of bicycle routes: Protected Bicycle Paths, Bicycle Lanes and Shared Lanes. Protected Bicycle Paths include greenways with exclusive rights-of-way, bicycle lanes located between the curb and the parking lane and bike lanes completely separated from the rest of the street traffic by physical barriers. Greenways are designated pathways for pedestrians and bicyclists, and are found in parks and along the waterfront. Bicycle Lanes are delineated with striped lane markings between vehicle travel lanes and parking lanes, or are adjacent to the curb when parking is not permitted. Shared Lanes are bicycle routes that share the same space with cars and are indicated either with signage or with “sharrows” (which are chevrons painted on the street) to inform drivers of the presence of a bicycle route on the road.

The bike network within the study area is limited, with potential to grow. Along the eastern side of the study area, a two-way bicycle lane pair runs on the Grand Concourse from 161st Street to Van Cortlandt Avenue East. Along the western edge of the study area, also running north-south, there is a two-way bicycle lane pair on Edward L. Grant Highway, which becomes a shared lane pair at the intersection of West Tremont Avenue to the north-west of the zoning study area and continues north to Moshulu Parkway. Running east-west, in the southern portion of the zoning study area, there is a two-way bike lane on East 167th Street that becomes a shared lane near the Grand Concourse. Also in the southern part of the zoning study area, there is a two-way shared lane on Jerome Avenue, which continues south past the zoning study area boundary at 167th Street, running south to the Macombs Dam Bridge and leading cyclists into Manhattan. Finally, a two-way bicycle lane pair enters and exits the study area from the south via Gerard and Walton Avenues and runs between East 138th Street and East 167th Street.

In terms of future bicycle network improvements, NYCDOT is considering installing several bicycle routes in the study area. One is a proposed east-west bicycle route on Tremont Avenue. In addition, according to the New York City Bicycle Master Plan, produced by DCP and NYCDOT in 1997, there

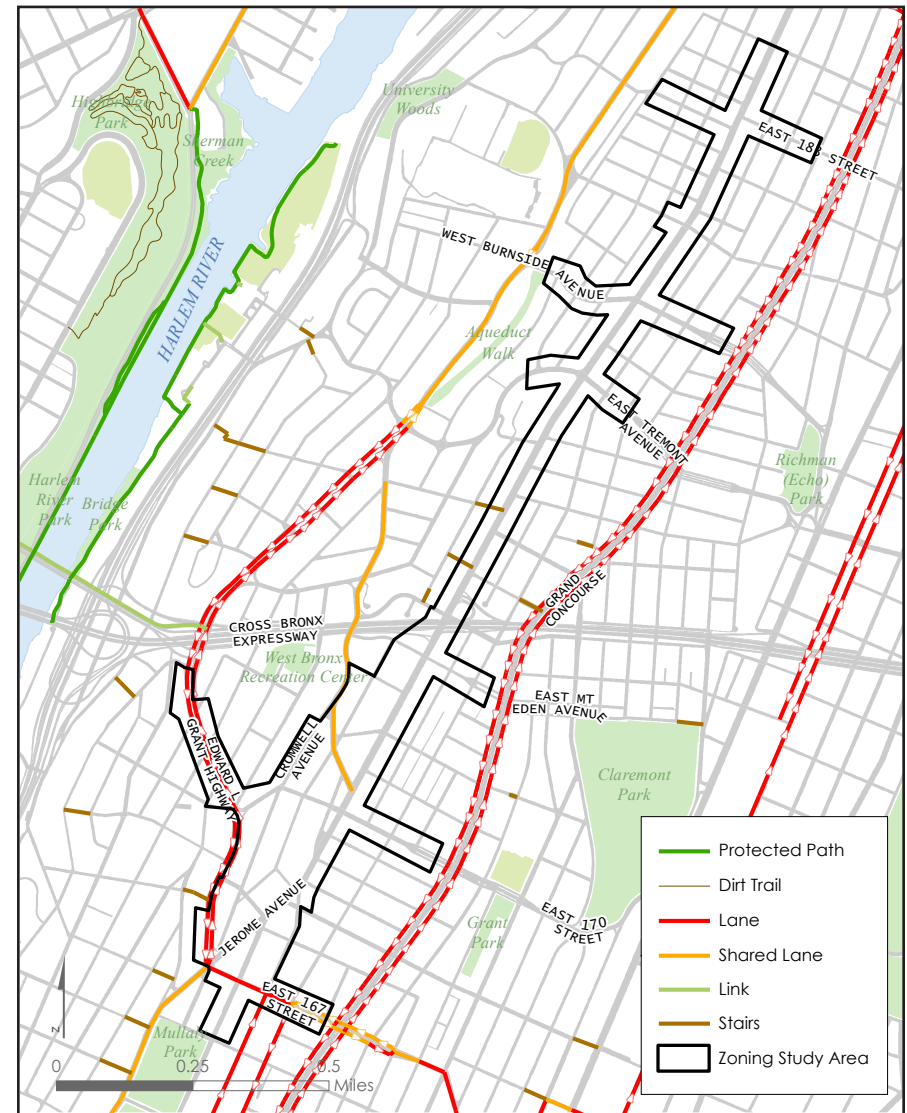
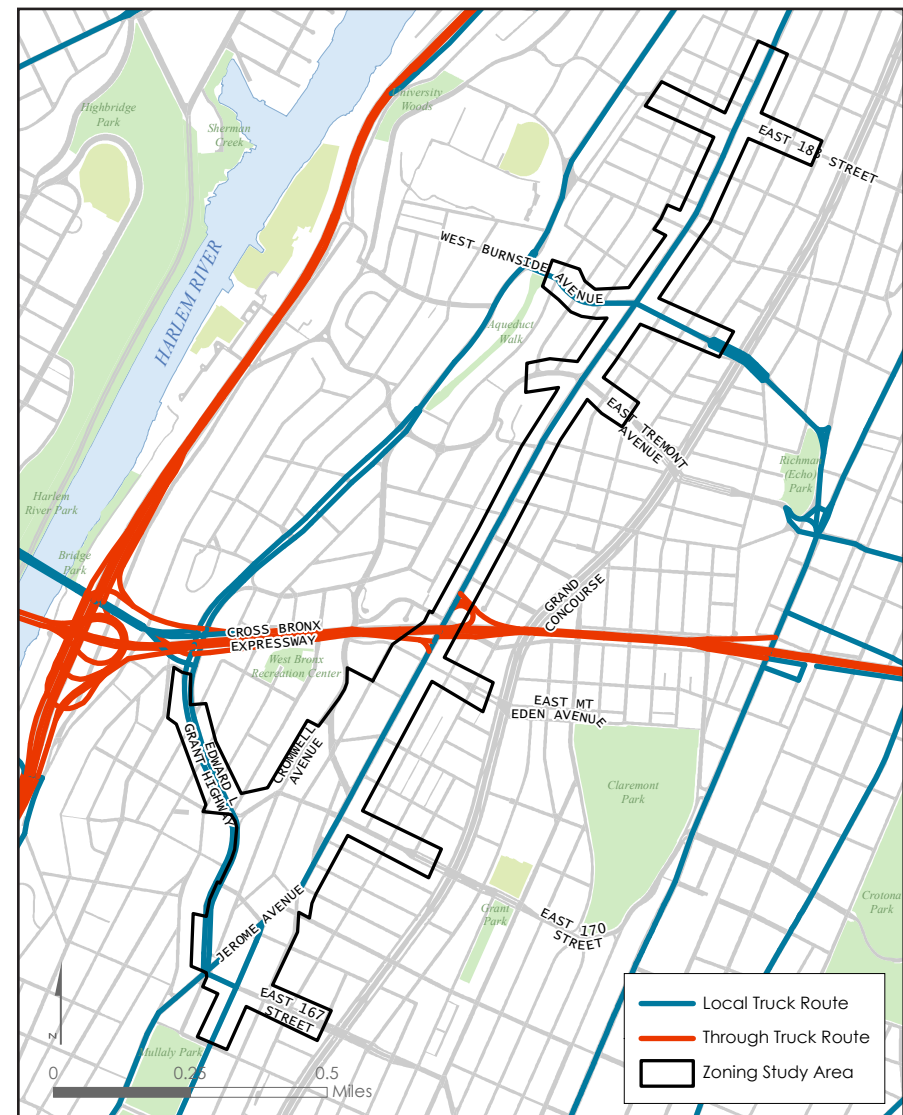


Figure 3.3: Cromwell Avenue-Jerome Avenue zoning study area bicycle routes

is a cluster of potential bike routes around Aqueduct Avenue East, one of which crosses the zoning study area at 184th Street and runs down Jerome Avenue for three blocks.

Truck Routes

The New York City Truck Route Network is comprised of Local and Through Truck Routes. Through Truck Routes are used by trucks that have neither an origin nor a destination in a local area or borough. Local Truck Routes are designated for trucks with an origin and/or destination within a local area or borough. This includes trucks that are traveling to make a delivery, or those that are loading or servicing. Trucks are advised to use non-designated routes only in order to travel between their origin or destination and a truck route. There is one Through Truck Route in the zoning study area, the Cross Bronx Expressway, which carries trucks to various regional destinations. The local truck routes in the zoning study area are Jerome Avenue, where trucks gain access to various retail establishments and auto-related businesses; Edward L Grant Highway, which connects to the Washington Bridge leading trucks into Manhattan; and Burnside Avenue, an important retail destination for this area of the Bronx.



Source: New York City Department of Transportation

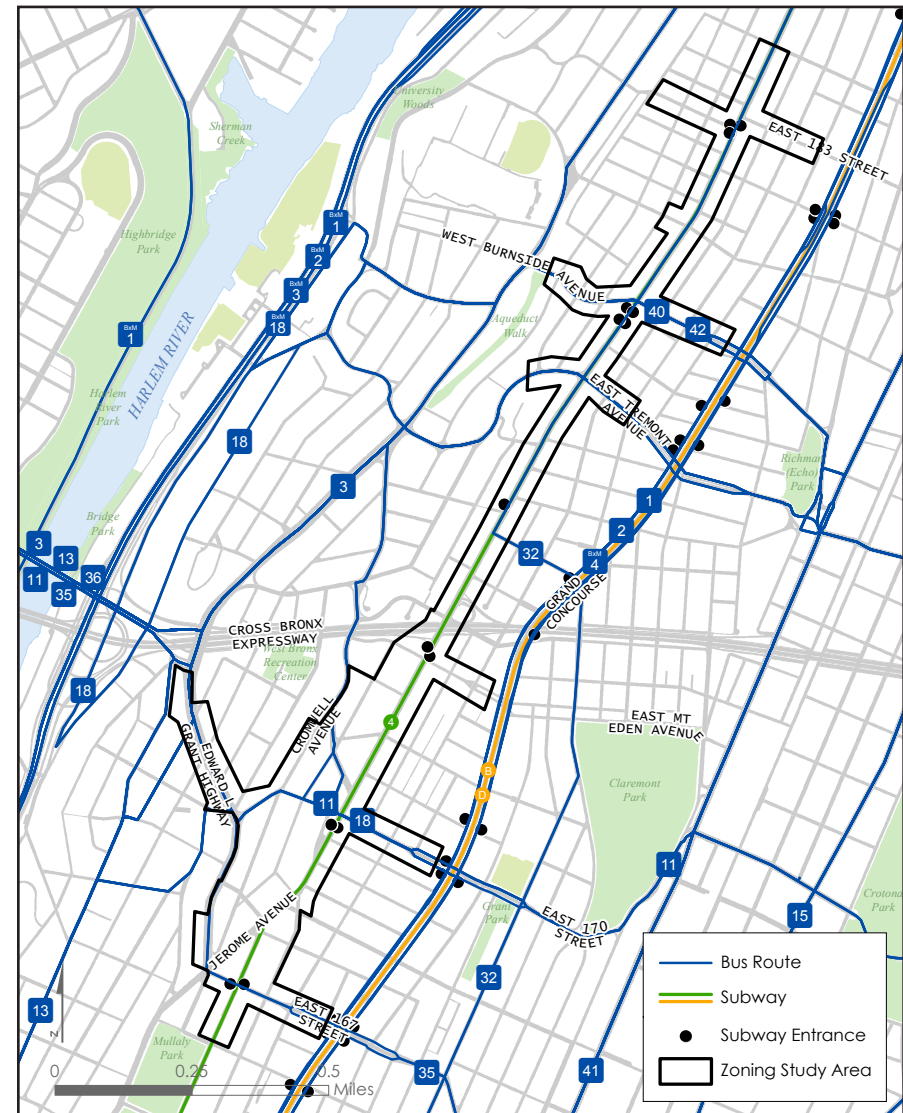
Figure 3.4: Cromwell Avenue-Jerome Avenue zoning study area truck routes

Public Transportation

The study area is generally well-served by existing public transportation. Two subway lines and ten bus routes make stops either inside the zoning study area or in its vicinity.

The elevated 4 train stops at six stations along Jerome Avenue and the B and D subway lines stop at five stations on the Grand Concourse. All subway lines run from the northern part of the Bronx, through Manhattan and terminate in Brooklyn. The Bx11, Bx35 and Bx36 run east-west connecting the study area with eastern portions of the Bronx and northern Manhattan. The other two east-west bus routes, the Bx40 and Bx42, traverse the zoning study area along Burnside Avenue. North-south bus lines including the Bx1, Bx2, Bx18, Bx32 and the express bus route BxM4 run in the western part of the Bronx, serving parts of the study area and its immediate surroundings.

For more information on public transportation services in the study area, including route-by-route bus services and transit ridership, see Appendix II.



Source: Metropolitan Transportation Authority

Figure 3.5: Cromwell Avenue-Jerome Avenue zoning study area public transportation

Crash Data

A crash analysis was performed for the zoning study area to determine if there were locations with a high number of crashes that needed to be analyzed. The results were divided into two categories: (1) total crashes and (2) pedestrian and bicycle crashes. The crash data presented here is cumulative of five years from 2009 to 2013.⁴ Overall, the results show that the zoning study area has several problematic locations in terms of safety for automobiles, pedestrians and bicyclists. The following intersections were identified as in need of a safety analysis based on the 2009 to 2013 crash data:

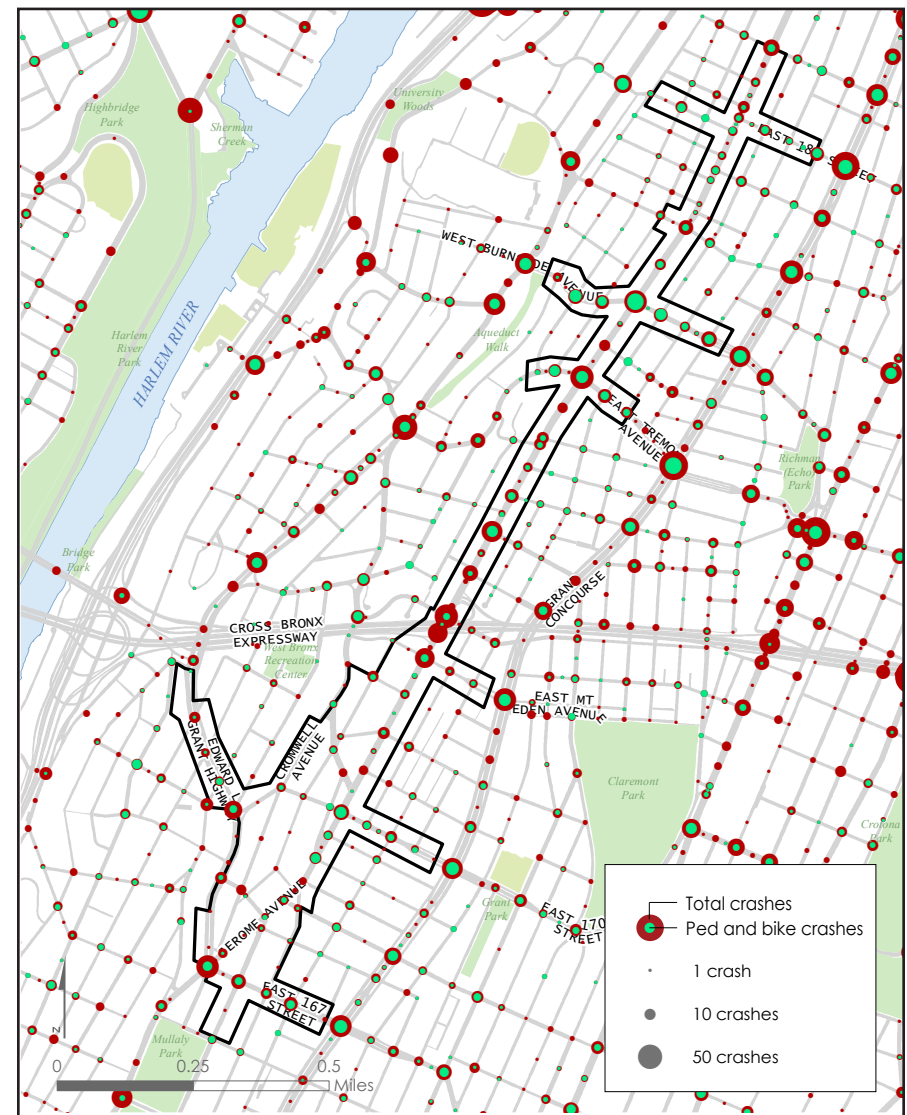
Jerome Avenue and 170th Street – This intersection experienced 21 crashes over the five year study period, ten of which involved pedestrians, and one a cyclist. 170th Street is also a street with high pedestrian traffic, adding to the possibility of more crashes involving pedestrians in the future.

Jerome Avenue-Cross Bronx Expressway-Mount Eden Avenue – This is an area of high vehicular traffic which had a total of 132 crashes, ten of which involved pedestrians or cyclists. The Cross Bronx Expressway on- and off-ramps are particularly challenging for pedestrians to cross due to a lack of traffic signals and drivers' aggressive movements at these locations. Several community members have mentioned that they avoid crossing at this location.

East 175th Street and Jerome – This intersection had 35 crashes from 2009 to 2013, ten involving pedestrians or cyclists.

Jerome Avenue and Tremont Avenue – This intersection had 45 crashes, ten of which involved pedestrians, and two cyclists.

Jerome Avenue and East 167th Street – This location had 41 total crashes over the five-year study period, eight of which involved pedestrians or cyclists. This intersection, with four different streets that intersect, is a wide and awkwardly shaped intersection. Additionally there is an elementary school at this intersection which generates significant pedestrian traffic.



Source: New York City Department of Transportation

Figure 3.6: Crash data for the zoning study area, 2009 to 2013

Burnside Avenue Corridor – The portion of Burnside Avenue that intersects the zoning study area stands out as having a significantly high crash rate for autos, bikes and pedestrians. The intersection of Burnside Avenue and Jerome Avenue had the highest number of pedestrian crashes in the zoning study area. From 2009 to 2013, 43 total crashes occurred at this location, more than half of which involved pedestrians or cyclists. The high pedestrian volume along this retail corridor likely contributes to the high pedestrian crash frequency.

Grand Concourse – Several intersections along the Grand Concourse had significant crash rates from 2009 to 2013. In particular the intersections at East Tremont Street, East 184th Street, East 183rd Street, East 181st Street and East Mount Eden Avenue each had 40 or more crashes during this period.

Location	Total Crashes	Pedestrian and Bike Crashes
170 St. and Jerome Ave.	21	11
CBE/Mt. Eden Ave. and Jerome Ave.	132	10
E. 175 St. and Jerome	35	10
Tremont Ave. and Jerome	45	12
167 St. and Jerome Ave.	41	8
Burnside Ave. and Jerome Ave.	43	23
E. Tremont and Grand Concourse	69	22
E. 181 St. and Grand Concourse	46	12
E. 183 St. and Grand Concourse	65	17
E. 184 St. and Grand Concourse	40	12
Mt. Eden Ave. and Grand Concourse	42	12

Source: New York City Department of Transportation

Table 3.1: Crashes at selected locations in the zoning study area, 2009 to 2013

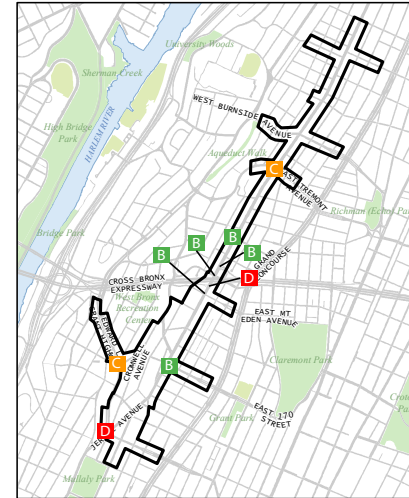
Traffic Operations and Analysis

An evaluation of the traffic operations at selected locations was performed as part of the study. Traffic data was collected in November 2014 at 14 locations to identify the daily temporal variation of traffic volumes and to perform a level of service (LOS) analysis for the zoning study area.

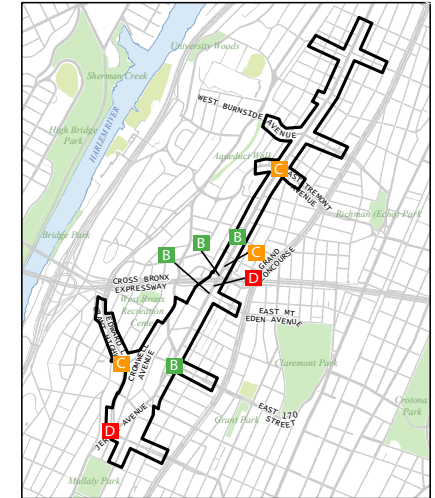
Eleven of the 14 analyzed intersections currently operate at an acceptable LOS, varying from A to D for all approaches and all peak periods (see Appendix V for detailed LOS results). However three intersections have approaches operating at LOS E or F: East 167th Street and Jerome Avenue, West 170th Street and Edward L. Grant Highway and the Cross Bronx Expressway northbound ramps at Jerome Avenue.

Even though many of the approaches at the entrance and exit ramps for the Cross Bronx Expressway (CBE) operate at a level of service better than E during the peak hours of the day, this does not reflect the traffic congestion and behavior of motorists at these locations. Observations revealed that there is significant congestion and queuing that keeps traffic volumes artificially low and the LOS artificially high, particularly from Mount Eden Avenue to East 174th Street/Featherbed Lane. Figure 3.7 shows the LOS for all intersections for each period we analyzed.

AM Weekday



Midday Weekday



PM Weekday



Midday Saturday

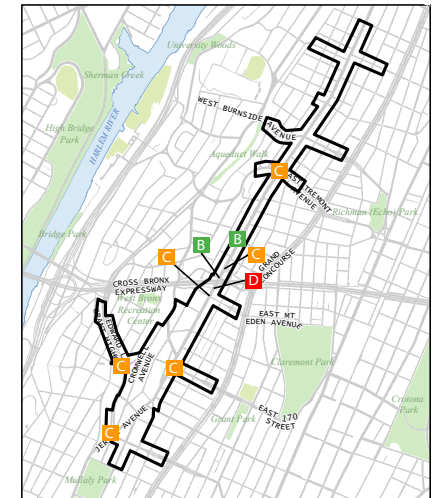


Figure 3.7: Cromwell Avenue-Jerome Avenue zoning study area level-of-service at peak periods

On-Street Parking Regulations

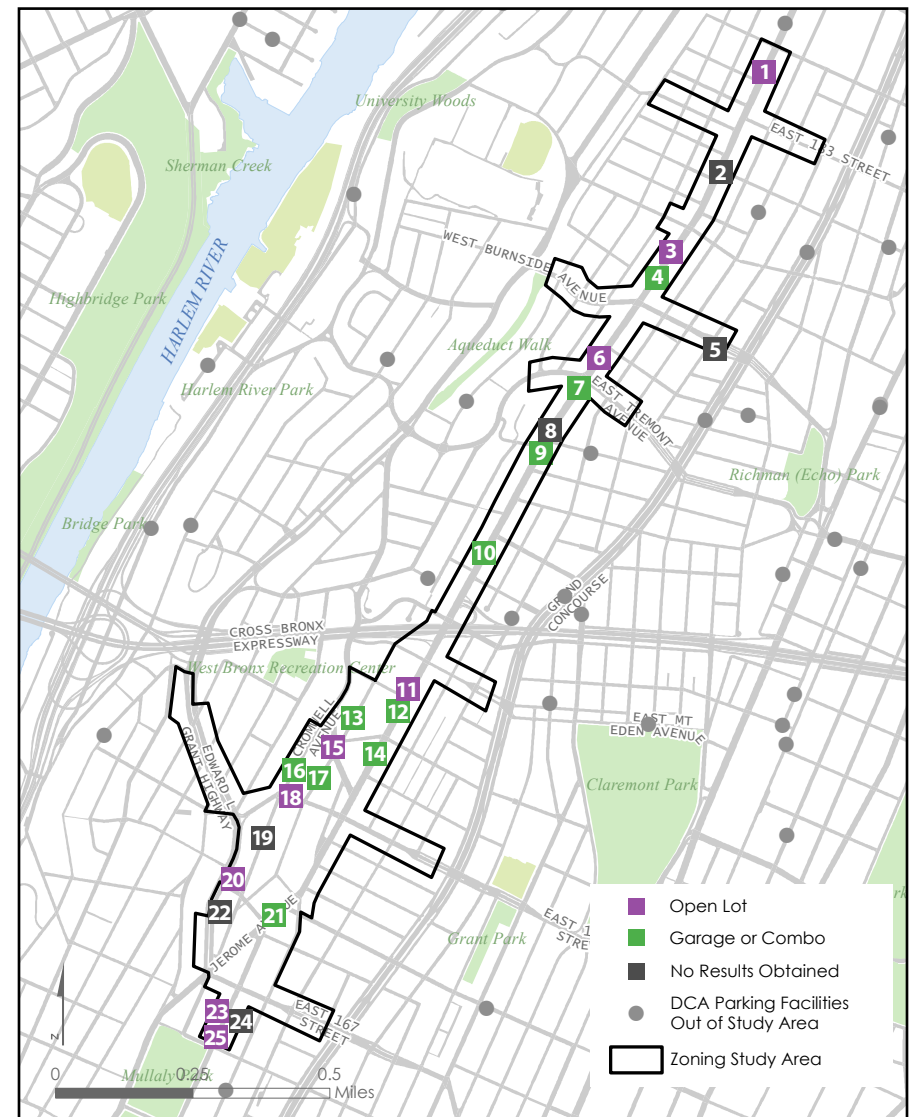
On-street parking is generally permitted in the study area, with restrictions governed by parking signs that regulate parking during a set time period of the day and week, or designate “No Parking Anytime” and “No Standing” zones. The most common regulations are for street cleaning, curb use, bus services, spaces reserved for city vehicles, metered parking and “No Standing” zones at intersections to increase visibility.

Street cleaning regulation requires vehicle owners to move their vehicles prior to the cleaning time indicated, which varies by street but is typically twice a week and does not last more than three hours. Curbside regulations also include “No Parking Anytime” and “No Standing” signs pertaining to a specific use such as a school (e.g. New Settlement Community Campus on Jerome Avenue, Bronx Academy of Promise School on Inwood Avenue), a police station (e.g. Bronx 44th Precinct on East 169th Street) or bus services. Also parking near certain corners or intersections is prohibited (known as “daylighting”) by enforcing “No Standing Anytime” zones to increase visibility for drivers and pedestrians and to enable easier turning for large vehicles.

On-street parking is free of charge on Jerome Avenue, Inwood Avenue and Cromwell Avenue with a one hour time limit from Monday through Saturday during the daytime. Meters are in effect on Burnside Avenue, Edward L. Grant Highway, West Mount Eden Avenue, East 167th Street and East 170th Street with a one or two hour time limit Monday through Saturday during the daytime.

Off-Street Parking Facilities

The study area contains a significant amount of off-street public parking. In the zoning study area, there are 25 parking lots and garages licensed by the New York City Department of Consumer Affairs providing more than 2,530 parking spaces.⁵ During the weekday midday peak period, around 1,800 spaces are typically occupied, representing a 72 percent utilization rate. It



Source: New York City Department of Consumer Affairs and Parking Facilities Managers
Figure 3.8: Cromwell Avenue-Jerome Avenue zoning study area off-street parking facilities

should be noted that Yankee Stadium on 161st Street tends to generate a high volume of parking demand when hosting games. At least two facility managers reported the facility utilization rate can be as high as 100 percent when the New York Yankees are playing home games.

List Number	Facility Name	Location	License Number	Capacity	Typical Midday Utilization (Spaces)	Typical Midday Utilization
1	Jerome Gas Corp.	2350 Jerome Ave.	1422639	25	8	32%
2	Sam Dar Enterprises Inc.	2218 Jerome Ave.	2006524	129	90	70%
3	KK Enterprise Group Inc.	2125 Jerome Ave.	1389592	75	45	60%
4	D'Almonte Enterprises Parking Garage Inc.	2080 Jerome Ave.	1303884	70	65	93%
5	Central Parking System of New York Inc.	2032 Creston Ave	1200151	49	49	100%
6	Jerome Parking Corp.	1985 Jerome Ave.	1421366	54	40	74%
7	Jerome Parking Corp.	1961 Jerome Ave.	1421369	51	40	78%
8	KRM Garage Corp.	1900 Jerome Ave.	1088937	40	40	100%
9	Veneca Parking Corp.	1892 Jerome Ave.	1249121	49	42	86%
10	1740 Petroleum LLC	1730 Jerome Ave.	1403604	33	33	100%
11	1545 Parking LLC	1545 Jerome Ave.	1040945	250	188	75%
12	Happy Men Parking Corp.	1556 Jerome Ave.	2005860	150	150	100%
13	Jonathan & Gabrielle Parking Inc.	1521 Inwood Ave.	1134343	100	65	65%
14	Ramcell Parking Corp.	1484 Jerome Ave.	1467740	174	85	49%
15	FIH Enterprise Inc.	1475 Macombs Rd.	1341969	99	50	51%
16	119 Parking Lot Corp.	1414 Cromwell Ave.	1360731	70	70	100%
17	1430 Inwood LLC	1430 Inwood Ave.	1241015	140	55	39%
18	BK Parking Group Inc.	27 W 170th St.	1381089	99	75	76%
19	Citisafe Parking Corp.	1355 Cromwell Ave.	1135386	100	35	35%
20	55 W 169 Parking, Inc.	55 W 169th St.	1300468	78	39	50%
21	Bienvenido, LLC	1277 Jerome Ave.	1407851	300	300	100%
22	ELG & 169th Street Parking Corp.	1240 Edward L. Grant Highway	1402548	140	126	90%
23	90 John St. Parking Corp.	1185 River Ave.	1341578	100	40	40%
24	PJP Parking Corp.	1184 River Ave.	1380470	88	75	85%
25	LR Parking Corp.	1150 River Ave.	1380469	74	20	27%

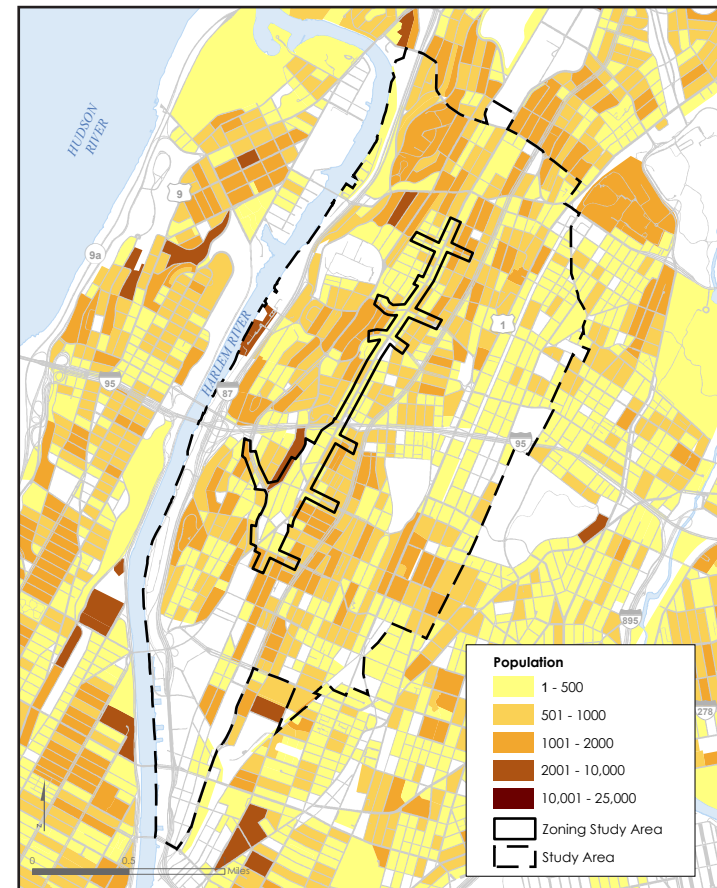
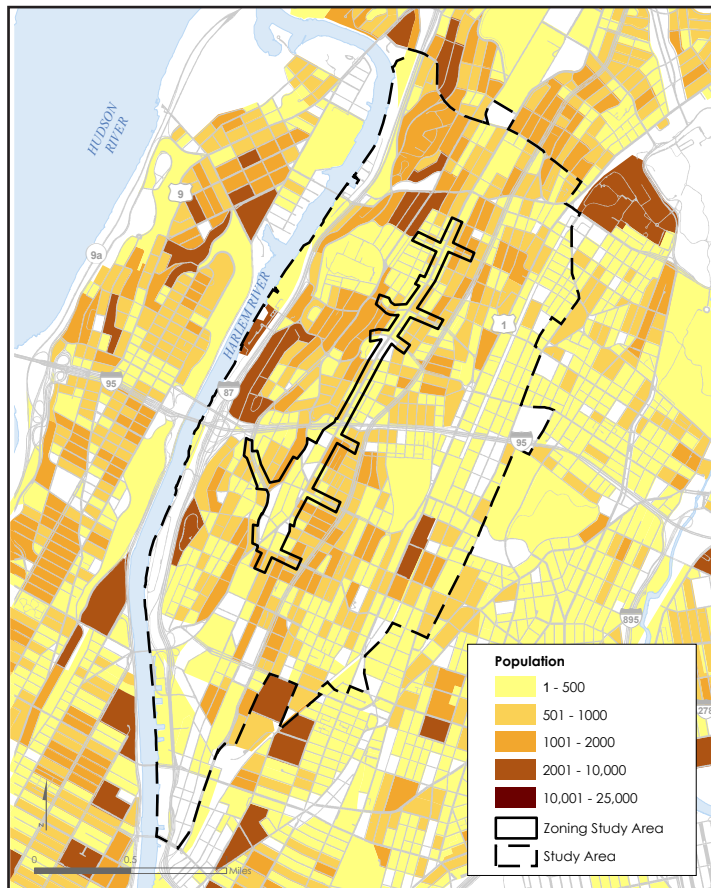
Source: New York City Department of Consumer Affairs and Parking Facilities Managers

Table 3.2: Cromwell Avenue-Jerome Avenue zoning study area off-street parking facilities details

Socioeconomic and Demographic Trends

Population

The population of the Cromwell Avenue-Jerome Avenue study area has experienced modest growth since the year 2000. From 2000 to 2010, the population of the study area increased from just under 341,000 to nearly 350,000. The population of the zoning study area remains relatively sparse compared to the study area as it contains few residential developments. Yet there are large residential areas on its east and west sides where population density is higher. Immediately



Source: U.S. Census Bureau

Figure 3.9: Cromwell Avenue-Jerome Avenue study area population by census block, 2000 and 2010

to the west of the zoning study area, the population of the census block between Macombs Road and Jesup Avenue doubled from 2000 to 2010 due to the construction of several new residential buildings with affordable housing during that time period. Another population center runs along Walton Avenue to the east of the zoning study area; this area did not see a significant change in population from 2000 to 2010.

Race

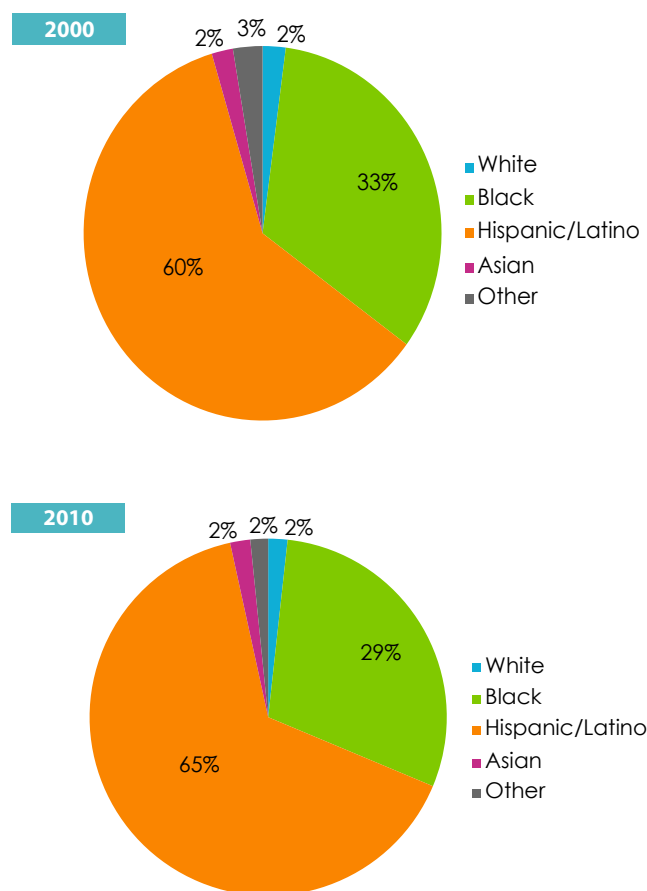
The racial makeup of the Cromwell Avenue-Jerome Avenue study area is majority Hispanic, with black people making up a significant portion as well. However, the Hispanic population increased from 60 to 65 percent from 2000 to 2010 while the black population fell from 33 to 29 percent during the same time period. White and Asian people and those of other races



Source: U.S. Census Bureau

Figure 3.10: Cromwell Avenue-Jerome Avenue study area geographic distribution of racial groups by census block, 2000 and 2010

are interspersed throughout the study area in small numbers with no significant concentrations. This racial mix reflects that of the South Bronx in general, which is largely Hispanic and black.



Source: U.S. Census Bureau

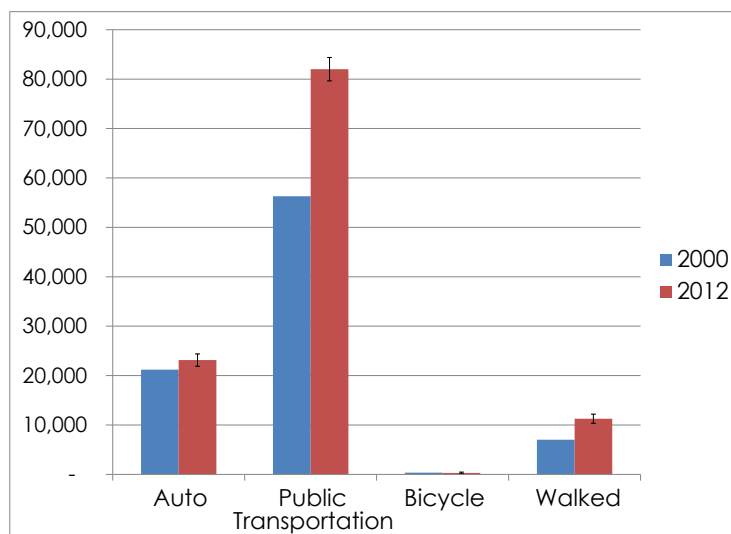
Figure 3.11: Cromwell Avenue-Jerome Avenue study area racial make-up, 2000 and 2010

Income

According to the Bronx Community District 4 Profile, CD4 had the third lowest median household income in New York City as of 2011 at \$26,934. According to the American Community Survey (ACS), median income in the study area was \$26,226 in 2012. This compares to a 2012 median income of \$34,300 for the Bronx and \$51,865 for New York City as a whole. Unemployment and poverty statistics show a similar disparity. In 2012, the unemployment rate in the study area was 17.7 percent while that in the Bronx was 14.2 percent and in New York City it was 10.2 percent. The percent of people living below the poverty level in the study area in 2012 was 38.2 percent while for the Bronx, it was 29.3 percent and for the city it was 19.9 percent.

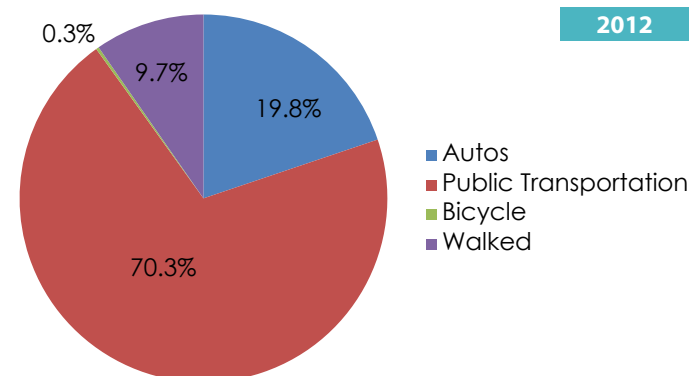
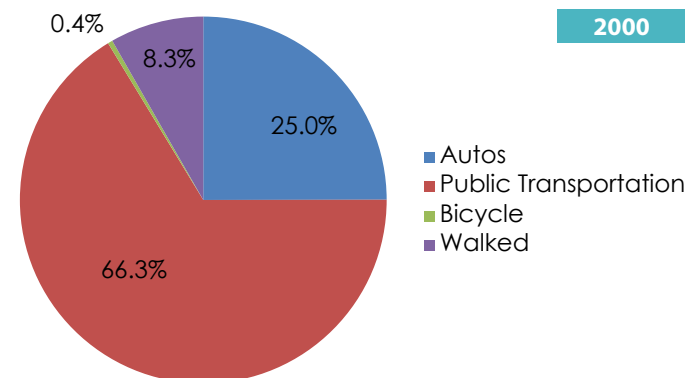
Transportation Data Trends

The three transportation data sets analyzed in this section are distributed as part of the Census Transportation Planning Package (CTPP). Data from 2000 was collected as part of the Decennial Census Long Form, a survey whose sample size was one in every six people. Due to the discontinuation of the Long Form, however, CTPP data from later years was collected as part of the American Community Survey (ACS), whose sample size is approximately one in 15 people.



Source: U.S. Census Bureau

Figure 3.12: Change in journey to work modal split for those who live in the study area, 2000 to 2012

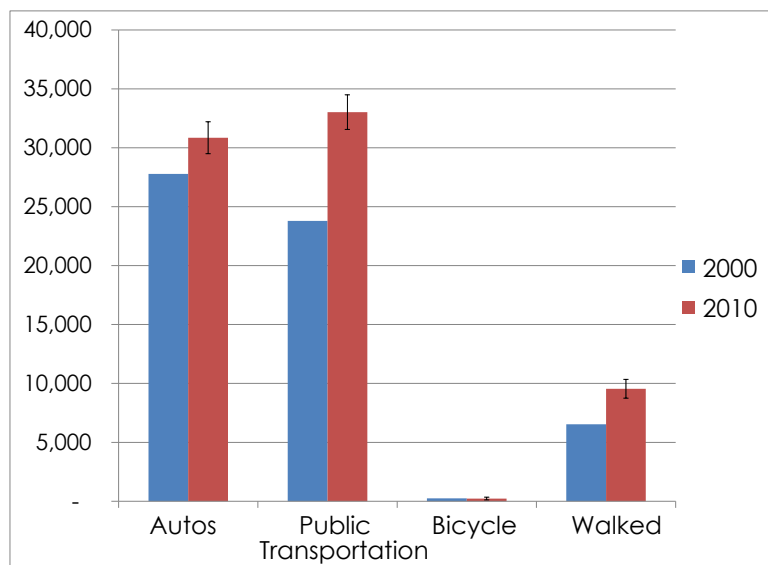


Source: U.S. Census Bureau

Figure 3.13: Journey to work modal split for those who live in the study area, 2000 and 2012

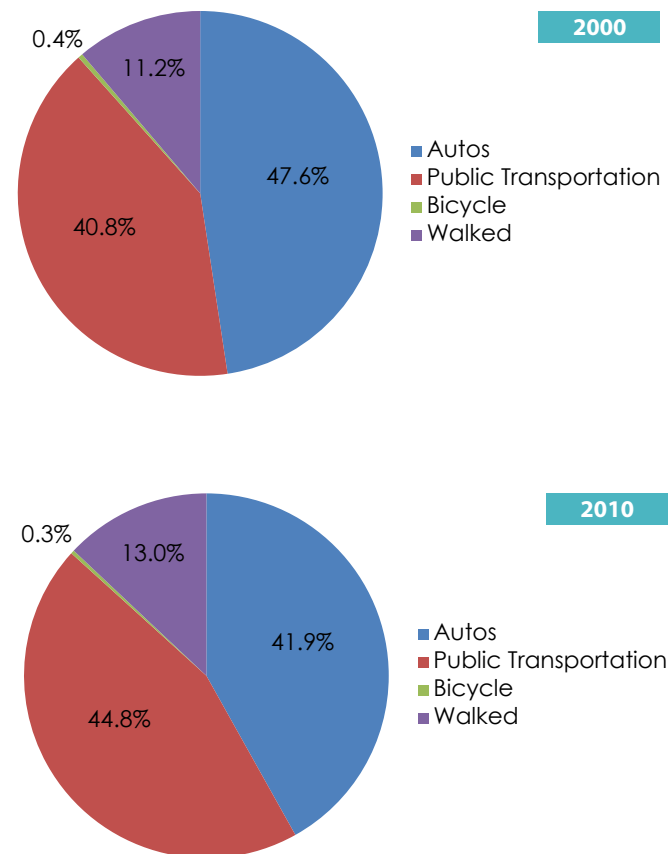
Means of Transportation to Work

Means of Transportation to Work by Residence is a measure of what mode of transportation people who live in a particular area use to get to their workplaces. The modal split for the study area is tilted largely in favor of public transportation and the share for this mode increased significantly from 2000 to 2012, largely by replacing autos. Similarly, the share of residents walking to work increased. Meanwhile, cycling remains an insignificant portion of the modal split. (See Figure 3.13)



Source: U.S. Census Bureau

Figure 3.14: Change in journey to work modal split for those who work in the study area, 2000 to 2010



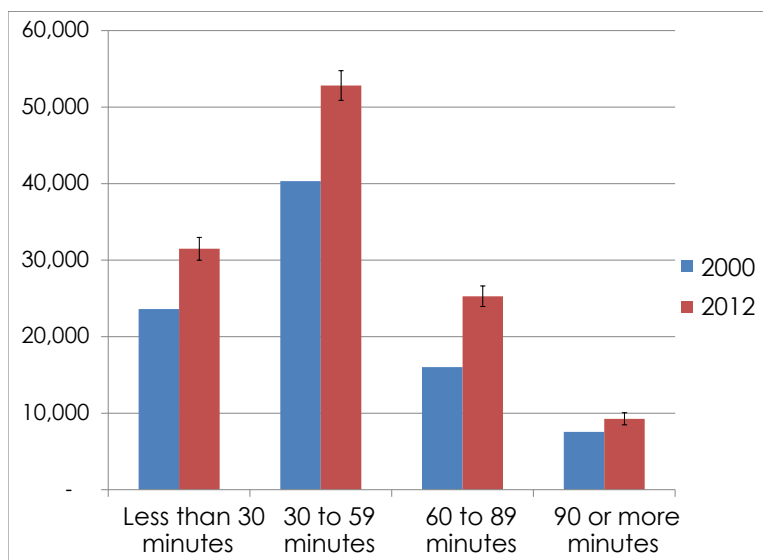
Source: U.S. Census Bureau

Figure 3.15: Journey to work modal split for those who work in the study area, 2000 and 2010

Means of Transportation to Work by Workplace measures what mode of transportation people who work in a particular area use to get to their workplaces. For the Cromwell Avenue-Jerome Avenue study area, the modal split for workers is tilted toward autos. However, as with the modal split for residents, autos were supplanted to a degree by walking and public transportation from 2000 to 2010. Cycling is also an insignificant portion of the modal split for workers. (See Figure 3.15)

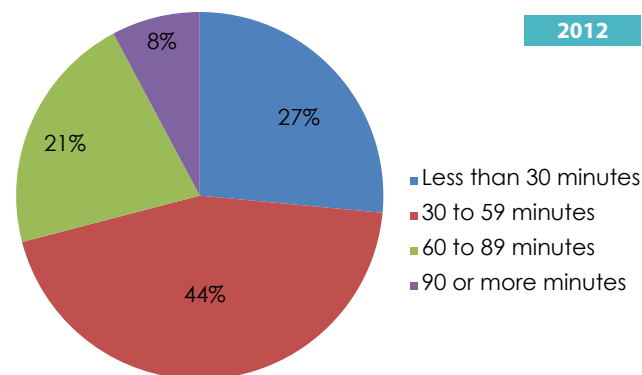
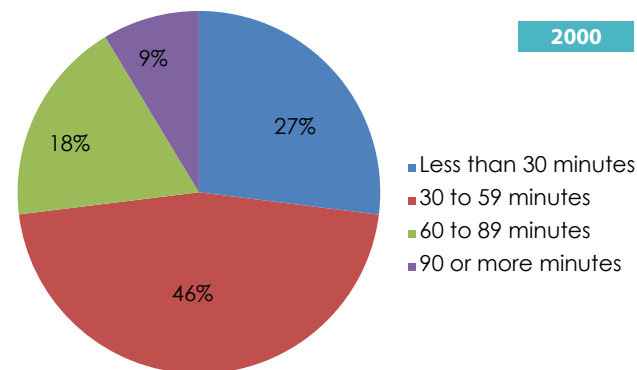
Travel Time to Work

Travel Time to Work by Residence measures how long it takes residents of a particular area to get to work. Commute times to work in the Cromwell Ave-



Source: U.S. Census Bureau

Figure 3.16: Change in travel time to work for those who live in the study area, 2000 to 2012

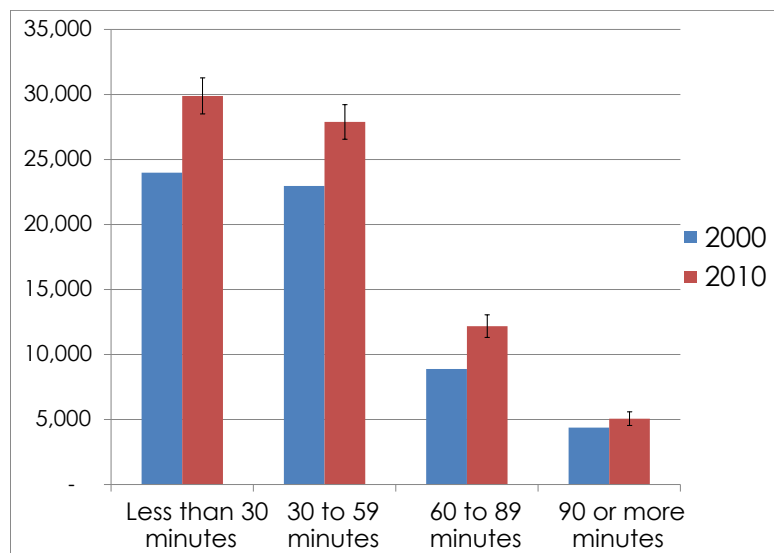


Source: U.S. Census Bureau

Figure 3.17: Travel time to work for those who live in the study area, 2000 and 2012

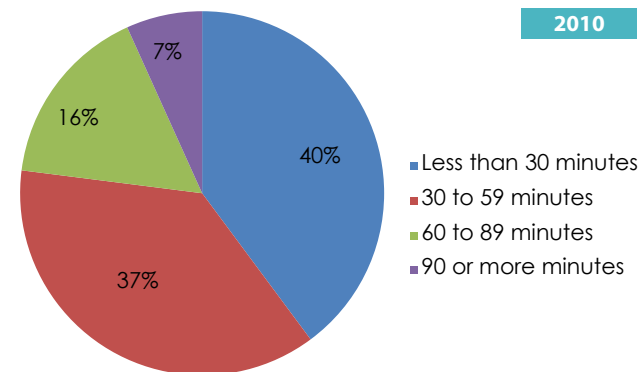
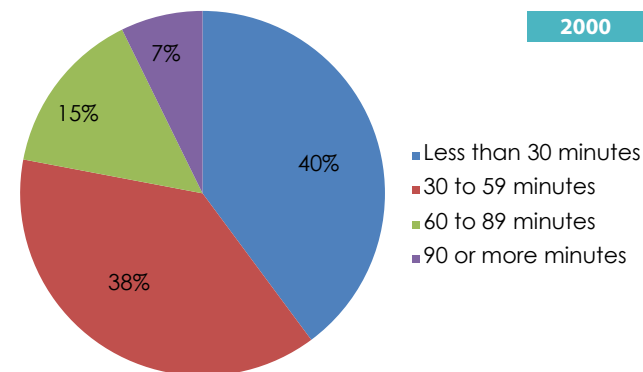
nue-Jerome Avenue study area are moderate with nearly three-quarters of residents getting to work in less than one hour. The breakdown of commute times remained fairly consistent from 2000 to 2012 but the share of people with commutes of 60 to 89 minutes increased slightly.

Travel times for those who work in the study area are significantly shorter with over three-quarters commuting less than one hour and 40 percent less than 30 minutes. From 2000 to 2010, there was essentially no change in the breakdown of travel times.



Source: U.S. Census Bureau

Figure 3.18: Change in travel time to work for workers of the study area, 2000 to 2010

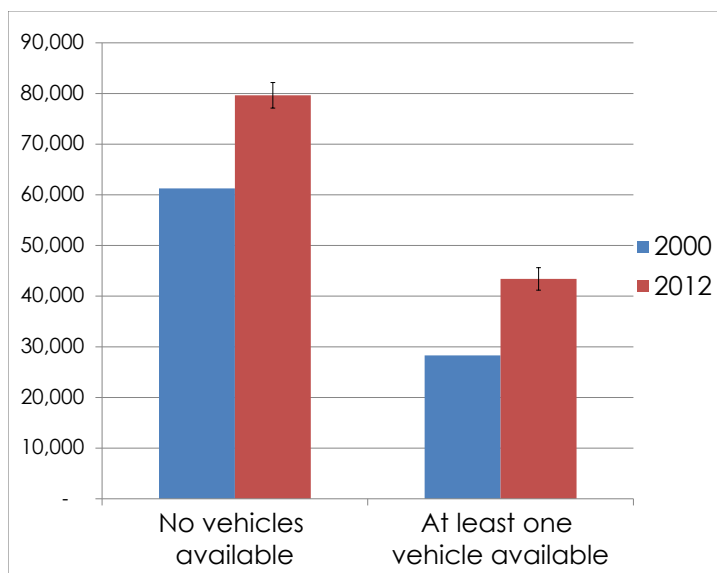


Source: U.S. Census Bureau

Figure 3.19: Travel time to work for those who work in the study area, 2000 and 2010

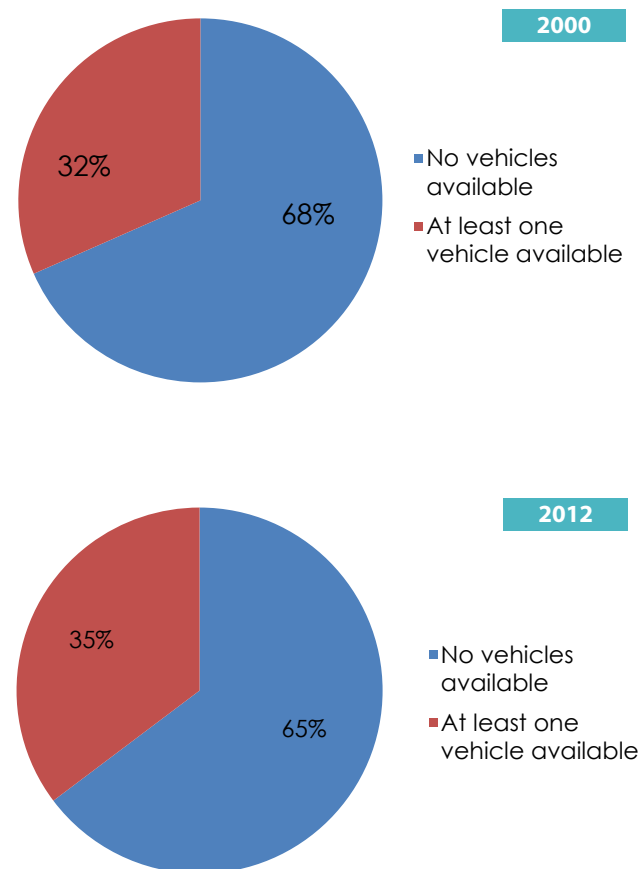
Vehicles Available

Residents of the Cromwell Avenue-Jerome Avenue study area have a low rate of vehicles available. The vast majority, 65 percent, had no vehicles available in 2012. That represents a slight decline from 2000.



Source: U.S. Census Bureau

Figure 3.20: Change in vehicles available for those who live in the study area, 2000 to 2012



Source: U.S. Census Bureau

Figure 3.21: Vehicles available for those who live in the study area, 2000 and 2012

Land Use and Zoning

Citywide Regulations

New York City is divided into three basic zoning districts: residential (R), commercial (C) and manufacturing (M). The three basic districts are further divided into ten residential, eight commercial and three manufacturing zoning districts of varying densities and regulations. Any of these districts may be overlaid by special zoning districts tailored to the unique characteristics of certain neighborhoods, such as a commercial overlay on some block-fronts in residential districts. These overlay districts modify and supplement the controls of the underlying zoning district.

The Cromwell Avenue-Jerome Avenue study area contains a mix of commercial and residential districts, along with a manufacturing district and some commercial overlays. The majority of the commercial zones are dominated by auto repair shops, parking lots and retail stores. The residential districts are mostly comprised of buildings that are several stories tall with almost no commercial enterprises on the first floors. The manufacturing district contains mostly warehouses and storage companies, but has some residential buildings as well. The commercial and manufacturing districts in the study area are surrounded by large residential districts on either side of the zoning study area.

C8-3 Districts (North of the Cross Bronx Expressway)

C8-3 districts are zoned mostly for automotive services, with other heavy commercial uses allowed as well. In C8-3 districts, housing is not permitted, and substantial parking must be provided for commercial uses. The FAR for these districts is 2.0, meaning buildings cannot have more than two times as much building area relative to their lot sizes. Within the C8-3 districts in the zoning study area, there are some non-conforming residential uses that likely predate zoning regulations.

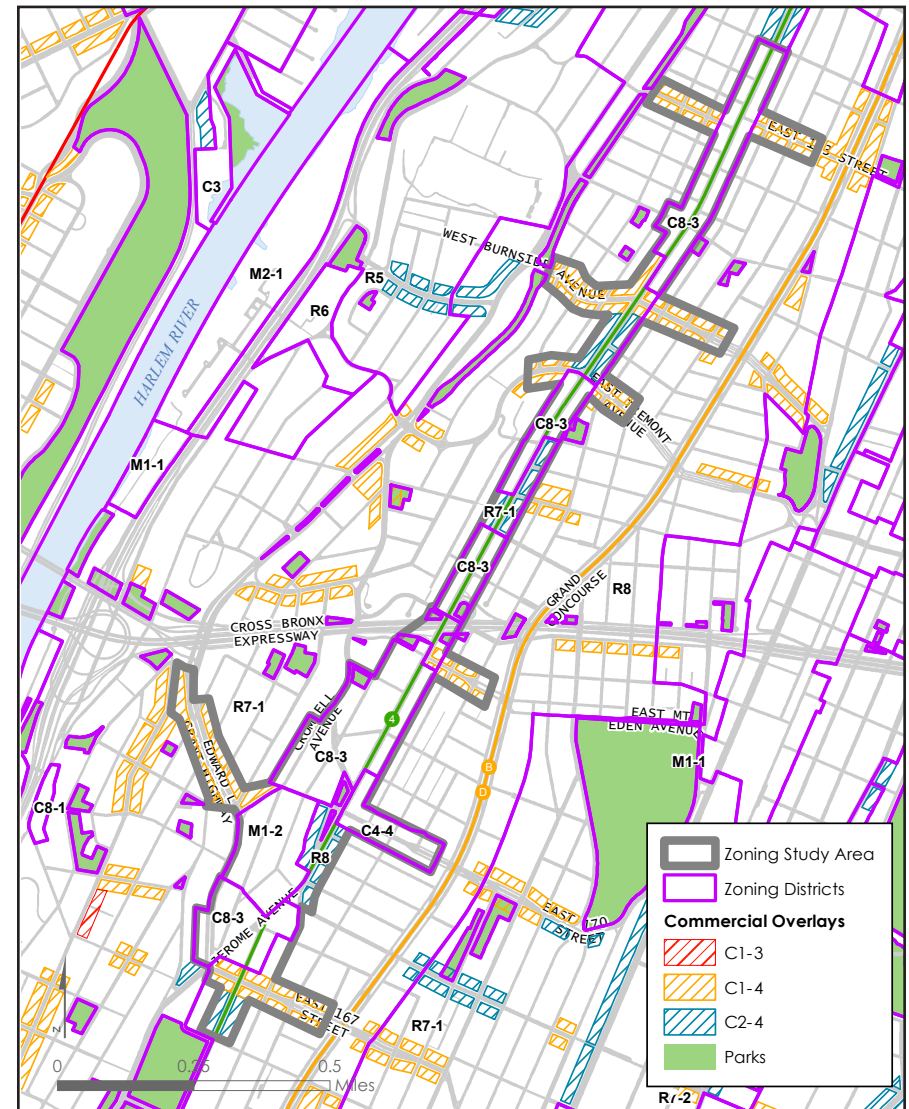


Figure 3.22: Zoning districts in the Cromwell Avenue-Jerome Avenue zoning study area

There are three C8-3 commercial districts in the zoning study area north of the Cross Bronx Expressway. All of these districts contain high concentrations of automotive-related businesses. They also contain retail uses, public facilities and manufacturing facilities throughout. Although housing is not permitted in C8-3 districts, some six- and seven-story apartment buildings can be found along Jerome Avenue between West 183rd Street and Clinton Place. Three mixed commercial/residential lots are located at Clifford Place West and Jerome Avenue. Susan's Place, a women's medical center that serves mentally ill and medically vulnerable homeless women is located on Jerome Avenue between Tremont Avenue and West 177th Street.

C8-3 Districts (South of the Cross Bronx Expressway)

There are two C8-3 districts mapped within the zoning study area south of the Cross Bronx Expressway.

The first C8-3 district stretches from 170th Street to the Cross Bronx Expressway, between Jerome and Cromwell Avenues. Commercial services on Cromwell Avenue include auto body shops, a used car lot, moving companies, realty stores, and industrial supply stores. There is also a large taxi depot and repair shop/service station. Jerome Avenue is lined with businesses as well, including delis, a supermarket, a restaurant, a night club and parking lots. It also includes the newly constructed New Settlement Community Campus, which houses three schools covering pre-kindergarten through grade 12 and an outdoor play area. Despite the fact that it is a C8-3 district, there are also some residential buildings interspersed throughout the district.

The second C8-3 district lies between 167th and 169th Streets and contains commercial services such as gas stations, auto body shops, and parking lots. Public facilities include the 44th police precinct, which includes New York Police Department (NYPD) fleet services and an auto shop as well as a health care facility. There is a group of mixed commercial/residential buildings on Inwood Avenue and West 169th Street despite the commercial zoning. In addition, P.S. 114, the Luis Lorens Torres School, is situated just



Figure 3.23: Cromwell Avenue-Jerome Avenue zoning study area land use

outside of the C8-3 district, south of the intersection of Jerome Avenue and East 167th Street while the Columbus Medical Rehabilitation Center is within the C8-3 district at the intersection of Edward L. Grant Highway and Cromwell Avenue.

C4-4 District

The C4-4 district runs along East 170th Street from Jerome Avenue to the Grand Concourse. C4-4 districts are commercial hubs that are not located in the central business district. The FAR for commercial enterprises in C4-4 districts is 3.4, which allows for department stores with several floors. The C4-4 district on East 170th Street is a regional commercial center with many shops, such as shoe stores, cell phone stores, clothing stores, pharmacies, banks, hardware stores and eateries. Some of its commercial buildings are mixed commercial/residential structures, with four stories of apartments above them. The school P.S. 64 is located just off East 170th Street on Walton Avenue, near the northern border of this district.

C1-4 and C2-4 Commercial Overlay Districts

Several C1-4 and C2-4 commercial overlays are mapped in the zoning study area. They are generally mapped along major avenues and streets that serve the local retail needs of the surrounding residential neighborhoods. Typical uses include grocery stores, hair salons and restaurants. The C2-4 allows for a wider range of uses, which include repair services. The maximum commercial FAR is 2.0. Residential and community facility developments are permitted in the C1-4 and C2-4 districts.

In the zoning study area, the C1-4 and C2-4 commercial overlays are concentrated in areas with pockets of commercial activity in the residential districts around 183rd Street, Burnside Avenue, Tremont Avenue, 176th Street, Mount Eden Avenue, Edward L. Grant Highway, 170th Street and 167th Street.

The C1-4 overlays on East 167th Street, East Mount Eden Avenue and 183rd

Street largely contain local retail destinations and services that cater to the daily needs of the immediate neighborhood including supermarkets and grocery stores, pharmacies, eateries and beauty salons. The C1-4 overlay on Burnside Avenue serves customers in a larger area and therefore extends further and contains more chain stores.

Most of the C2-4 overlay districts in the study area are interspersed along Jerome Avenue and River Avenue. These overlays contain uses similar to C1-4 districts, but some also contain auto-related uses and parking lots.

M1-2 District

The M1-2 district is situated between two C8-3 districts, mainly encompassing the area between 169th and 170th Streets, and between Edward L. Grant Highway and parts of Jerome Avenue. M1-2 districts do not permit residences, and require extra parking be made available. They usually host lighter industrial uses such as wholesale service and storage facilities, woodworking shops and repair shops.

Industries in this particular district include a packaging company, an iron works shop, parking lots, auto repair shops, a city sanitation truck depot, a U.S. Postal Service truck depot, a large CubeSmart storage facility, and many warehouses. In this district, there are not many parking lots. Despite the M1-2 designation, there are some multi-family walkup residences in this district intermingled with warehouses on Inwood Avenue. All of the residences are no taller than their surroundings—two to three stories high.

R7-1 District

Edward L. Grant Highway cuts through a large R7-1 district that lies in the western portion of the study area. This district overlaps Jerome Avenue at several locations where commercial overlays are present. R7 districts allow for medium height residential buildings. The FAR cannot exceed 4.0.

R8 District

The R8 district runs along the Grand Concourse corridor in the eastern portion of the study area. As with the R7-1 district, this district overlaps Jerome Avenue at several locations where commercial overlays are present. R8 districts allow for mid-rise to tall residential buildings. In this district, the lots are filled mostly with multi-storied brick residences. FAR cannot exceed 7.2 in this district.

Endnotes:

1. John McNamara. *History in Asphalt*. Bronx County Historical Society, New York, 1993.
2. Steve Alpert and Lexcie Lu. "The Cross-Bronx Expressway," Big Dig Seminar at Boston University, Metropolitan College, Spring 2003. <http://www.mit.edu/~uic/igert-cdrom/cross-bronx/xbronx.x005.pdf>
3. New York City Department of City Planning, "Bronx Community District 4 Profile." New York City, 2015. <http://www.nyc.gov/html/dcp/pdf/lucds/bx4profile.pdf>
4. The crash data is recorded by the New York Police Department and sent to the New York State Department of Motor Vehicles (DMV). The DMV sends the crash data to the New York State Department of Transportation (NYSDOT), which records it in its ALIS (Accident Location Information System) database. ALIS is a web-based system that visually displays crash data queries in GIS format. NYCDOT geocodes the crash data provided by NYSDOT. To perform the analysis for this project, DCP used NYCDOT's database of geocoded crash locations.
5. Utilization of these facilities was surveyed from August 2014 to January 2015 by contacting the manager of each facility to assess the approximate utilization levels during the weekday midday period. Data was collected for all 25 parking facilities.

RECOMMENDATIONS

Cromwell Avenue-Jerome Avenue Transportation Study

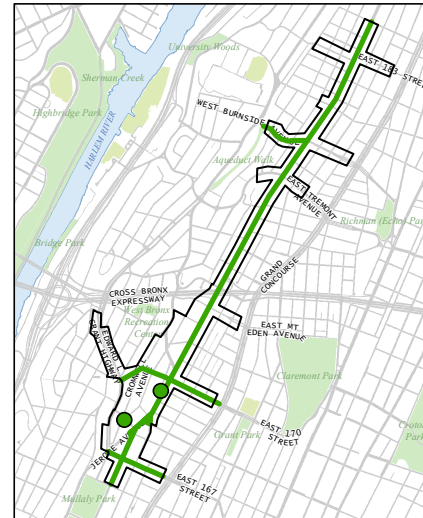
Introduction

Over several months of research, DCP identified more than a dozen areas within the Cromwell Avenue-Jerome Avenue zoning study area with transportation challenges. These challenges include pedestrian safety issues and lack of amenities, intersections with relatively high crash rates, inadequate connections to transit and traffic congestion. In response, we developed a series of recommendations to improve the safety and efficiency of transportation in the zoning study area. Our proposals are mainly targeted at creating a more walkable and livable streetscape that is safe for all roadway users. This means knitting together the large residential districts on each side of Jerome Avenue and ensuring that the major pedestrian destinations in and around the zoning study area—schools, shopping districts, parks and places of worship—are easily and safely accessible. While the area is well-served by existing public transit, it is vital that access to subway stations and bus stops be improved.

DCP's proposals were shared with NYCDOT and some treatments were developed in the course of discussion and several interagency working sessions. Collaboration between NYCDOT and DCP on a strategy for implementation will continue as needed. See Figure 4.2 for a map and accompanying list of locations, which provide a summary of the transportation challenges that were identified.

DCP's research included a variety of methods such as site visits during which we observed conditions and took street measurements, a detailed crash analysis of the zoning study area, discussions with community members on transportation challenges in the area and a level of service analysis that looked at traffic volumes collected at key intersections. Once draft recommendations were developed, we had a series of meetings with NYCDOT to discuss the feasibility of the recommendations and to begin determining the City's priorities for implementing improvements. The City will be involved in ongoing discussions with the community in order to identify high-priority projects that can be implemented in the short-term as well as projects that require a longer-term focus.

Enhanced Pedestrian Space



Pedestrian and Bicycle Safety Measures



Improved Connections to Transit



Additional Traffic Control

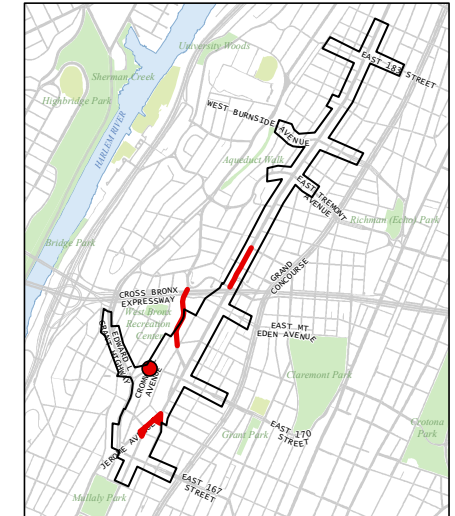


Figure 4.1: Transportation recommendations by category

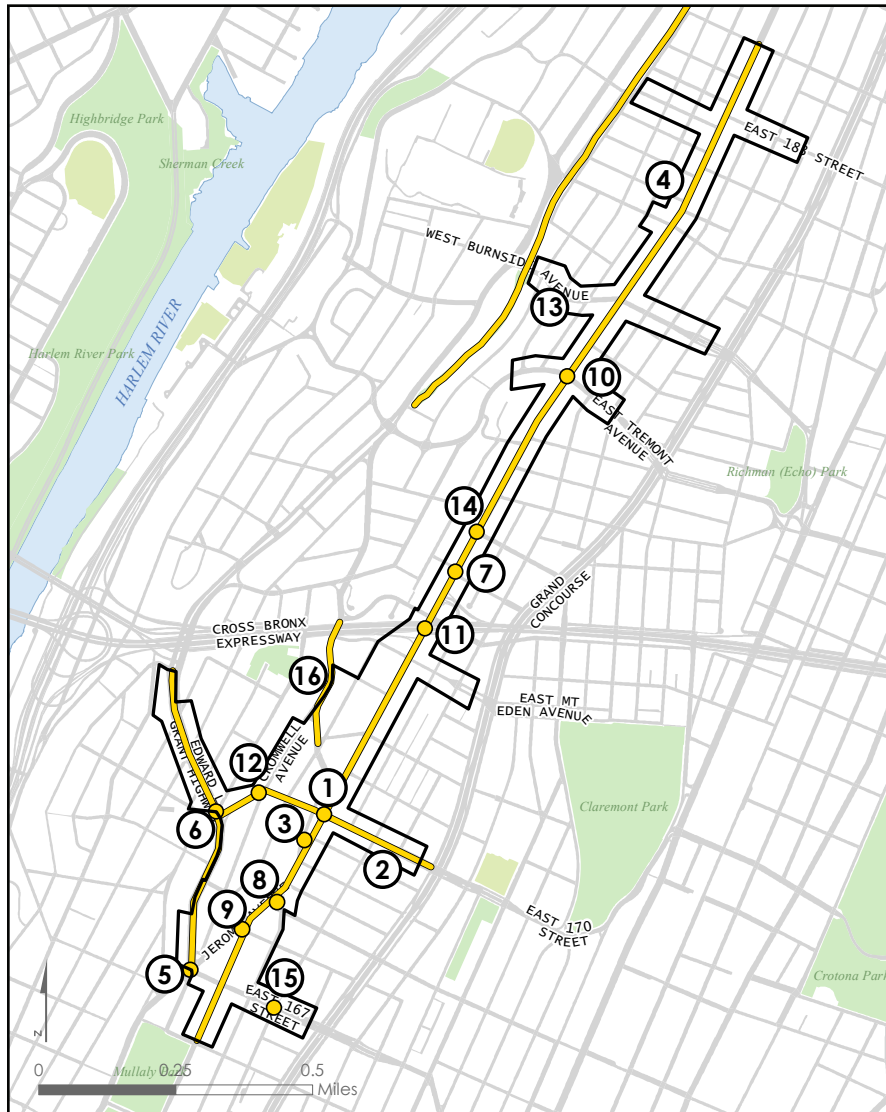


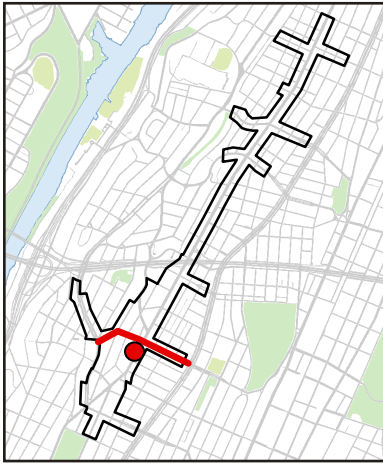
Figure 4.2: Locations with transportation challenges

Number	Location	Transportation Challenge
1	170 St and Jerome Ave	11 of 21 total crashes from 2009 to 2013 involved pedestrians or cyclists; drivers make frequent left turns despite "No Left Turn" signs for all directions
2	170 St corridor	Proportionally high pedestrian crash rate; lack of pedestrian amenities; double parking impedes traffic
3	Plaza Dr and Keltch Park	Proportionally high pedestrian crash rate; speeding vehicles; lack of pedestrian amenities
4	Jerome and River Aves	Lack of pedestrian amenities; parked cars on sidewalks; dark, loud, uninviting conditions; columns for elevated train create uncoordinated roadway
5	Jerome Ave and E 167 St	Significant number of crashes from 2009 to 2013; lack of pedestrian amenities; conflicts between roadway users
6	Edward L. Grant Hwy and W 170 St	Long, inadequate pedestrian crossing; excess roadway space provides opportunities for improvements
7	Jerome Ave and Clifford Pl	No pedestrian crossings from 174 St to 175 St along Jerome Ave; Clifford Pl step streets provide opportunities for pedestrian enhancements
8	Jerome and Gerard Aves	Long pedestrian crossing; cars parked in pedestrian plaza, blocking access
9	Jerome Ave at River Ave	Lack of pedestrian amenities; cars parked in striped area; excess roadway space provides opportunities for improvements
10	Jerome and Tremont Aves	12 of 45 total crashes here involved pedestrians or cyclists; long crossing distances; inadequate connection to transit
11	Jerome Ave and Cross Bronx Expwy	Heavy congestion; significant number of crashes from 2009 to 2013; lack of pedestrian amenities
12	Cromwell Ave and W 170 St	Long crossing distance; lack of pedestrian amenities
13	Aqueduct Walk	Lack of signage leading to the park
14	Jerome Ave and E 175 St	Proportionally high pedestrian crash rate; no traffic control for cars exiting Dunkin' Donuts parking lot
15	Walton Ave and E 167 St	Lack of pedestrian amenities
16	Macombs Rd	No pedestrian crossings for several blocks from Inwood Avenue to Featherbed Lane, southbound vehicles speed down street

Part II of this report walks through the details of these recommendations using a series of street design drawings, maps and photos of particular locations. The recommendations generally fall into four focus areas: enhanced pedestrian space, pedestrian and bicycle safety measures, improved connections to transit and additional traffic control measures. Figure 4.1 indicates where recommendations in each focus area are located. While some recommendations could arguably fall into all four focus areas, the maps indicate the one or two most germane focus areas for each.



170th Street Corridor



DCP took a close look at the 170th Street corridor, as it is an important retail destination and link in the transportation network. Several locations along this corridor were analyzed including the area around 170th Street, Jerome Avenue and Plaza Drive; the East 170th Street corridor between Jerome Avenue and the Grand Concourse; and the intersection of West 170th Street and Cromwell Avenue. These locations present transportation challenges along with opportunities to improve efficiency and safety for roadway users.

The intersection of 170th Street and Jerome Avenue is an important hub that includes an intermodal transfer point between east-west bus routes and the north-south Jerome Avenue el. East 170th Street between Jerome Avenue and the Grand Concourse is a shopping destination that includes banks, a supermarket and other major retail destinations. In addition, Keltch Park, which borders Jerome Avenue has the potential to serve as an important local pedestrian plaza space, knitting together this important hub.

Pedestrian safety is an important issue in this area. Our crash analysis indicated pedestrians are at high risk here: along the streets spanning the 170th Street corridor from Plaza Drive to Wythe Place as well as Jerome Avenue from 170th Street to Marcy Place, 39 out of 75 crashes—52 percent—involved pedestrians or cyclists from 2009 to 2013 (see Figure 4.3). At 170th Street and Jerome Avenue, left turns are prohibited from all directions, but observed traffic volumes indicate a significant number of illegal left turns are made, which may contribute to the crash rate. While this area is heavily used by pedestrians on a daily basis, DCP's research found that there is a general lack of pedestrian amenities along East 170th Street. Double-park-

ing by trucks making deliveries tends to slow down the flow of traffic on this corridor. At the southern portion of Plaza Drive, where this street merges with Jerome Avenue, there is an open parking area with no sidewalk causing a hazard for pedestrians. In addition, vehicles have been observed speeding down Plaza Drive.

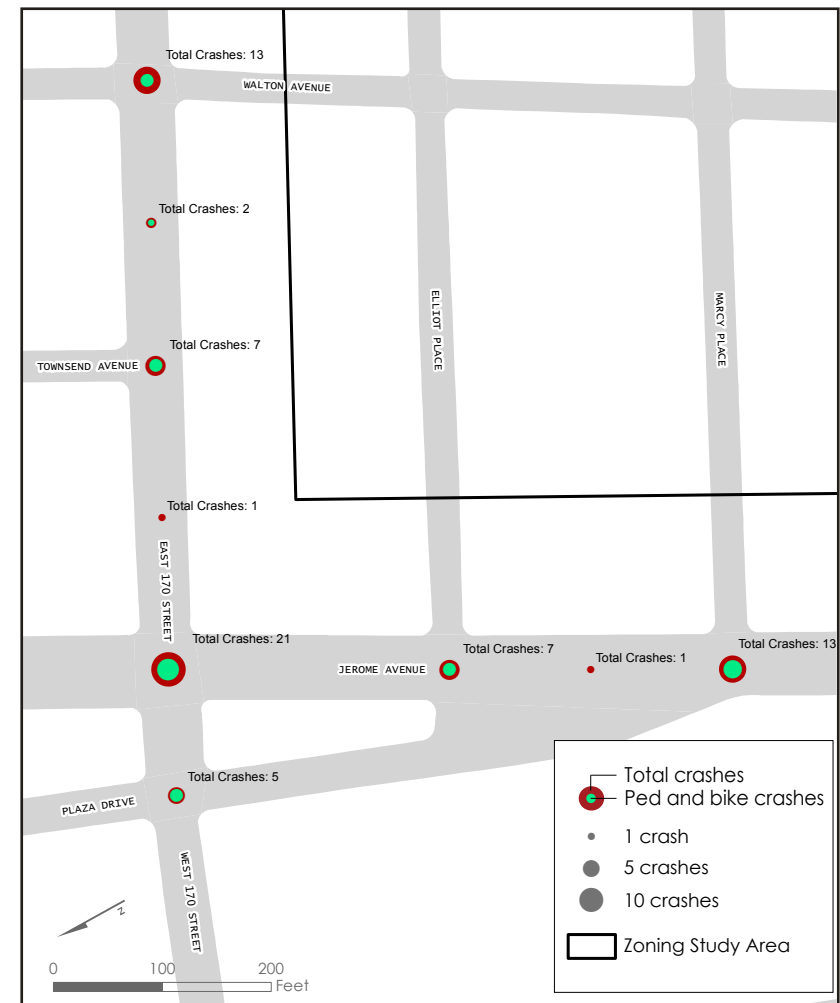


Figure 4.3: 170th Street crashes from 2009 to 2013

170th Street-Jerome Avenue-Plaza Drive

This area is recommended for interventions that address pedestrian safety and increase pedestrian amenities. These recommendations should help to bring down the number of pedestrians and cyclists involved in crashes and make this a more walkable area. In addition to pedestrian-oriented interventions, we also propose installing a bicycle lane on 170th Street that will complement NYCDOT's recently installed bicycle route on West 170th Street that connects the neighborhood with the High Bridge and the waterfront area. The City has two proposals for improving this area.



Proposal 1

Traffic calming measures, such as neckdowns, implemented on several corners should help reduce speeds and crossing distances. The open road space at the parking lot at the southern portion of Plaza Drive presents a unique opportunity to expand pedestrian space. Our recommendations include closing this portion of the street and providing a planted seating area in front of the church where Plaza Drive intersects Jerome Avenue. Building a sidewalk along the west side of Jerome Avenue adjacent to the parking area would increase safety for parkers and provide a contiguous pedestrian space extending from Keltch Park to the open space at the southern extent of Plaza Drive. The AutoTURN analysis (see Figure 4.6) shows that trucks that access the parking lot to the west of Plaza Drive will be able to turn out onto Elliot Place.



Figure 4.4: Plaza Drive existing conditions

Number	Proposal 1- Recommendation
1	Close street and convert to pedestrian space.
2	Add sidewalk. Currently pedestrians must walk in the street to access parking lot.
3	Add neckdowns at several locations to calm traffic and decrease crossing distances.
4	Redesign Keltch park to facilitate greater access and pedestrian circulation. Redesign could include a center path to facilitate pedestrian circulation and an entrance near bus stop on 170 th Street to allow bus riders to filter into park.
5	Realign curb to create more space for bus riders and a bus shelter.
6	Widen sidewalk by 5 feet to increase pedestrian space and calm traffic.

Number	Proposal 1- Recommendation
7	Replace existing crosswalk with high visibility crosswalk.
8	Add crosswalk and stop sign.
9	Move signals for pedestrians crossing Jerome to make them more visible. Currently they are located behind the el columns.
10	Move bus stop for either the Bx11 or Bx18 to this corner. Currently, both stop at Keltch triangle causing congestion on this short street.
11	Install bus shelter. The sidewalk is wide and much of it is unused.
12	Install bus pad. The existing roadbed is cracked and warped at the bus stop.

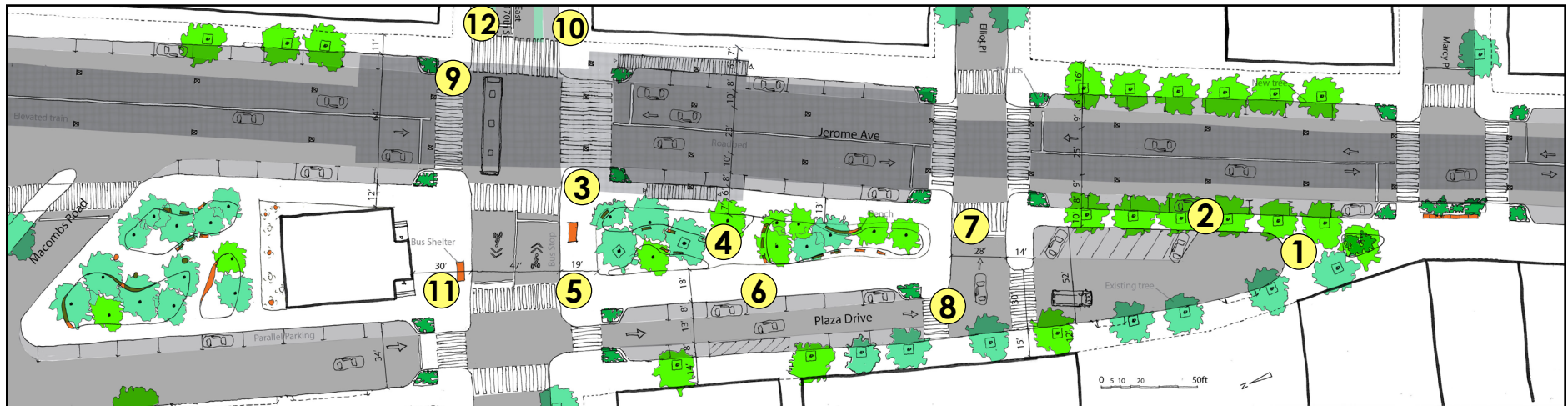


Figure 4.5: Plaza Drive proposal 1

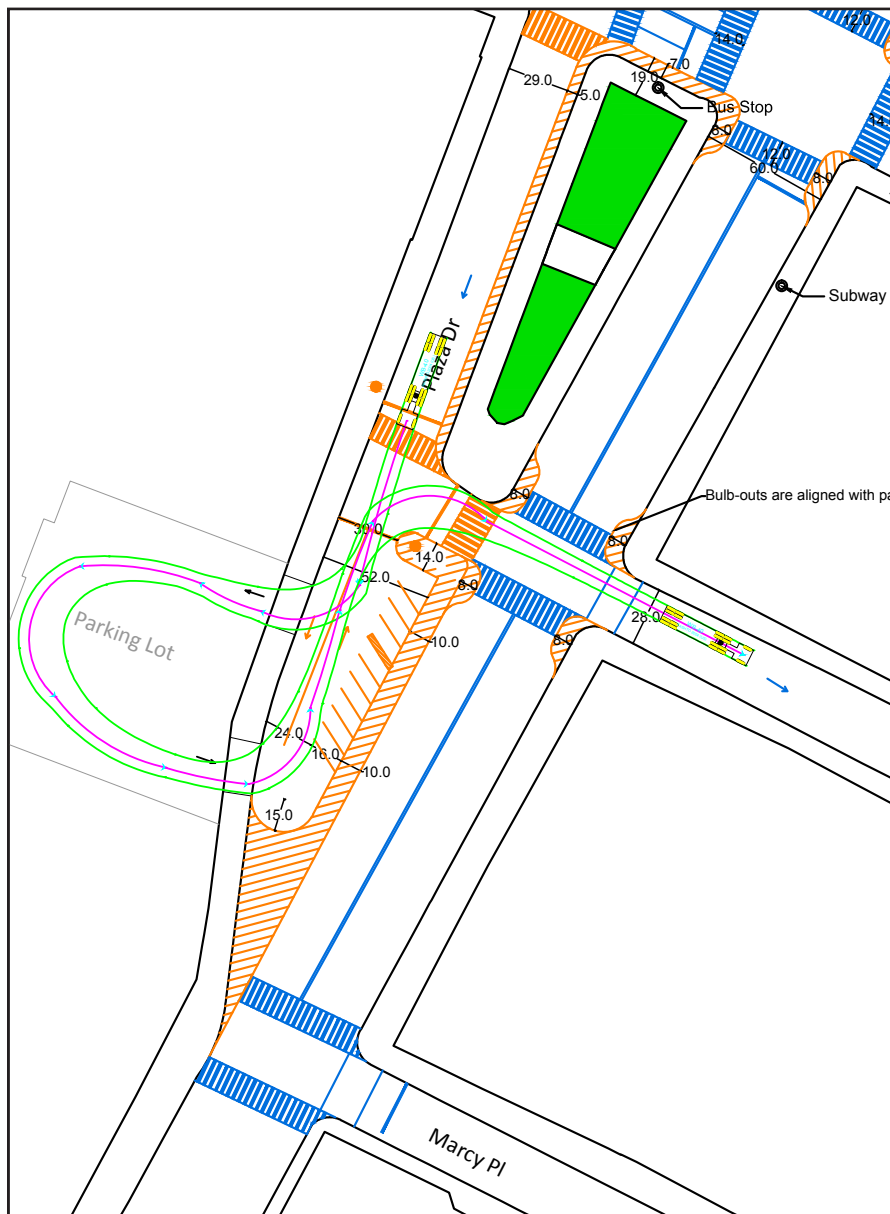


Figure 4.6: Plaza Drive AutoTURN analysis

Proposal 2:

While closing the southern extent of Plaza Drive would significantly improve pedestrian conditions in this area, trucks may not be able to use the privately-owned parking lot to make turns to exit Plaza Drive. The City's second potential set of recommendations therefore includes keeping this street open and building a wide sidewalk alongside the parking lot using the parking and service lanes. This second proposal would also move the bus stop for both eastbound buses on 170th Street to the east side of Jerome Avenue and both westbound bus stops to the west side of Plaza Drive. This could potentially better improve transit access (See Figure 4.7).



Figure 4.7: Plaza Drive proposal 2

East 170th Street Corridor

The goal on East 170th Street is also to improve pedestrian safety and walkability. Several neckdowns and pedestrian amenities such as benches would serve this purpose. Additionally, redesigning the park near the Grand Concourse would facilitate greater pedestrian access. The redesign option depicted in Figure 4.9 would feature an alternate pedestrian route leading from the Grand Concourse to the pedestrian crossing between the Concourse and Wythe Place. The proposed bicycle route on 170th Street would connect the Grand Concourse bike lane to those on Macombs Road and Edward L. Grant Highway and would provide cyclists access to the High Bridge and the waterfront Bridge Park. It would vary between a shared route and a standard route depending on the street width. For most of West 170th Street, the lane would be shared by cyclists and motor vehicles.

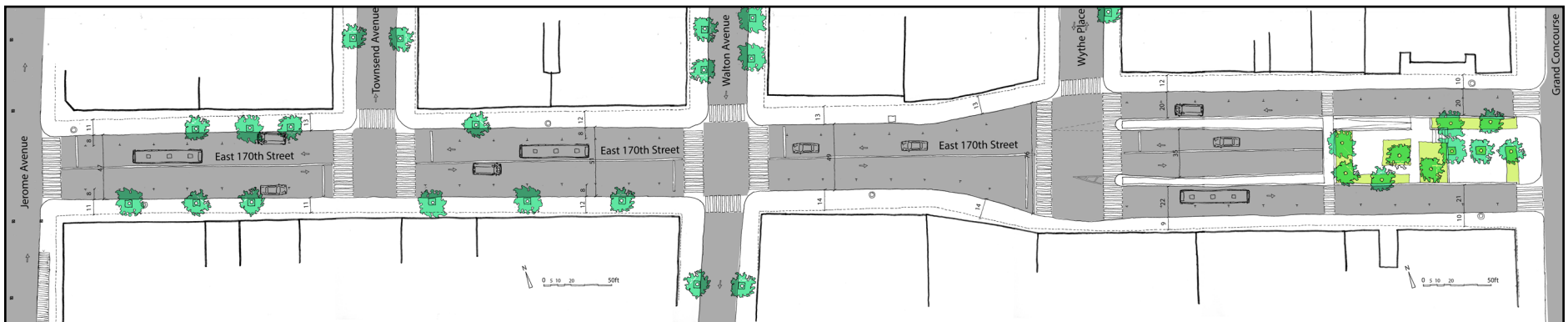


Figure 4.8: East 170th Street corridor existing conditions

Number	Recommendation
1	Add pedestrian amenities on sidewalks along the entire corridor including benches and green space.
2	Install standard bike lanes on each side.
3	Add shared bike lanes on both sides between Wythe Place and Grand Concourse
4	Install neckdowns at several locations to calm traffic and increase pedestrian space.

Number	Recommendation
5	Redesign the park to provide better and safer access. The park's current design includes walls on the north and south sides, creating a hard separation from the street. Redesign could include a planted separator and contiguous path linking Grand Concourse entrance with the crossing between the Concourse and Wythe Place.
6	Extend the medians to provide pedestrian refuge islands.
7	Work with businesses to add loading zone to mitigate double parking and allow greater traffic flow.

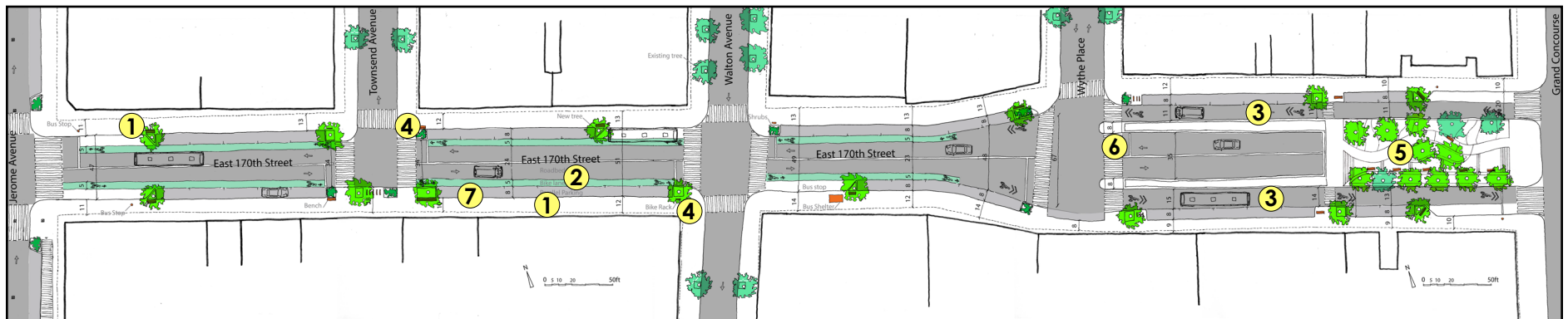


Figure 4.9: East 170th Street corridor recommendations

West 170th Street and Cromwell Avenue

The intersection of West 170th Street and Cromwell Avenue is located along a key corridor for commuting to the subway lines to the east. Although DCP sample counts showed that this intersection is heavily used by pedestrians (see Appendix VI), the lack of a crosswalk and pedestrian signals on the southwestern leg creates unsafe conditions for pedestrians crossing. Our recommendation is to make this intersection easier and safer for pedestrians to navigate by adding a high visibility crosswalk and changing the signal phasing to allow for a pedestrian-only phase.

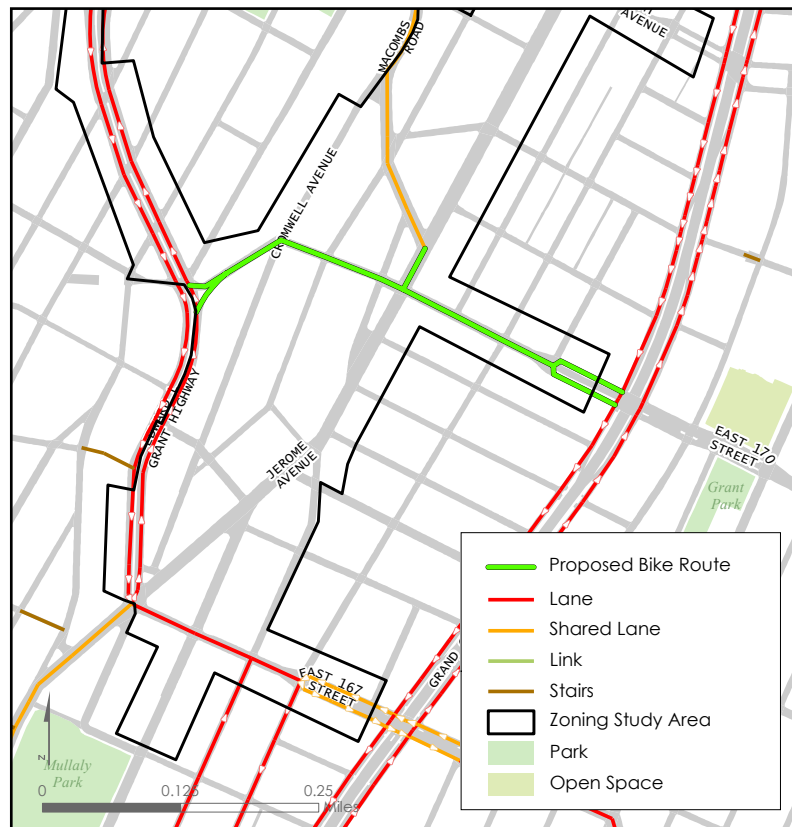


Figure 4.10: Proposed 170th Street bike route

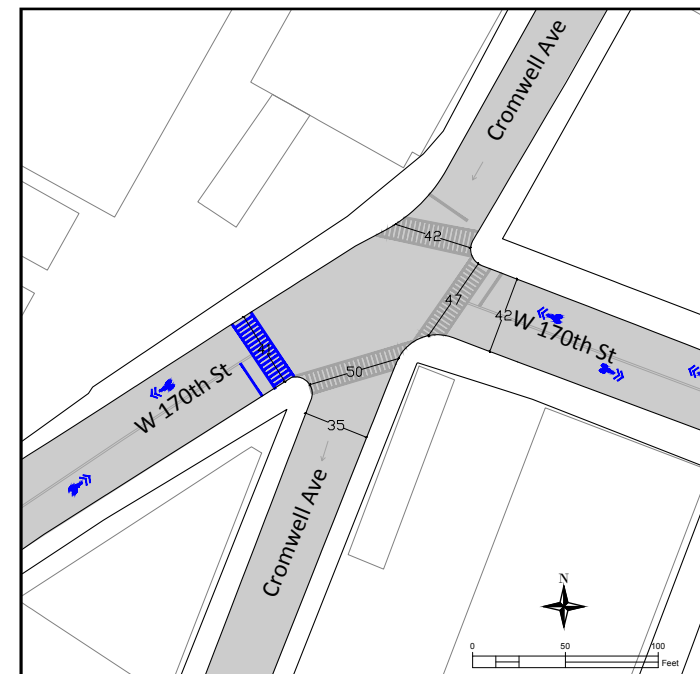


Figure 4.11: West 170th Street and Cromwell Avenue recommendation



Under the Jerome Avenue Elevated Rail Line

As part of the transportation study, DCP sought ways to promote a more walkable and attractive environment for pedestrians, shoppers and local residents under the elevated 4-train rail line on Jerome Avenue. Several challenges for this space were identified by members of the community. They include the following:

- The structure blocks sunlight and there is a lack of lighting at night.
- The existing uses along Jerome Avenue encourage double parking and parking on sidewalks.
- Supporting columns for the elevated structure limit visibility for both pedestrians and motorists especially at intersection approaches where turns occur.

DCP also collected data on the locations of driveways along the corridor from East 174th Street to 184th Street. The map in Appendix VII displays this data along with the locations of the columns and land uses along Jerome Avenue. This data can be used as a starting point for the City in responding to the challenges listed above.

DCP held preliminary discussions with NYCDOT to develop ideas for improving the el space. The initial proposal is to create an Under the El Opportunity Zone located at intersecting corridors along the el, such as 170th Street and Burnside Avenue. Potential treatments would be aimed at creating a focal point or identity-building mechanism along the corridor. For example, a wayfinding system could be implemented. Other possible recommendations include exploring opportunities for a pilot concession stand along with lighting and seating treatments.

An emphasis on the implementation of safety measures for pedestrians along the Jerome Avenue corridor is important to the local residents. This corridor has already been designated as a priority corridor by the City un-

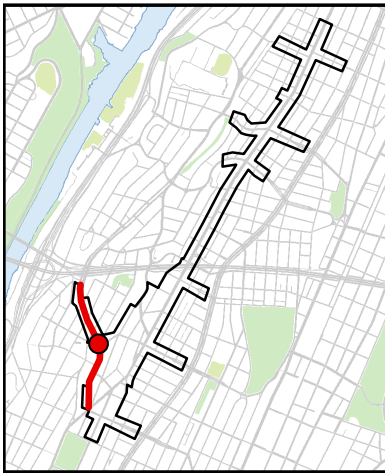
der the Vision Zero Action Plan and measures to make it more walkable are being considered. NYCDOT is currently installing Bus Stops under the El treatments at several locations along this corridor—large curb extensions at bus stops to facilitate safe boarding—which will provide opportunities to enhance safety and build more streetscape amenities.

If implemented, several of the recommendations contained in this report will improve pedestrian safety and walkability under the El.



Jerome Avenue at East 172nd Street

Edward L. Grant Highway



Edward L. Grant Highway is a wide road that includes a buffered bicycle lane and a bus route. The drawback of this configuration is that pedestrian crossings tend to be long. At the same time, the wide roadway provides opportunities to enhance conditions for various roadway users. Our recommendations address the entire street from 167th Street to the entrance to the Washington Bridge, but we focused particularly on the key intersection of West 170th Street.

A particular challenge at this location is that many pedestrians have been observed crossing Edward L. Grant on the southern crosswalk and crossing West 170th Street by walking through the Greenstreet and jaywalking. In fact, a dirt path has been cut through the plantings to mark the desired path which does not line up with the existing crosswalk. In order to respond to the desire line cut through the Greenstreet, one of our recommendations is to add an appropriate crossing as shown in Figure 4.13. This would involve reshaping the Greenstreet to provide pedestrians with two crossing options, the existing north-south crossing and a new east-west crossing. The recommendations for increased pedestrian space, including refuge islands and neckdowns, would improve safety.

Two other recommendations for this area span the full length of Edward L. Grant in the zoning study area. One proposal is to move the bicycle lane against the curb and build a protected bicycle path including a striped buffer between the bike lane and the parking lane. Planted islands would be added near intersections for pedestrian and cyclist safety. The second proposal for the full length of Edward L. Grant is to install raised concrete bus stops in the bike lane buffer, reducing bus-cyclist conflicts and providing a

safe place for bus riders to wait and board the bus. An alternative option for the bike lane is to move it next to the median and leave the bus stops as they are. See Figures 4.12-4.16 for details on these proposals.



Jaywalking at Edward L. Grant Highway



Figure 4.12: Edward L. Grant Highway and West 170th Street existing conditions

Figure 4.13: Edward L. Grant Highway and West 170th Street proposal 1

Number	Proposal 1 - Recommendation
1	Add pedestrian crossing to match desire path.
2	Install stop sign at new pedestrian crossing.
3	Redesign Greenstreet to accommodate recommended pedestrian crossing.
4	Build raised planted islands to provide pedestrian refuges and mitigate long crossing distances.

Number	Proposal 1 - Recommendation
5	Expand sidewalk space into existing striped area to increase pedestrian space.
6	Add parking-protected, buffered bike lane to increase cyclist safety.
7	Build raised bus stop islands in bike lane buffer.
8	Expand sidewalk space to calm traffic turning onto West 170 th Street.

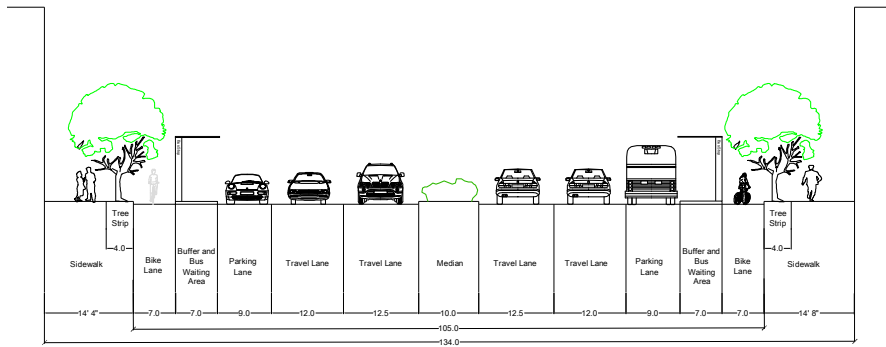


Figure 4.14: Proposal 1: Sectional view of Edward L. Grand Highway north of West 170th Street

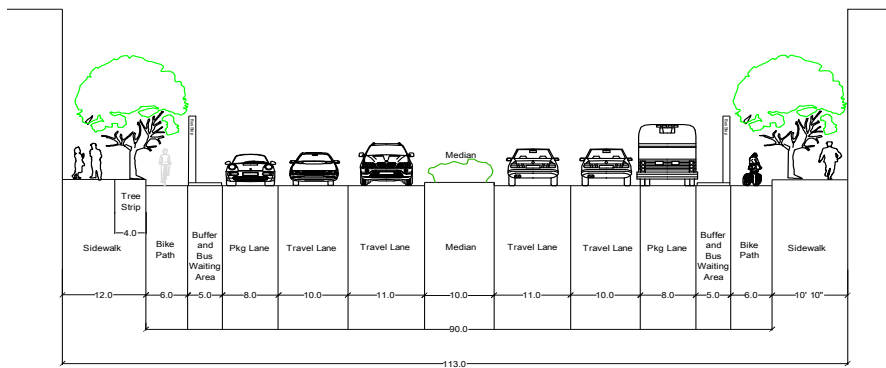
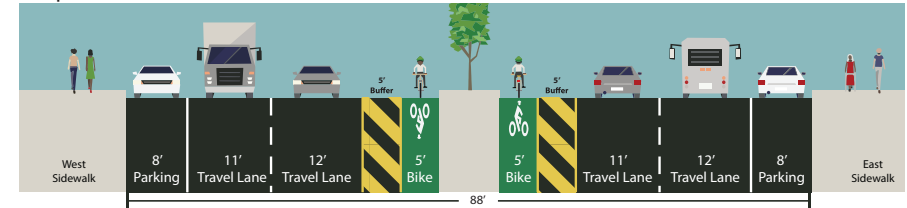


Figure 4.15: Proposal 1: Sectional view of Edward L. Grand Highway south of West 170th Street

Proposed- In-house



Proposed Capital Reconstruction

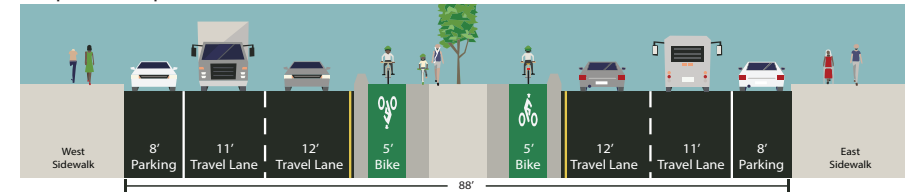
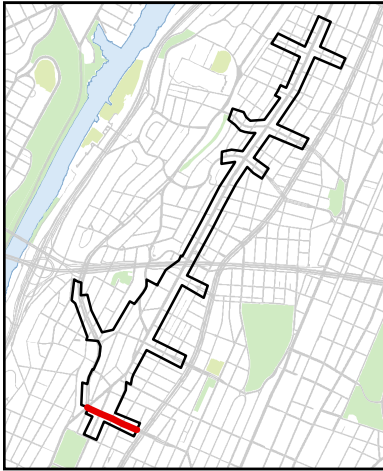


Figure 4.16: Proposal 2: Sectional drawings of Edward L. Grant Highway

167th Street Corridor



167th Street and Jerome Avenue

The intersection of 167th Street and Jerome Avenue is complex, as four different roads come together. From 2009 to 2013, there were 41 crashes at this intersection, a high number for the study area. Also of note, the pedestrian crossing that spans the southern legs of Cromwell and Jerome Avenues is long and lacks amenities. An elementary public school is located between these streets, emphasizing the importance of pedestrian safety in this area.

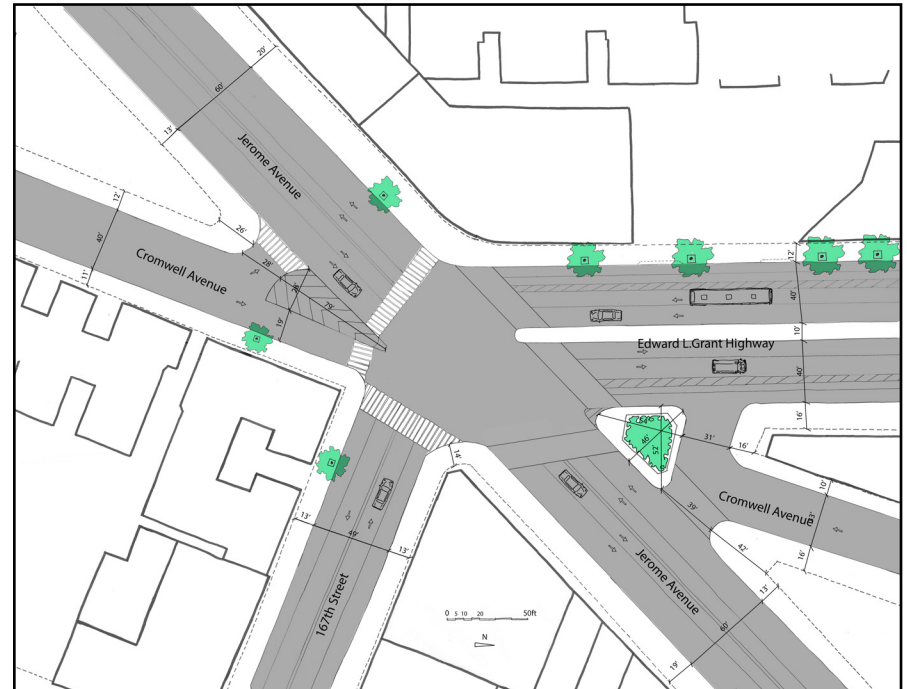


Figure 4.17: 167th Street and Jerome Avenue existing conditions



167th Street and Jerome Avenue

Proposal 1:

Our recommendations at this location focus on pedestrian safety and traffic calming. The City's first alternative for this intersection includes closing the turn from northbound Cromwell Avenue onto Jerome Avenue, which would simplify the intersection and add pedestrian space. It would likely have a minimal impact on traffic conditions as observed volumes for this turn range from 32 autos per two-hour period at midday on Saturday to 51 at midday on a weekday. As part of this recommendation, signage would be installed at the intersection of River Avenue and McClellan Street (the only street that connects to this section of Cromwell Avenue) indicating that motorists who seek to access Jerome Avenue or Edward L. Grant Highway must proceed north to 167th Street and River and turn left (See Figure 4.19).

Number	Proposal 1 - Recommendation
1	Extend sidewalk north through turning area and striped area. All northbound traffic on Cromwell Avenue will have to turn right onto 167 th Street. This will increase pedestrian space and safety and reduce traffic conflicts.
2	Install curb extensions to calm traffic and increase pedestrian space.
3	Install pedestrian crossing with stop sign. This will control southbound traffic on Cromwell Avenue that has been observed not stopping for existing red flashing light.

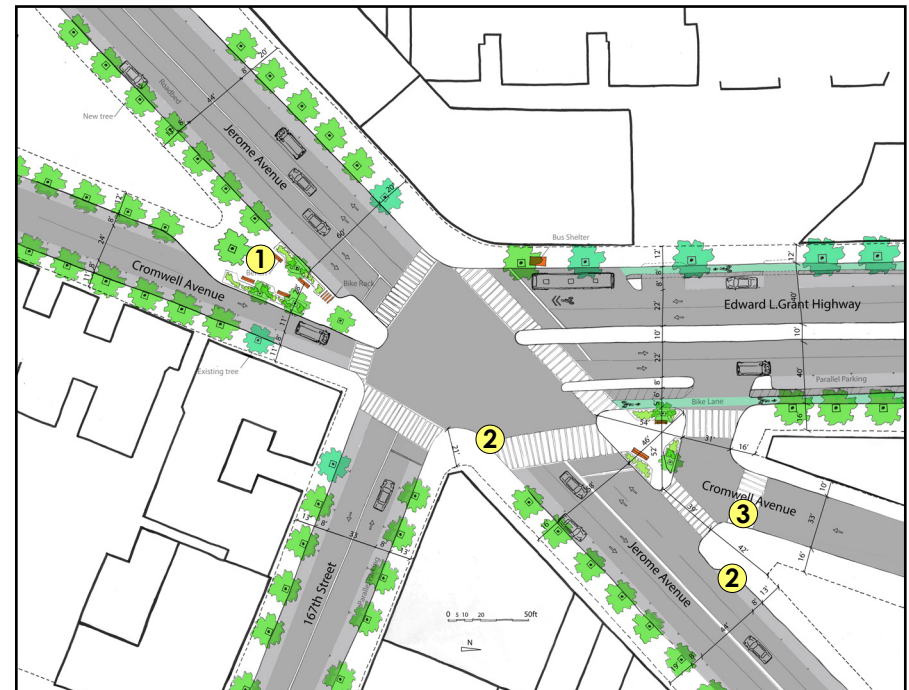


Figure 4.18: 167th Street and Jerome Avenue proposal 1



Figure 4.19: Proposed redirection of Cromwell Avenue traffic



Figure 4.20: AutoTURN analysis for 167th Street and Jerome Avenue proposal 1: fire truck (Top) and transport truck (Bottom)

Proposal 2

The City's second proposal would close the northern extent of northbound Cromwell Avenue, directing all traffic onto Jerome Avenue. This would allow the intersection to function as a four-legged intersection. As a safety measure and to reduce conflicts, this proposal would also involve installing a physical barrier in the roadbed on the southern leg of Jerome Avenue to prevent vehicles from northbound Cromwell from turning left onto southbound Jerome Avenue. In addition, this proposal would widen the Green-street on all sides.

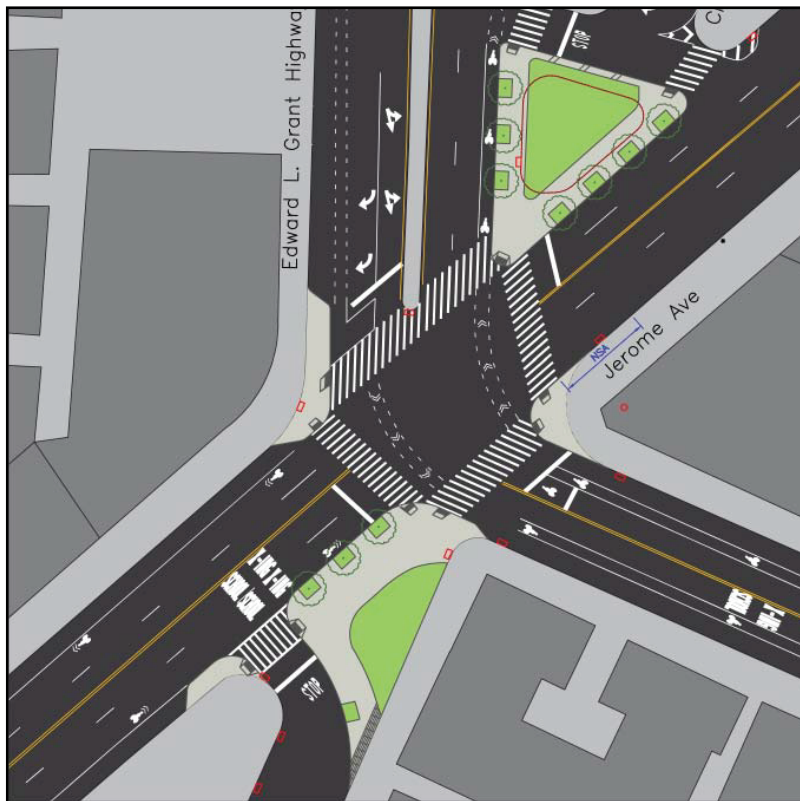


Figure 4.21: 167th Street and Jerome Avenue proposal 2



A bicyclist on Edward L. Grant Highway and 167th Street

167th Street and Walton Avenue

In addition to Jerome Avenue, DCP also looked at the intersection of 167th Street and Walton Avenue where 167th Street enters a tunnel under the Grand Concourse. Here we observed a long crossing distance for pedestrians crossing north-south on the east side of the street. There are two small pedestrian islands, but they do not extend through the entire width of the crosswalk. In addition, there is a lack of channelization for eastbound traffic, which splits in two directions at this intersection.

To remedy these issues, we propose extending the pedestrian islands to cover the entire crosswalk and adding striping in the roadbed to channelize traffic either into the tunnel or to the Grand Concourse. Along with these proposals, a “No Standing” zone would also be installed starting on the southwestern corner extending west to further improve channelization.



East 167th Street and Walton Avenue

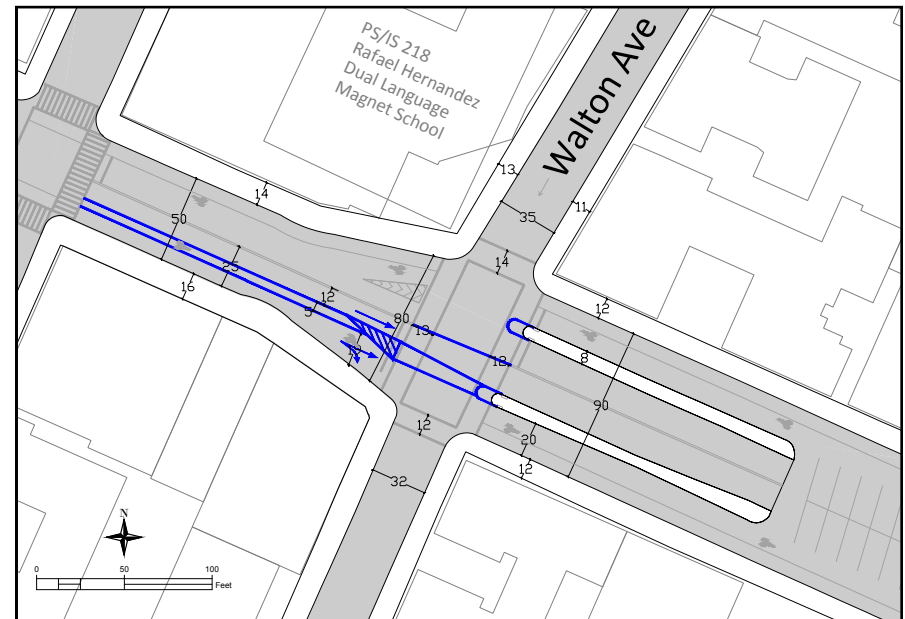


Figure 4.22: 167th Street and Walton Avenue recommendations

Jerome Avenue: East 168th Street to Gerard Avenue



On Jerome Avenue between East 168th Street and Gerard Avenue, pedestrians need to navigate a series of streets where cars are parked on the sidewalk and in pedestrian areas. This has the effect of forcing pedestrians into the roadway and creating an unpleasant pedestrian environment.

Gerard and Jerome Avenues

The northernmost intersection along this stretch of Jerome is at Gerard Avenue, which forms a triangle containing the Sean A. McDonald Memorial Plaza. Motorists use the sidewalks and streets surrounding the plaza to park their vehicles. Most of these vehicles belong to the 44th police precinct or people who work there. In addition, the northern portion of the intersection of Gerard and Jerome Avenues is a wide road that does not have a pedestrian crossing. Since this area is used by pedestrians, accommodations should be made to increase safety and amenities. The City has provided two possible proposals for improving pedestrian conditions near Gerard Avenue.

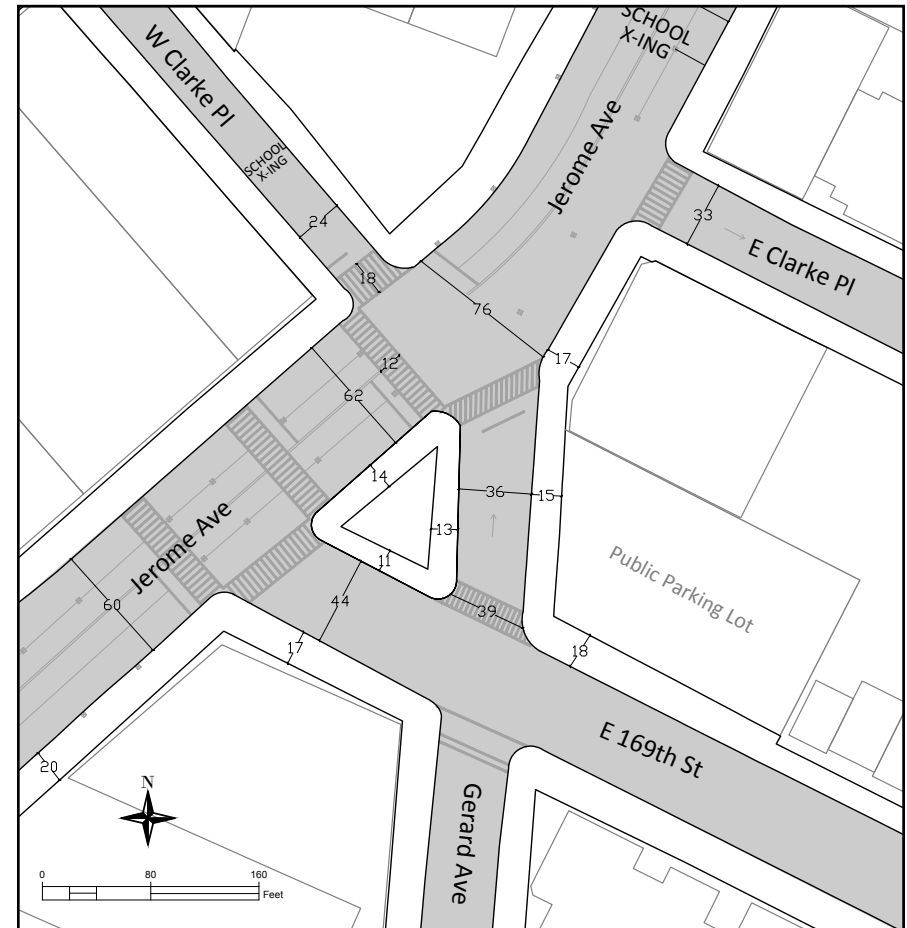


Figure 4.23: Gerard and Jerome Avenues existing conditions

Proposal 1

This proposal would close off Gerard Avenue to through-traffic between East 169th Street and Jerome Avenue and extend the plaza space north on the sidewalk along the east side of Jerome Avenue. In order to compensate for the loss in parking, the existing parking lot on the east side of Gerard would be extended across Gerard to accommodate precinct-related vehicles. A pedestrian crossing would be installed on the north side of the intersection of West Clarke Place and Jerome Avenue.

Number	Proposal 1 - Recommendation
1	Close Gerard Avenue to through traffic and expand pedestrian plaza space north.
2	Expand parking lot to create alternative parking space for precinct-related vehicles and mitigate sidewalk parking.
3	Install curb cut for entrance to parking lot.
4	Build new sidewalk.
5	Add neckdowns to calm traffic and shorten crossing distance.

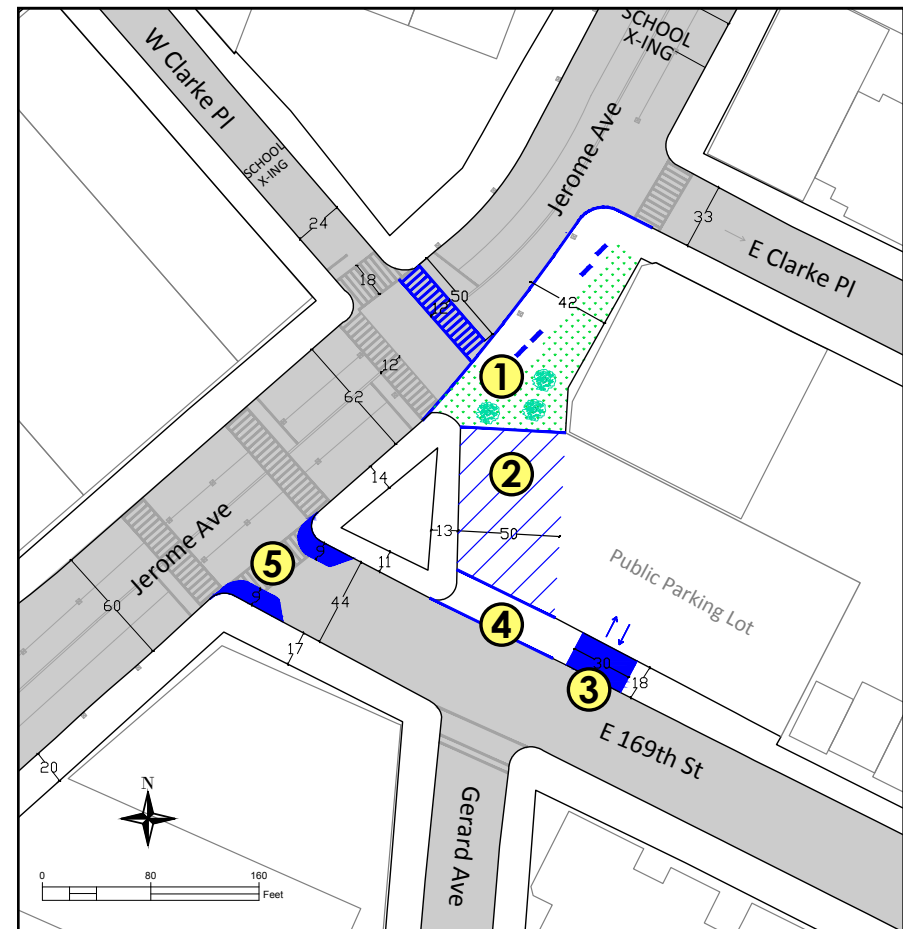


Figure 4.24: Gerard and Jerome Avenues proposal 1

Proposal 2

This proposal would build on the existing plaza space by expanding it into Jerome Avenue. It would also add angle parking to formally designate a space for precinct-related vehicles to park and convert West 169th Street between Gerard and Jerome to one-way eastbound. Finally, it would add a neckdown at the northeast corner of Gerard and Jerome to shorten the crossing distance and normalize the intersection.

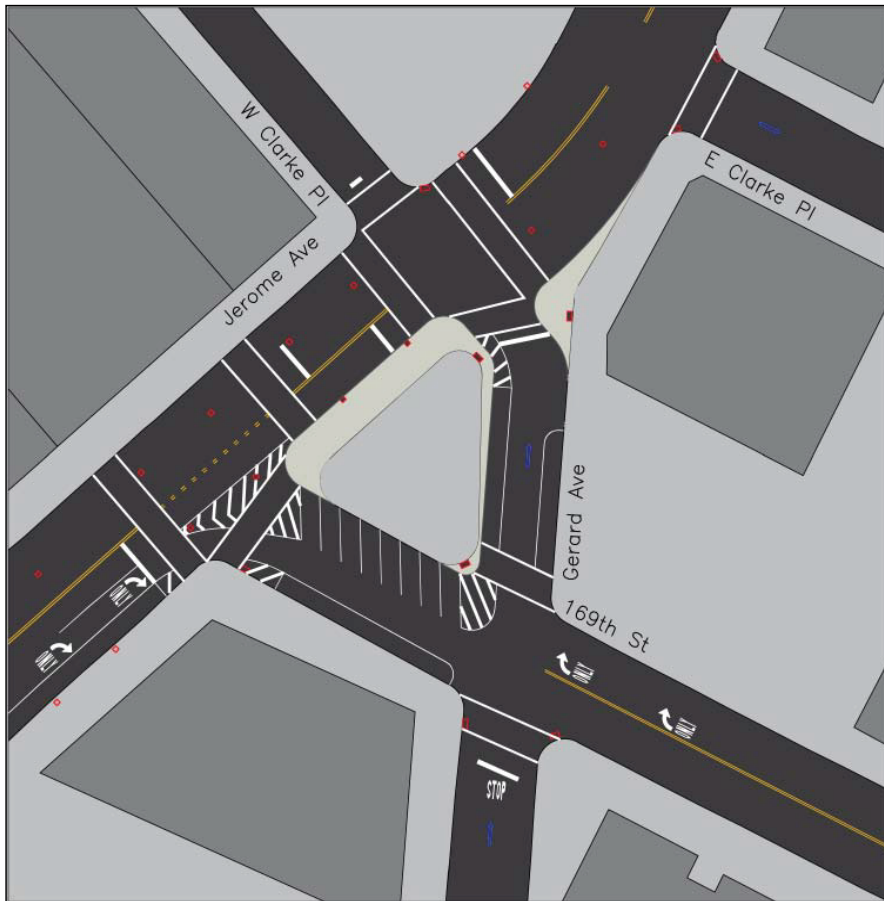


Figure 4.25: Gerard and Jerome Avenues proposal 2

River and Jerome Avenues

The intersection where River Avenue and Jerome Avenue meet is complex because East 168th Street and West 169th Street also meet at this location. There is a large striped area to channelize traffic from Jerome and River Avenues as the latter merges into the former. This striped area represents an opportunity to increase pedestrian space, but as with the triangle at Gerard and Jerome Avenues, it is occupied by vehicles, making this area difficult for pedestrians to navigate. Furthermore, while the sidewalk on the east side of River and Jerome is wide, it also serves as a parking area. We heard several complaints from the community about the parking problem in this area. As with Gerard and Jerome, most of these vehicles are related to the 44th Precinct. They are either vehicles that belong to those who work in the precinct, NYPD vehicles that are used daily or impounded vehicles that are stored by police. In addition, pedestrians walking north toward the merger along the east side of Jerome or the west side of River do not have a designated crossing to continue through the merger. The only safe option is to walk south to 167th, cross there and then proceed north again. Finally, DCP observed several vehicles making illegal turns from Jerome Avenue onto northbound River to access East 168th Street.



Vehicles parked on the sidewalk on River Avenue

DCP's recommendations largely address the concerns about pedestrian space and parking. They also seek to better channelize traffic at this complex intersection. Extending the pedestrian space north from the triangle between River and Jerome, adding a planted pedestrian island in the existing striped area and providing a north-south pedestrian crossing would

allow pedestrians to safely traverse this area. The design of the proposed islands in Figure 4.27 will better channelize traffic from Jerome that seeks to access East 168th Street and make this turn legal.

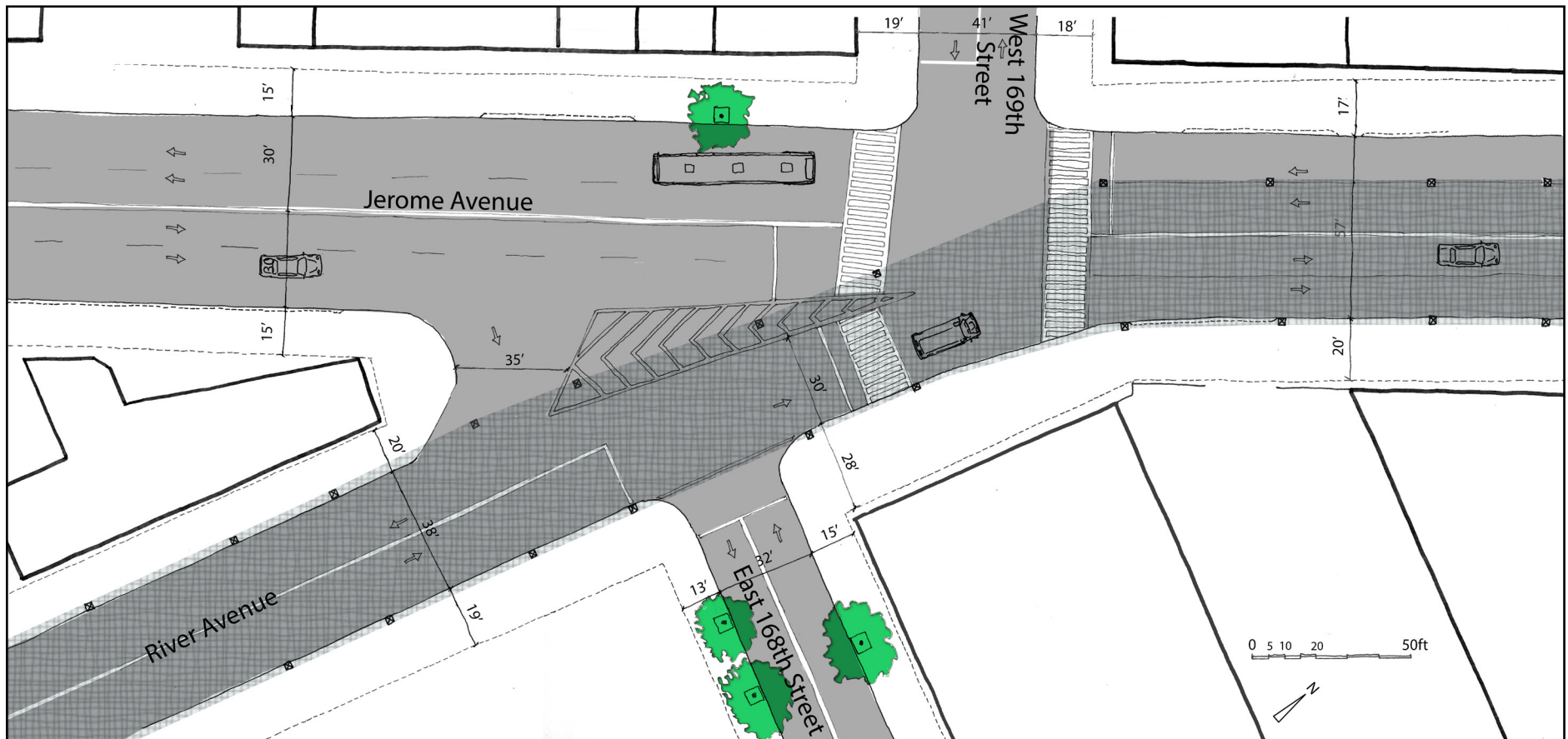


Figure 4.26: River and Jerome Avenues existing conditions

Number	Recommendation
1	Add pedestrian island with amenities in existing striped area.
2	Extend sidewalk north, add amenities.
3	Install pedestrian crossings to facilitate pedestrian access north of East 168 th Street.

Number	Recommendation
4	Add traffic signal for eastbound traffic. No change in signal phasing.
5	Add neckdowns to calm traffic and shorten crossing distances.

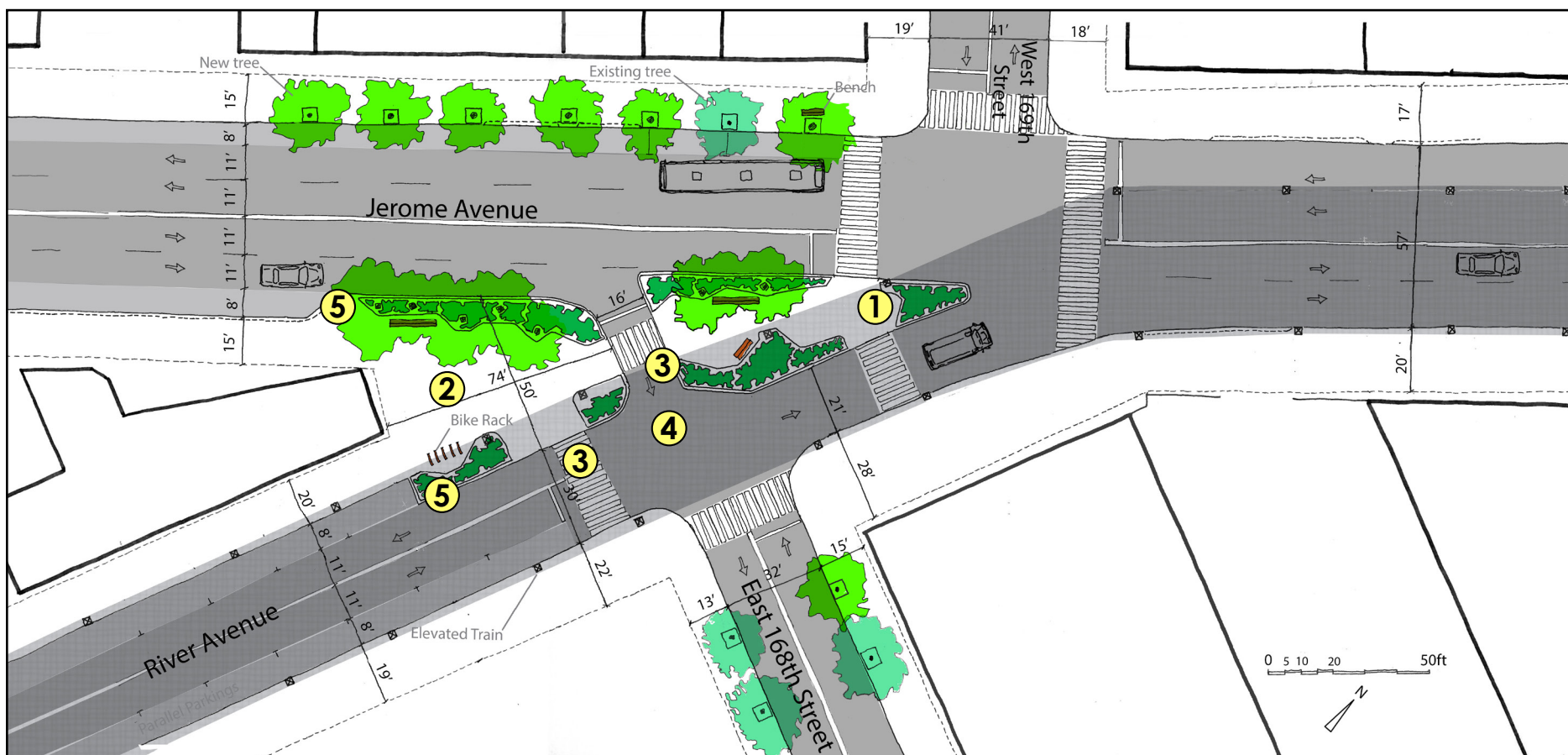


Figure 4.27: River and Jerome Avenues recommendations

Jerome Avenue: 174th Street to 175th Street



As part of the Jerome Avenue corridor, the stretch of road from East 174th Street to East 175th Street is an important link connecting neighborhoods on the north and south sides of the Cross Bronx Expressway.

There are no pedestrian crossings on Jerome Avenue between these two streets. This is only a two-block span, but traffic conditions are often unsafe for pedestrians, with ten out of 35 crashes from 2009 to 2013 at 175th Street involving pedestrians or cyclists.

Furthermore, DCP observed jaywalking near West Clifford Place, a step street that spans the hill between Jerome Avenue and Davidson Avenue. There is no designated crossing at this location for those who use the step street and want to cross Jerome Avenue. The Clifford Place corridor is an important pedestrian route connected by the step street at West Clifford Place as well as the step street on Clifford Place that spans the hill between Walton Avenue and the Grand Concourse. These step streets connect the residential area to the west of Jerome Avenue to the Grand Concourse and the B and D subway routes which stop at the 174-175 Streets station.



Jaywalking at Jerome Avenue and Clifford Place

Clifford Place

Our recommendation at Clifford Place is to conduct a warrant analysis for a signalized intersection at the base of the step street on Jerome Avenue. In addition, we recommend that curb extensions be built where pedestrians are likely to cross on the north side of the intersection.

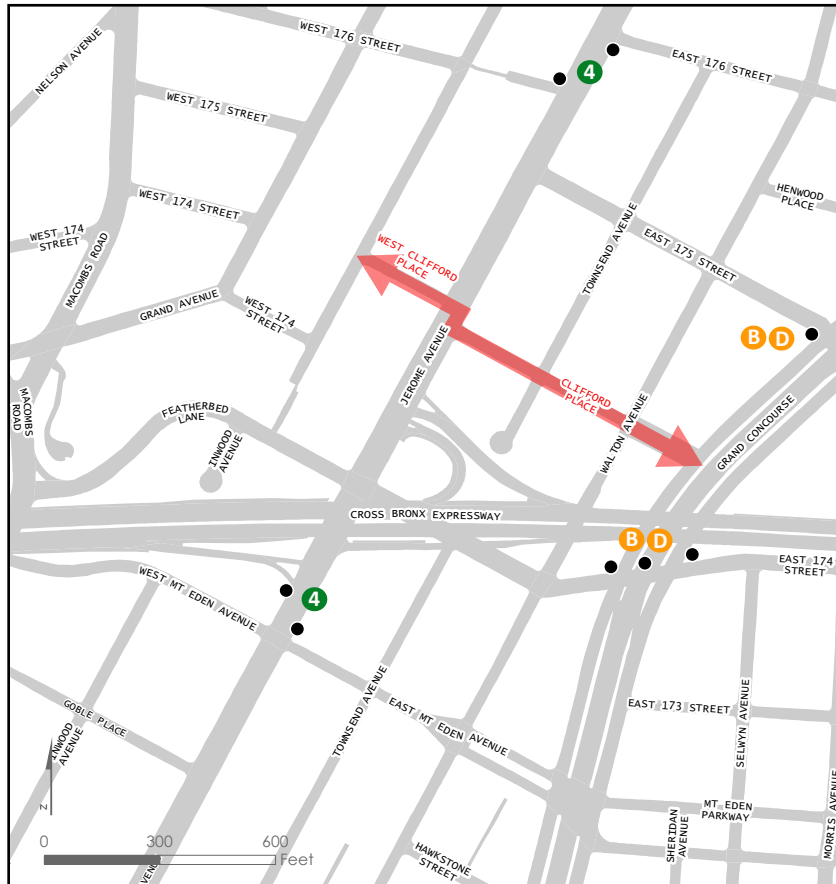


Figure 4.28: Clifford Place serves as an important east-west corridor for pedestrians in the study area.

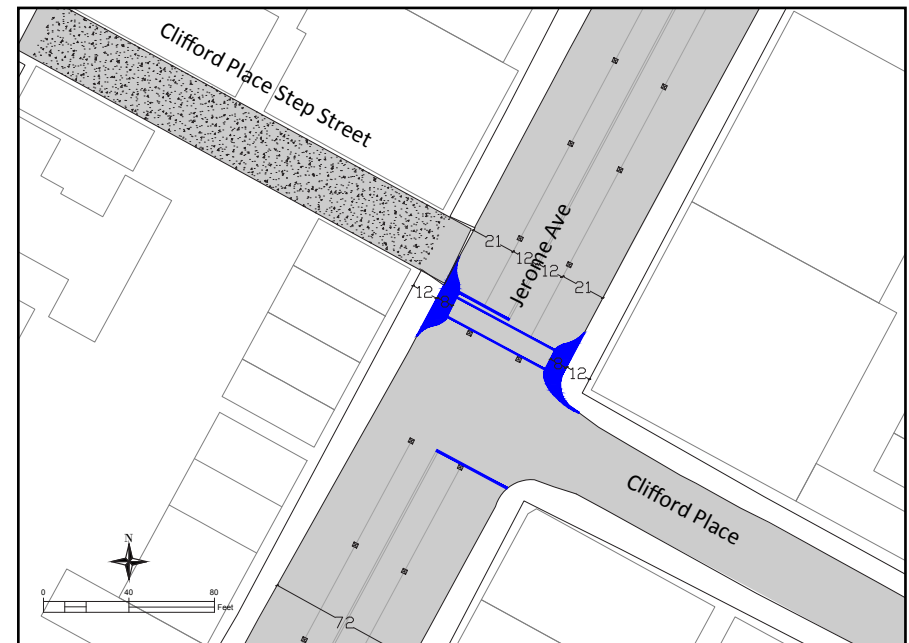
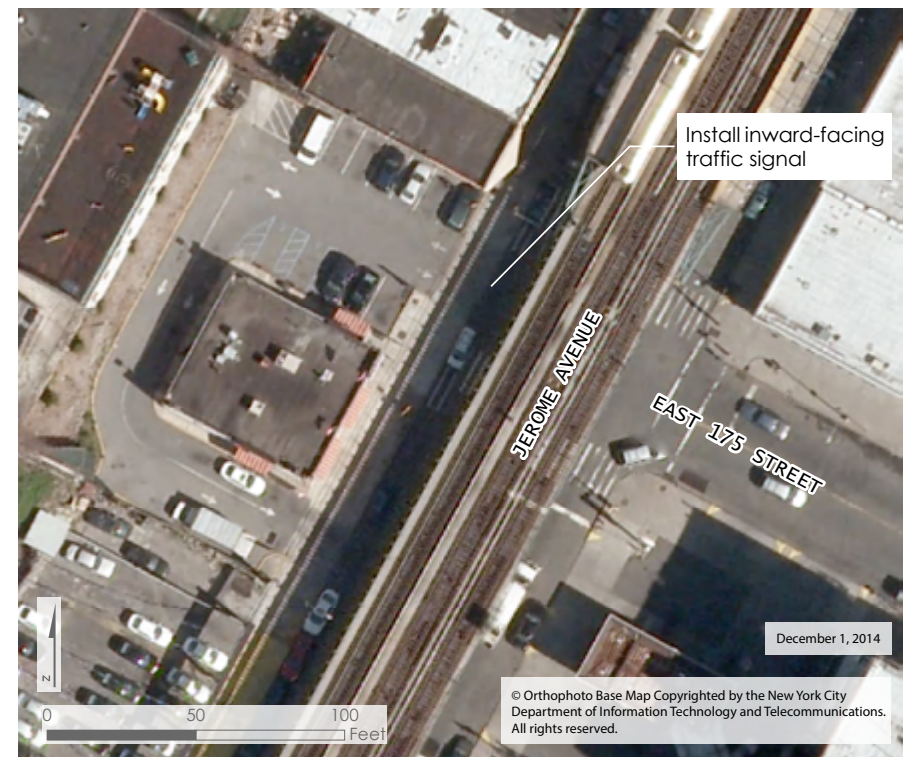


Figure 4.29: Jerome Avenue and Clifford Place recommendations

175th Street

The intersection of 175th Street and Jerome Avenue was analyzed as well. It is a busy intersection with a relatively high crash rate that is often congested as a result of the Cross Bronx Expressway entrance and exit ramps two blocks south. In addition, while it is officially a T-intersection, it functions as a four-legged intersection because there is a Dunkin' Donuts drive-through and parking lot on the west side of the intersection. Vehicles exiting this parking lot do not have any traffic control and are therefore permitted to move in any direction at any time. Our proposal is to install a traffic signal facing into the parking lot with no change in phasing and install a designated pedestrian crossing at the entrance of the parking lot to mitigate traffic and pedestrian conflicts.



Cross Bronx Expressway Ramps at Jerome Avenue



The area around the entrance and exit ramps for the Cross Bronx Expressway on Jerome Avenue is significantly congested. This area runs from Mount Eden Avenue to the entrance and exit ramps for the southbound Cross Bronx located on the north side of Featherbed Lane/East 174th Street. The high vehicle volumes along this short stretch of Jerome led to 134 crashes from 2009 to 2013, thus posing a safety issue as well.

The LOS for these intersections varies from B to D, but this does not fully account for the congestion. Site visits revealed that there is significant queuing to the north and south along Jerome Avenue throughout the day.

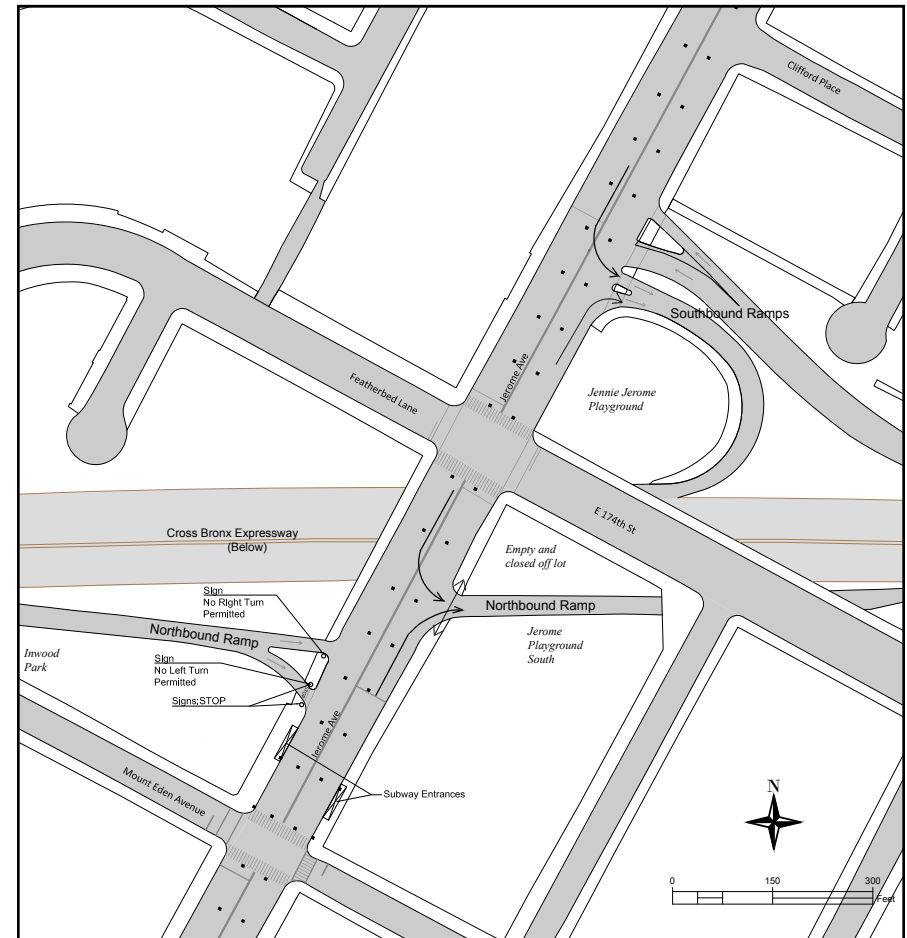


Figure 4.30: Cross Bronx Expressway at Jerome Avenue existing conditions

The queuing also occurs on Mount Eden Avenue and East 174th Street and Featherbed Lane. The main reasons for the congestion are the heavy use of the Cross Bronx and the congestion that occurs on this highway throughout the day. Therefore, it is a challenge to substantially mitigate the spillover effects on the study area.

Alongside the congestion and safety issues at this location, there is a significant amount of illegal and unsafe vehicle movements as drivers attempt to navigate a complex area. This likely exacerbates the other transportation issues.

DCP's interventions at this location are modest. A more significant response to the challenges posed at this intersection would have to include regional interventions to deal with congestion on the Cross Bronx. Since most of the crashes occurred between Mt. Eden Avenue and East 174th Street, we targeted our recommendations to the area around the northbound ramps located on the south side of Featherbed Lane/East 174th Street. In 2013, NYCDOT did a transportation study of the area, the Jerome Avenue Transportation Study (see Appendix I), which included recommendations for improving turning movements at the southbound ramps, signal timing adjustments at both ramps and a one-way conversion of West Mt. Eden Avenue. Most of these recommendations have been implemented.

Number	Recommendation
1	Stagger green time for northbound and southbound traffic to mitigate conflicts.
2	Install a traffic camera to record traffic infractions. Assign traffic agent here to enforce traffic laws.
3	Paint street markings to designate turning lanes for southbound and northbound traffic. Install signage indicating turns are only permitted from turning lanes.

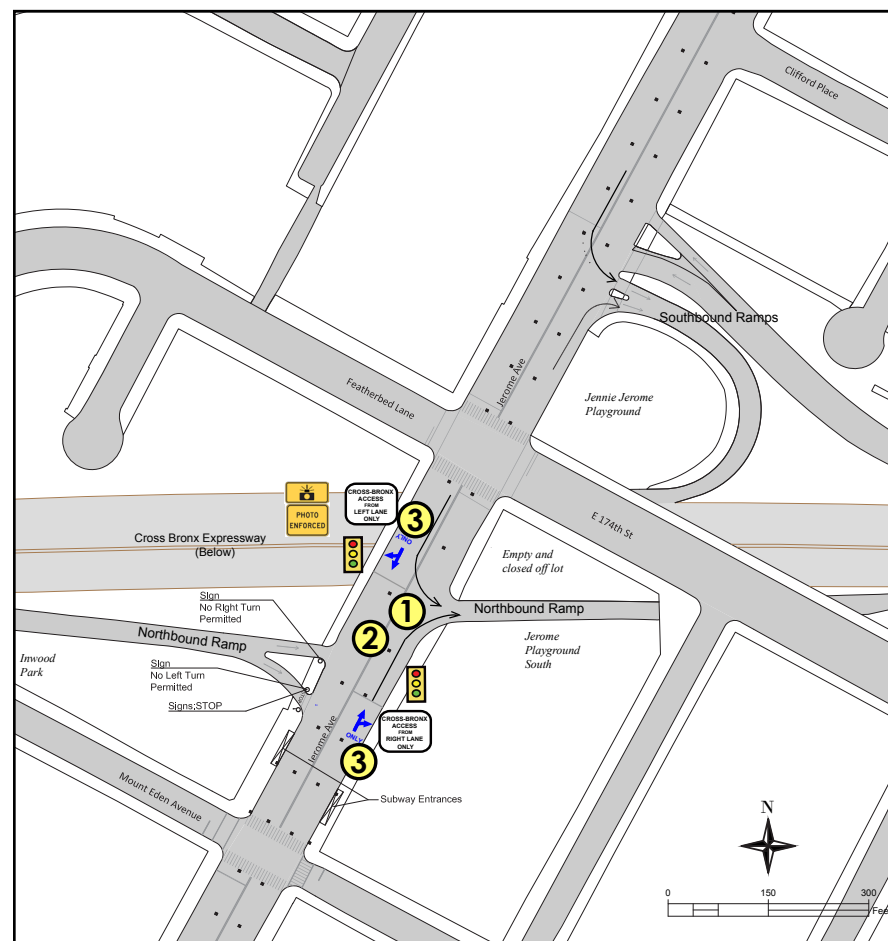


Figure 4.31: Cross Bronx Expressway at Jerome Avenue recommendations

Tremont Avenue and Jerome Avenue



The intersection of Tremont Avenue and Jerome Avenue stands out as one of the intersections with the highest crash rates in the zoning study area at 45 total crashes from 2009 to 2013, 12 of which involved pedestrians or cyclists. At Davidson Avenue, one block west of Jerome near the Bronx School of Young Leaders, nine out of 15 total crashes involved pedestrians or cyclists. At Walton Avenue, one block to the east, there were 17 crashes. Safety, largely for pedestrians, is the main challenge at this intersection. The presence of the school

as well as the True Gospel Tabernacle Church on the northwest corner of Tremont and Jerome reinforce this point. These institutions attract significant numbers of pedestrians.

The City proposes to implement NYCDOT's Bus Stops under the EI program at this location for the Bx32, which runs along Jerome Avenue and stops at Tremont Avenue. Currently, the northbound and southbound bus stops are located in the street between the service lane and the main moving lane. Bus riders are often compelled to wait next to the supporting pillars for the elevated 4-train. Implementing Bus Stops under the EI here would mean extending the sidewalks on the northwest and southeast corners as far out as the ei pillars to provide a safe space for riders to wait. This would also address safety concerns. The current crossing distance on the north side of the intersection is 88 feet and on the south side it is 83 feet. The sidewalk extensions would reduce these to 50 feet and 60 feet respectively. In addition, the existing smooth curb on the northwest corner allows southbound vehicles on Jerome to speed into their right turns onto West Tremont. The curb extension here would have a traffic calming effect.



Figure 4.32: Tremont and Jerome Avenues existing conditions

In order to make sure westbound trucks can make the right turn from East Tremont Avenue onto northbound Jerome Avenue, we did an AutoTURN analysis. The results, shown in Figure 4.32, indicate that this turn is possible with the recommendations.

NYCDOT has plans to implement Bus Stops Under the El at this location and five other locations on Jerome Avenue (177th Street, Burnside Avenue, 181st Street, 182nd Street and North Street) in order to increase pedestrian and passenger safety and allow for Americans with Disabilities Act accessibility.

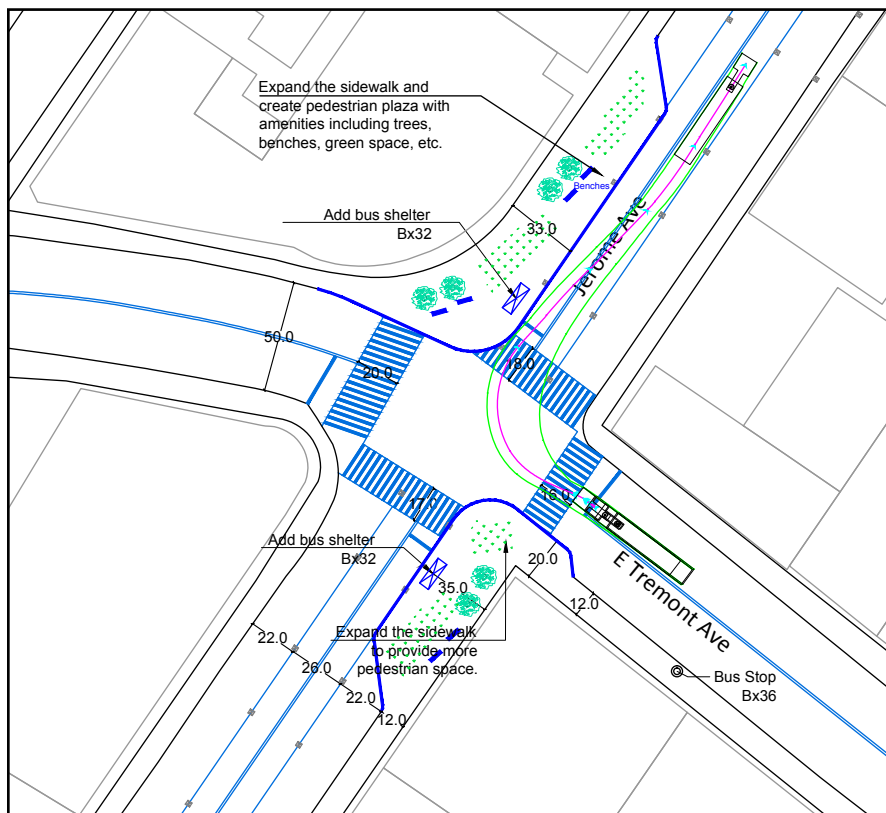


Figure 4.33: AutoTURN analysis at Tremont and Jerome Avenues



Figure 4.34: Tremont and Jerome Avenues recommendations

Macombs Road: Inwood Avenue to Featherbed Lane



NYCDOT recently did extensive work on Macombs Road, installing several pedestrian refuge islands and striping in the roadbed to guide traffic. These improvements have succeeded to a large degree in reducing traffic incidents and have accommodated new residents who access the housing that was recently built near Cromwell Avenue.

A remaining issue is that there are no pedestrian crossings along Macombs over a significant distance from Inwood Avenue to Featherbed Lane. NYCDOT

completed a warrant analysis for the intersection of Goble Place and Macombs, but it resulted in no traffic control being installed. DCP observed that vehicles continue to speed down Macombs and frequently drive over the striped median in the middle of the street. The curved road reduces visibility adding to the unsafe conditions.

The City recommends revisiting the warrant analysis to find a suitable pedestrian crossing along this stretch of Macombs. Two possible locations for such an analysis are at Goble Place which was previously analyzed; and at the intersection with Cromwell Avenue where DCP has observed large pedestrian volumes and a significant amount of jaywalking. In addition, traffic could be further calmed by converting the current shared bike lane to a standard lane, providing a clear indication to drivers that there are cyclists in the roadway. Furthermore, to reduce the incidence of double parking, we recommend changes to curbside regulations and the installation of a residential loading zone.

In the section of this report that addresses angle parking, we have included this part of Macombs Road in a group of streets that could potentially be used for angle parking. Some of the recommendations described here may not work if angle parking is implemented. Angle parking would serve as a traffic calming tool and provide additional on-street parking for residents.

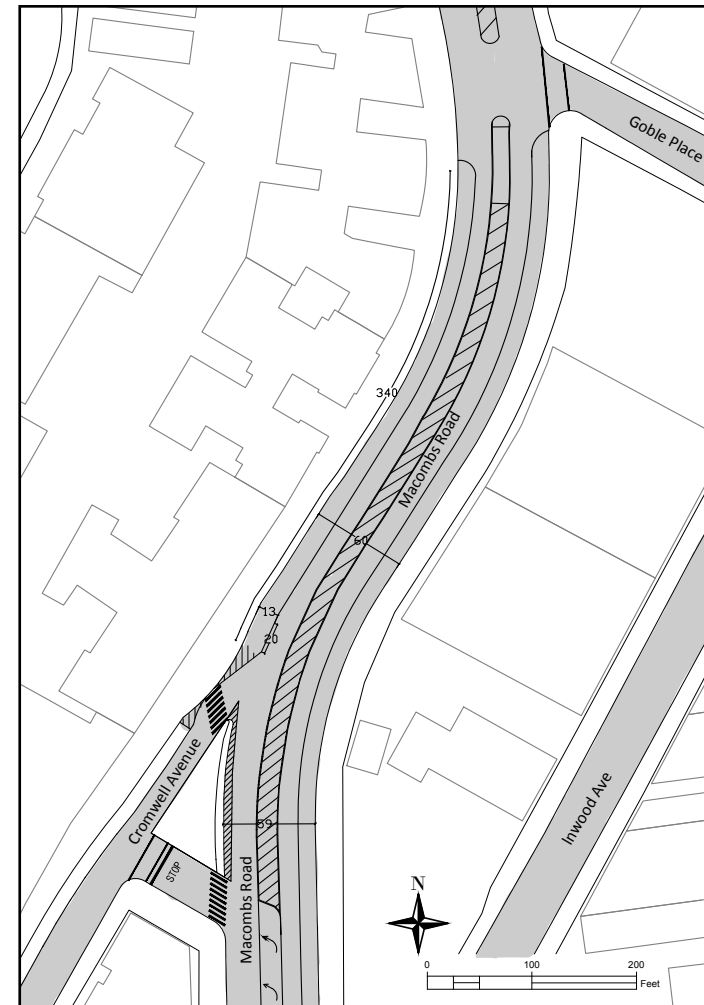


Figure 4.35: Macombs Road existing conditions

Number	Recommendation
1	Conduct a warrant analysis to determine suitability for controlled pedestrian crossing.
2	Convert existing shared bike lanes to standard bike lanes to accommodate cyclists and calm traffic.
3	Narrow parking lane to accommodate standard bike lane.
4	Install a 15-minute loading zone for residential pick-ups and drop-offs.
5	Install flexible bollards and truffle paint to eliminate illegal standing.
6	Install "No Double Parking" signs.



Figure 4.36: Existing traffic signals on Macombs Road in the zoning study area

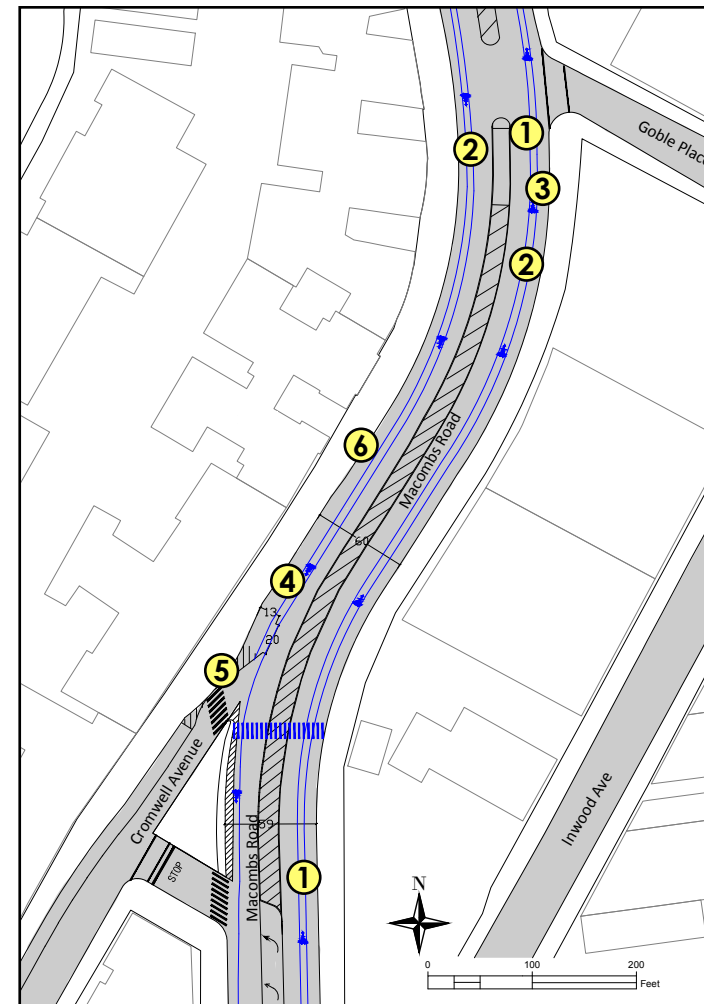


Figure 4.37: Macombs Road recommendations

West 169th Street and Inwood Avenue



When NYCDOT looked at the zoning study area, they found an additional location for street improvements that DCP had not considered: a small street near the triangle at West 169th Street and Inwood Avenue. Traffic volumes at this intersection are low and this portion of Inwood Avenue is redundant with Cromwell Avenue. The existence of several intersecting streets causes traffic conflicts. This slip lane can be closed and converted to pedestrian space, complementing the similar treatments on nearby streets. Figures 4.37 and

4.38 show the existing conditions at this intersection and NYCDOT's recommended treatment.

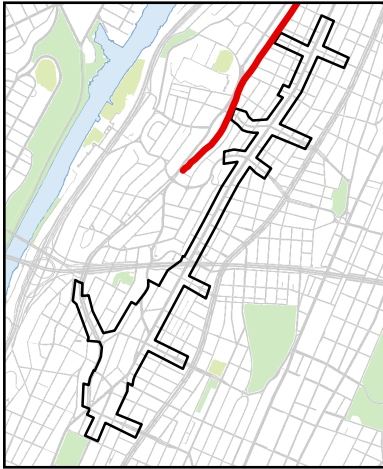


Figure 4.38: West 169th Street and Inwood Avenue existing conditions



Figure 4.39: West 169th Street and Inwood Avenue recommendations

Aqueduct Walk



Aqueduct Walk, a remnant of the Old Croton Aqueduct, is located three blocks west of Jerome Avenue. This narrow park stretches roughly from West Tremont Avenue to West Kingsbridge Road and runs parallel to University Avenue with the small the Aqueduct Lands Playground located between 181st and 182nd Streets. The most direct route from Jerome Avenue to access the walkway is along West 183rd Street. There is no separation on this path between pedestrians and cyclists.

First, the City recommends improving access to this unique amenity by adding wayfinding signage along West 183rd Street that can guide visitors from the Jerome Avenue elevated rail line to the park. Additional signage and pavement markings along the walkway would be useful in separating pedestrians from cyclists. At its intersection with Fordham Road, Aqueduct Walk is interrupted by this major arterial forcing pedestrians to walk to a corner to find a designated crossing and then walk back to the entrance to the park on the other side of the street. To better connect the park, the City



recommends a warrant analysis to assess the possibility of adding a mid-block crossing to accommodate pedestrians and cyclists accessing the park.

In the long term, given the length of this walkway and the space available, the City recommends installing a greenway along its length where feasible. The proposed greenway could connect to the bicycle network at University Avenue, which runs parallel to Aqueduct Walk.



Figure 4.39: Proposed typical signage and pavement markings to separate cyclists and pedestrians on the pathway. Photos of Cross Island Parkway Greenway.

Parking Survey

DCP conducted a survey of off-street public parking facilities licensed by the New York City Department of Consumer Affairs (DCA) in the zoning study area to address concerns raised at community outreach meetings about neighborhood parking. The major findings from the survey were as follows:

- DCA parking capacity is significantly higher south of the Cross Bronx Expressway than to the north.
- Parking is priced at a similar level to the nearby high-density Bronx neighborhoods, and at a much lower level than northern Manhattan.
- There is substantial excess capacity of off-street parking spaces at the current prices, especially in the southern portion of the study area where capacity is higher.
- The majority of customers are local residents, with others including teachers, hospital workers, police officers and taxi drivers.

The zoning study area contains 24 DCA-licensed off-street parking lots and garages providing approximately 2,400 parking spaces. About 80 percent of these parking spaces are located in the southern portion of the zoning study area, south of the Cross Bronx Expressway.

Using a survey that included questions about parking rates and utilization, and interviewing attendants and managers, DCP obtained results for 19 of these facilities (9 parking lots and 10 garages or combos*), ranging in capacity from 25 to 336 parking spaces.

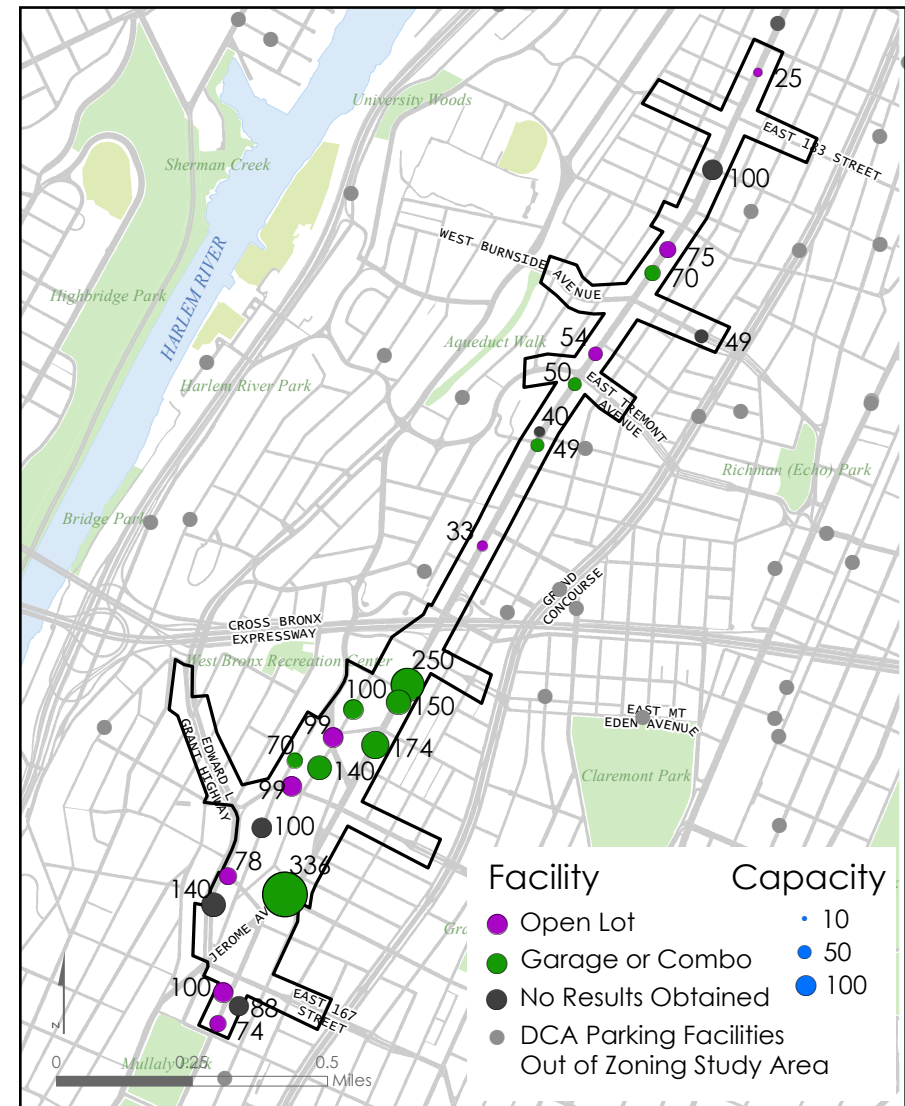
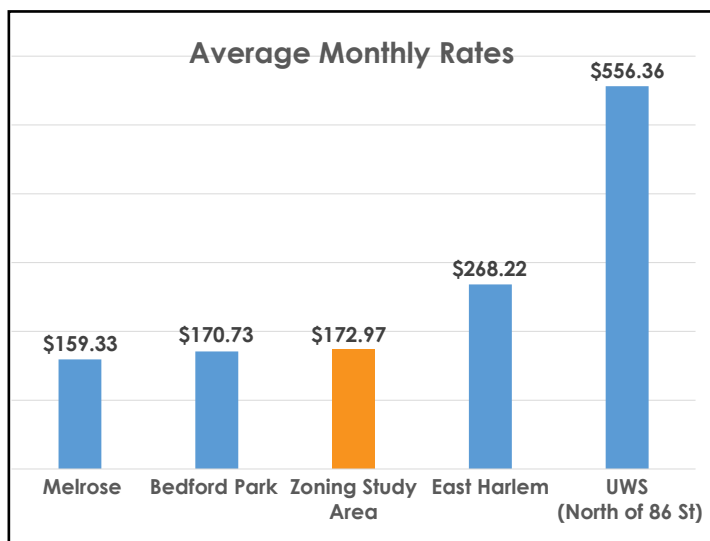


Figure 4.40: Parking capacity in the zoning study area

** According to DCA, a Parking Lot is a parking facility where vehicles are stored in an unenclosed space; a Garage or Combo is a parking facility where vehicles are stored in an entirely enclosed space or in both enclosed and unenclosed spaces.*



The posted rates of the surveyed parking facilities ranged from \$5.44 to \$10 for daily parking, and from \$140 to \$226.60 for monthly parking. It should be noted that the posted rate is the maximum price that can be charged, and that many DCA-licensed facilities offer discounts. Based on posted rates, the average daily rate was \$7.60 and the average monthly rate was \$172.97, with daily rates comparable throughout the study area, and the highest monthly rates located in the southern area. Overall, prices in the zoning study area are consistent with the nearby high-density residential neighborhoods in the Bronx (Melrose and Bedford Park), but much lower than northern Manhattan (East Harlem and the Upper East Side north of 86th Street).

Parking facility utilization was another topic of the survey. As a whole, the zoning study area's utilization rate was around 56 percent during the weekday midday and around 61 percent on a typical weeknight, with occupancy rates higher in the northern portion. As Yankee Stadium is located close by, several surveyed parking facilities in the southern portion had increased occupancy on Yankee game days.

The survey also looked at types of customers. Around 40 percent of the 2,026 spaces in the 19 surveyed parking facilities were occupied by “monthly parkers”—people who pay the monthly rates. For all customers (monthly and non-monthly parkers) more than half were residents, with others including teachers, hospital workers, police officers and taxi drivers who work in this area. The survey results also showed that about three-quarters of monthly parkers were residents of the neighborhood.

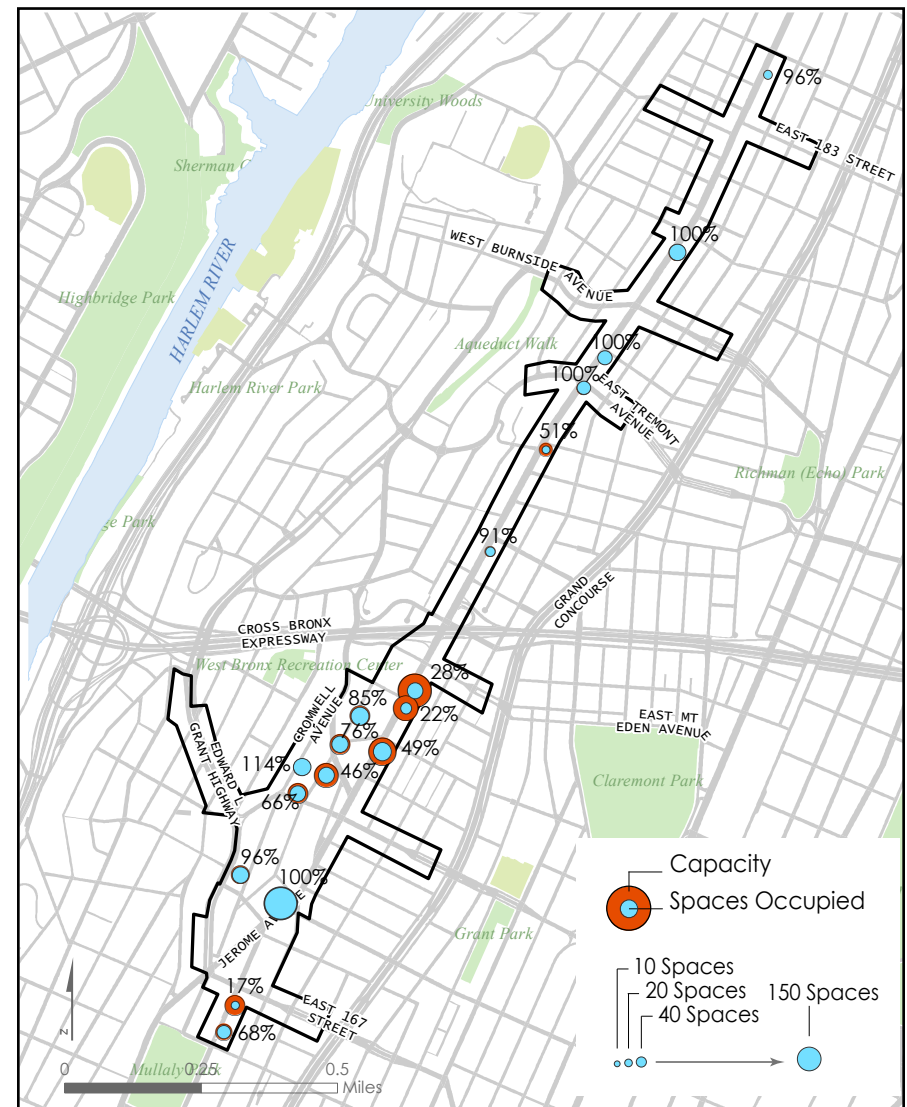


Figure 4.42: Weeknight occupancy in the zoning study area

Angle Parking

To address parking concerns raised by the community, this study included an analysis of potential locations for angle parking within the study area. This is an effective tool to increase the supply of on-street parking that has been implemented at various locations across the city. For safety reasons, NYCDOT only allows reverse angle parking on the city streets. The design of reverse angle parking requires motorists to back into spaces, which increases visibility when motorists are exiting spaces and reduces the risks of hitting pedestrians and bicyclists.

When implemented properly, 60-degree angle parking provides up to twice as many parking spaces as typical parallel parking does. (The design standards of both parking methods are illustrated in Appendix IV.) For example, on the segment of Macombs Road from Goble Place to Cromwell Avenue, the length of the western curb is around 340 feet, which currently accommodates 17 parallel parking spaces. If 60-degree reverse angle parking is

installed, the same curb can fit as many as 33 parking spaces. In this case the conversion of parallel parking to angle parking would increase the parking supply by 94 percent. However, several factors can affect the number of parking spaces added from the conversion, including curb lengths, parking regulations, the presence of fire hydrants or bus stops, etc. The number of parking spaces that angle parking can add can only be estimated on a case-by-case basis.

DCP researched potential locations for the implementation of angle parking to make parking safer and easier in the community. Since a reverse angle-parking lane is much wider than a typical parallel parking lane, the street width is a key consideration in the search for potential angle parking locations. DCP looked at all roadways within a 0.5-mile buffer of the zoning study area whose widths could accommodate angle parking. We examined the characteristics of those qualified road segments including traffic direction, road configuration, traffic volume and underutilized road space, and then finalized the list of ideal locations for angle parking.

With a comprehensive consideration of the road characteristics, DCP ultimately identified four road segments that are ideal for the implementation of the 60-degree reverse angle parking (see Figure 4.42). The four locations include two road segments on Macombs Road and two on University Avenue. A detailed description of those locations can be found in Appendix IV.

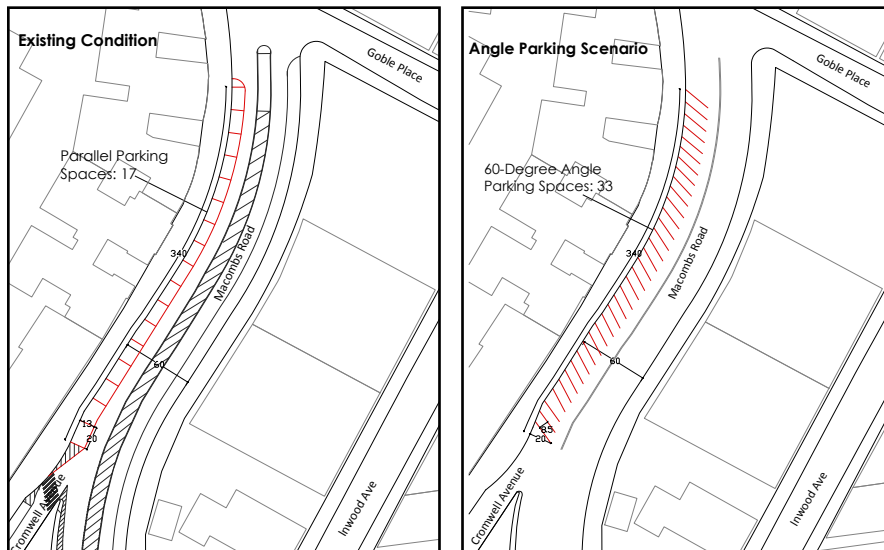


Figure 4.43: Macombs Road with and without angle parking

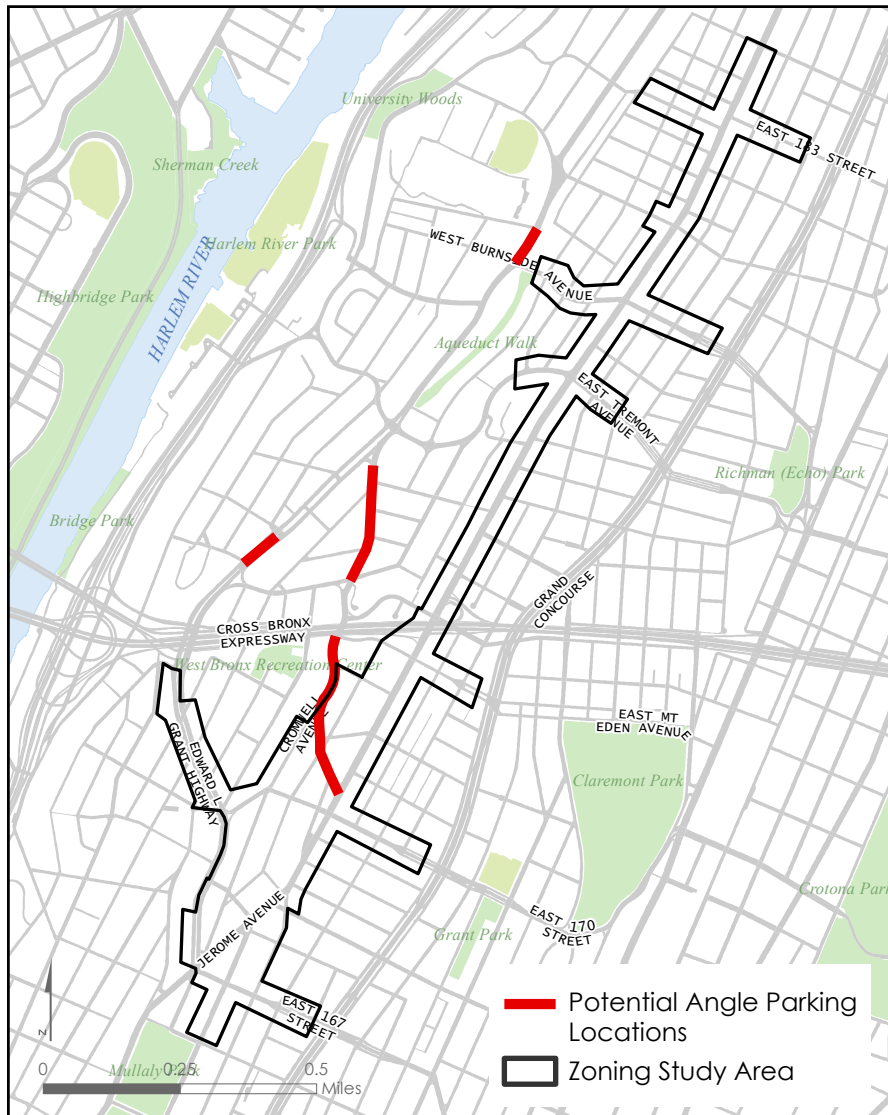


Figure 4.44: Potential angle parking locations in the study area

CONCLUSIONS & NEXT STEPS

Cromwell Avenue-Jerome Avenue Transportation Study

Conclusions and Next Steps

The Cromwell Avenue-Jerome Avenue Transportation Study examined the existing conditions and analyzed the transportation challenges observed and the issues provided by the community. Recommendations were developed that can help improve traffic circulation for all roadway users, reduce traffic congestion along this corridor and enhance the pedestrian environment.

City agencies including NYCDOT, the New York City Department of Parks and Recreation, the MTA have started and will continue working together toward implementation of the recommendations. Ongoing community consultation will be essential as this process progresses. Implementation will focus on identifying high-priority projects that can be implemented in the short-term as well as projects that require a longer-term investment that complement the land use changes projected for the area. As plans advance, the City may look to multiple agencies' capital and operating budgets to implement recommendations, as well as funds from Borough Presidents and City Council members, and the recently-established Neighborhood Development Fund, which targets projects that add significant capacity to infrastructure systems in neighborhoods that are being rezoned.

The recommendations presented in this report may be subject to further analysis to determine feasibility.



APPENDICES

Cromwell Avenue-Jerome Avenue Transportation Study

Appendix I: Literature Review

Community Board 4 District Needs Statement, FY 2016

There are a number of transportation concerns and issues included in CB4's District Needs Statement for 2016. The community board supports the development of the East 153rd Street Bridge to ease traffic conditions along 149th and 161st Streets, as well as to alleviate some of the congestion on local streets in the neighborhood. A lack of parking especially around Yankee Stadium is mentioned as an outstanding concern. The Community Board advocates a permit parking initiative which could improve conditions.

Other issues relevant to pedestrian safety, public transit and traffic are as follows:

- East 174th Street and Grand Concourse underpass: CB4 has requested that NYCDOT engineers work with DEP and MTA personnel to determine who has responsibility for renovation and maintenance.
- Jerome-Shakespeare-Cromwell Triangle: CB4 would like to see the concrete configuration widened to allow for safe pedestrian movement along this corridor.
- Bus Pads: Several commercial corridors should be surveyed for bus pads.
- NYCDOT's Jerome Avenue study: CB4 wants NYCDOT's remedies near the Cross Bronx Expressway to be redone because conditions have not improved.
- Grand Concourse: CB4 would like to see this street resurfaced from East 149th Street to East 174th Street.
- East 161st Street and Gerard Avenue: The slope at this street should be repaired and the red brick removed.
- Grand Concourse and Cross Bronx Expressway underpasses should be maintained.

Community Board 5 District Needs Statement, FY 2013

Community Board 5's District Needs Statement for 2013 lists the following areas of priority for NYCDOT relevant to transportation:

- Creation of a Step Street Task Force for the district's approximately 14 Steps Streets.
- Continuation of the Jerome Avenue Transportation Study (which NYCDOT completed in 2013).
- Resurfacing of the Grand Concourse from East 175th Street to Fordham Road.
- Improved signage and traffic calming devices on all major thoroughfares.
- Reconstruction and rehabilitation of three step streets in the district.
- Increased resources for key Bronx government transportation agencies.

Brownfield Opportunity Area Pre-Nomination Materials: Cromwell Avenue-Jerome Avenue, New York City

Under the Brownfield Opportunity Areas (BOA) Program, the New York State Department of State (DOS) provides financial and technical assistance to municipalities and community-based organizations. This is made possible by the Superfund/Brownfield law passed in 2003, which provides assistance to areas affected by the presence of brownfield sites and site assessments for strategic brownfield sites.

A brownfield is defined by the United States Protections Agency as any real property, the expansion, redevelopment or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant or contaminant. Potential brownfields are identified here based on a history of hazardous materials, noxious uses or spills proximate to the site. Given the history of the study area, the probability of environmental contamination exists, which would not be conducive to future investment.

Identified strategic sites within the study area are potential brownfields and abandoned, vacant or underutilized lots. These lots provide an opportunity in this area, and a chance to consider residential and retail development.

The pre-nomination materials for Cromwell Avenue-Jerome Avenue, prepared by DCP in 2013, precede the first of three steps in the BOA Program. The first step, a complete Pre-Nomination Analysis includes the materials in the document along with the input from the community. It provides a basic and preliminary analysis of the area affected by brownfield sites.

Preliminary analysis of the proposed Cromwell Avenue-Jerome Avenue BOA has identified five potential brownfields consisting of the following:

- 1490 Macombs Road: This location contained no built structure at the time of the study, but development has since been planned. 1450 Cromwell Avenue is currently occupied by an open air parking facility.
- 1355 Cromwell Avenue: This location has been used for automobile service, petroleum storage, filling, fuel sales and other auto-related activities.
- 1349 Inwood Avenue: This location is largely vacant with no built structure except for a large metal shed that takes up approximately half of the lot area.
- 1400 Cromwell Avenue: This location is a parking lot for long-term vehicle storage and contains a petroleum bulk storage site.

Relevant Transportation Studies and Projects

In addition to DCP's Cromwell Avenue-Jerome Avenue Transportation Study, much effort has been devoted to the transportation system in the South Bronx. Previous and ongoing transportation projects include the following:

- Bronx Arterial Needs Major Investment Study (NYSDOT, 2004): This study assessed current and future travel conditions and developed strategies to improve the movement of people and goods in the Bronx,

particularly along the Cross Bronx Expressway and Major Deegan Expressway corridors. The study evaluated the conditions of traffic operations and safety, transit services, goods movement and bicycle and pedestrian mobility in these congested highway corridors.

- Grand Concourse Reconstruction and Improvement Projects (NYCDOT, 2008 to 2013): A series of reconstruction and improvement projects on the Grand Concourse has been initiated by NYCDOT since 2008. In 2008, NYCDOT adjusted the street design on the Grand Concourse between East 161st Street and East 166th Street. The intersection at East 161st Street was shrunk to shorten the crosswalk, with the merger between the service road and the main line eliminated. Service roads were narrowed with planted medians being raised. In addition, the parking lot in front of the Bronx County Courthouse was replaced by a more pedestrian-friendly plaza (Lou Gehrig Plaza). In 2012, NYCDOT launched a project to improve pedestrian safety on the Grand Concourse near Van Cortlandt Avenue and Mosholu Parkway. Crosswalks were shortened by extending the medians. A new bus boarding plaza was built near Van Cortlandt Avenue to eliminate irregular bus movement. Walking and biking network connections were enhanced through sidewalk extensions and bike lane improvements. In 2013, NYCDOT released a plan to reconstruct the Grand Concourse service roads between East 166th Street and East 171st Street. Anticipated to be completed in 2015, the project seeks to enhance safety and quality of life for users through the reduction of traffic speeds, widening and greening of the medians, and installation of bike lanes and traffic calming elements. It will also bring both the service roads and main line up to a state of good repair through reconstruction and resurfacing.
- Macombs Road Improvement Project (NYCDOT, 2011): This project was initiated to enhance pedestrian safety on Macombs Road between Jerome Avenue and West 176th Street in 2011, a location where over 100 injuries occurred from 2005 to 2009. Because the street geometry was oversized and tended to encourage speeding, a landscaped triangle was added at Cromwell Avenue and safety islands were created at Inwood Avenue, Goble Place and West 176th Street to slow down traffic and provide better protection for crossing pedestrians.

- Jerome Avenue Transportation Study (NYCDOT, 2013): Per a request from Bronx Community Boards 4 and 5 to deal with the growing congestion, mobility and safety issues along Jerome Avenue, NYCDOT conducted a transportation study along this corridor from 172nd Street to 181st Street. The study area also extended from the Grand Concourse in the east to Dr. Martin Luther King Jr. Boulevard/University Avenue in the west. The study examined existing and future conditions, including demographics, zoning and land use, traffic, goods movement, pedestrian and bicycle conditions, accidents and safety, as well as parking and public transportation. A series of improvements was recommended to ease congestion and improve safety, including sidewalk and median extensions and restriping, signal timing modifications, bus stop relocation, new truck loading/unloading zones and a one-way conversions.
- Edward L. Grant Highway Safety Improvement Project (NYCDOT, 2014): As part of the Vision Zero Action Plan, NYCDOT launched this improvement project to resolve the safety issues on Edward L. Grant Highway near the Washington Bridge on- and off-ramps. This location handles a high volume of buses and pedestrian and vehicular traffic, with long pedestrian crossings as well as poor curb alignment and limited amenities at the bus stops. Adjustments in lane width and street design, including new bus boarding islands and a one-block bus lane, were proposed to discourage speeding and to help buses and other vehicles better navigate. A pedestrian refuge island and two sidewalk extensions were also planned to protect crossing pedestrians. Installation of these improvements was completed in late 2014.

Endnotes:

1. <http://www.dot.ny.gov/regional-offices/region11/projects/project-repository/bxmis/index.html>
2. http://www.nyc.gov/html/dot/downloads/pdf/161_166grandconcourse.pdf
3. http://www.nyc.gov/html/dot/downloads/pdf/2012-05-12_grand-concourse-mosholu.pdf
4. <http://www.nyc.gov/html/dot/downloads/pdf/2013-02-grand-concourse.pdf>
5. http://www.nyc.gov/html/dot/downloads/pdf/20110302_macombs_cb4_slides.pdf
6. <http://www.nyc.gov/html/dot/downloads/pdf/2014-04-02-elgranthwy-cb4-ppt.pdf>

Appendix II: Public Transportation Scheduling

Subway Service

The elevated Woodlawn Line runs along Jerome Avenue, through the study area, with stops at 167th Street, 170th Street, Mount Eden Avenue, 176th Street, Burnside Avenue and 183rd Street. In addition the B/D line runs on the Grand Concourse parallel to the Woodlawn Line. Stops include East 167th Street, East 170th Street, East 174-175th Streets, East Tremont Avenue, and East 182nd-183rd Streets.

Woodlawn (4) Line

The Woodlawn Line runs from Woodlawn in the Bronx to New Lots Avenue in Brooklyn. Some trains terminate before Woodlawn, at Burnside Avenue. During certain periods the trains on this line skip all stops between 167th Street and Burnside Avenue (three stops). On weekdays this subway line has 20 minute headways from 12 AM to 4 AM. The headways decrease until they reach 6 minutes by 5:55 AM. They remain around 6 minutes until 9:30 AM, when they become 8 minutes until 2:42 PM. They then average 5 to 8 minutes until 8:49 PM when they become 10 minutes. At 10:30 PM the headways begin to lengthen out again to 16 minutes by the middle of the night.

On Saturdays this line has 20 minute headways from 12 AM to 5:14 AM when it switches to 8 minute headways gradually over the course of an hour. Starting at 6:37 AM there are 8 minute headways until 6:37 PM when the headways gradually increase to 12 minutes by 8:35 PM. The headways remain at 12 minutes until the middle of the night.

On Sundays this line has 20 minute headways from 12 AM to 5:34 AM at which point they begin to decrease, reaching 12 minutes by 8:07 AM. They remain at 12 minutes until 9:30 AM when they decrease again, reaching 8

minutes by 9:57 AM. They remain at 8 minutes until 5:41 PM, when they increase to 12 minutes by 6:23 PM. The headways remain at 12 minutes until 10:23 PM, when they begin to increase again, reaching 20 minutes by the middle of the night.

B/D Line

The D train runs regularly from Norwood 205th Street in the Bronx to Coney Island in Brooklyn and travels parallel to the 4 line in the Bronx. The B train normally runs from Brighton Beach in Brooklyn to 145th Street in Manhattan, but during rush hours, it continues north and terminates at Bedford Park Boulevard.

The D train headways during the week start at 20 minutes from midnight until 5:04 AM on Monday. At that point they grow shorter, reaching 9 minutes by 6:27 AM. Then they run every 7 to 8 minutes until 8:03 AM. They then lengthen out to 10 minutes by 9:31 AM, running at that interval until 1:41 PM. By 4:04 PM they reach 8 minutes, and then run every 6 to 8 minutes until 5:17 PM. Headways run at 9 to 11 minutes until 9:32 PM, at which point they grow longer again, reaching 15 minutes by the middle of the night.

On Saturdays, the D train has 20 minute headways from midnight until 6:04 AM. They decrease to 10 minutes by 7:24 AM and stay that long until 7:24 PM. At that point, the headways start to lengthen out again, reaching 15 minutes by the end of the day.

On Sundays the D train has 20 minute headways from midnight until 7:24 AM. They shorten to 12 minutes by 7:51 AM and remain at that length until 10:03 AM. After one 11-minute headway, all headways are 10 minutes until 5:44 PM. Then, the headways slowly increase, reaching 15 minutes by the middle of the night.

In the southbound direction during the weekday peak period, B train headways start at 19 minutes at 5:26 PM and decrease to 7 minutes by 8:57 AM when the train stops running in the Bronx. Trains start again at 3:58 PM,

with headways of 8 minutes, which grow to 10 minutes by 6:37 PM, when they stop running again.

Bus Service

The Cromwell Avenue-Jerome Avenue study area is served by ten bus routes: the Bx1, Bx2, Bx11, Bx18, Bx32, Bx35, Bx36, Bx40, Bx42 and the express bus route BxM4.

Bx1

This route operates between Riverdale Avenue-231st Street and East 136th Street-Lincoln Avenue and makes stops at East 165th Street and East 177th Street. On weekdays, it runs toward Riverdale Avenue from 5:10 AM to 6:45 PM and then from 7:59 PM to 1:45 AM. It runs toward Lincoln Avenue from 4:12 AM to 5:48 AM and then from 6:42 PM to 12:41 AM.

Table 6.1: Bx1 average frequency (minutes)

Days of the Week	Morning Rush (7 AM - 9 AM)	Midday (11 AM - 1 PM)	Afternoon Rush (4 PM - 7PM)	Evening (7 PM - 9 PM)	Night (Midnight - 4 AM)
Weekdays	8	--	--	13	--
Saturdays	20	--	--	12	--
Sundays	24	13	13	20	--

Bx2

This bus route travels from Fort Independence Street/Sedgwick Avenue to East 136th Street/Lincoln Avenue making the same relevant stops as the Bx1. On weekdays it runs toward Fort Independence from 5:54 AM to 1:05 AM and runs toward Lincoln Avenue from 4:52 AM to 11:33 PM.

Table 6.2: Bx2 average frequency (minutes)

Days of the Week	Morning Rush (7 AM - 9 AM)	Midday (11 AM - 1 PM)	Afternoon Rush (4 PM - 7PM)	Evening (7 PM - 9 PM)	Night (Midnight - 4 AM)
Weekdays	8	6	6	10	--
Saturdays	20	10	10	17	--
Sundays	24	13	13	20	--

Bx11

This bus line runs between Southern Boulevard/West Farms Road and the George Washington Bridge Bus station and stops at the intersection of 170th Street and Jerome Avenue. It runs from 5 AM to 1:55 AM towards Southern Boulevard and from 4:20 AM to 1:10 AM towards the George Washington Bridge on weekdays.

Table 6.3: Bx11 average frequency (minutes)

Days of the Week	Morning Rush (7 AM - 9 AM)	Midday (11 AM - 1 PM)	Afternoon Rush (4 PM - 7PM)	Evening (7 PM - 9 PM)	Night (Midnight - 4 AM)
Weekdays	5	11	7	11	--
Saturdays	12	9	9	10	--
Sundays	17	11	11	13	--

Bx18

This bus route travels between Undercliff Avenue/Sedgwick Avenue and Grand Concourse/East 170th Street and stops at the intersection of 170th Street and Jerome Avenue. On weekdays it travels towards Undercliff Avenue from 6:15 AM to 9:20 PM and towards Grand Concourse from 6 AM to 8:30 PM.

Table 6.4: Bx18 average frequency (minutes)

Days of the Week	Morning Rush (7 AM - 9 AM)	Midday (11 AM - 1 PM)	Afternoon Rush (4 PM - 7 PM)	Evening (7 PM - 9 PM)	Night (Midnight - 4 AM)
Weekdays	12	30	15	20	--
Saturdays	30	30	30	30	--
Sundays	60	30	30	30	--

Bx32

This bus route operates between East 138th Street/Lincoln Avenue and the Bronx VA Medical Center. On weekdays it runs towards the VA Hospital from 6:15 AM to 11:30 PM and runs towards East 138th Street from 5:54 AM until 12:05 AM.

Table 6.5: Bx32 average frequency (minutes)

Days of the Week	Morning Rush (7 AM - 9 AM)	Midday (11 AM - 1 PM)	Afternoon Rush (4 PM - 7 PM)	Evening (7 PM - 9 PM)	Night (Midnight - 4 AM)
Weekdays	11	15	15	17	--
Saturdays	30	20	20	30	--
Sundays	30	30	30	30	--

Bx35

This bus route travels between West Farms Road/Southern Boulevard and West 181st Street/Broadway. It stops at 167th Street and Grand Concourse. It travels both ways at all times.

Table 6.6: Bx35 average frequency (minutes)

Days of the Week	Morning Rush (7 AM - 9 AM)	Midday (11 AM - 1 PM)	Afternoon Rush (4 PM - 7 PM)	Evening (7 PM - 9 PM)	Night (Midnight - 4 AM)
Weekdays	6	9	8	9	60
Saturdays	13	9	8	10	60
Sundays	17	10	10	11	60

Bx36

This bus line operates from Olmstead Avenue/Randall Avenue and Washington Heights. It operates at all times of day both ways for all seven days during the week. On school days, there is additional service that travels from West 182nd Street/Belmont Avenue to West 179th Street/Fort Washington Avenue at 2:41 PM, from Boston Road/East Tremont Avenue to Randall Avenue/Olmstead Avenue at 3:09 PM and from 179th Street/Broadway to Pugsley Avenue/Lafayette Avenue from 2:58 and 3:04 PM. In addition there is a Bx36 Limited service that runs during periods of high volume along the same route with frequencies of 8 minutes in the morning and 11 minutes in the afternoon.

Table 6.7: Bx36 average frequency (minutes)

Days of the Week	Morning Rush (7 AM - 9 AM)	Midday (11 AM - 1 PM)	Afternoon Rush (4 PM - 7 PM)	Evening (7 PM - 9 PM)	Night (Midnight - 4 AM)
Weekdays	7	7	10	7	48
Saturdays	7	7	7	8	48
Sundays	11	8	7	9	48

Bx40/Bx42

The Bx40 bus route runs between Morris Heights and Fort Schuyler while Bx42 runs between Morris Heights and Throgs Neck. The combined Bx40 and Bx42 service operates between Morris Heights and East Tremont Avenue/Randall Avenue. Bx40 buses alternate with Bx42 buses.

The Bx40 and combined service operate at all times of day both ways for all seven days of the week. On weekdays, the Bx42 service operates towards Morris Heights from 4:30 AM to 1:30 AM and towards Throgs Neck from 4:02 AM to 12:45 AM.

Table 6.8: Combined Bx40/Bx42 service average frequency (minutes)

Days of the Week	Morning Rush (7 AM - 9 AM)	Midday (11 AM - 1 PM)	Afternoon Rush (4 PM - 7PM)	Evening (7 PM - 9 PM)	Night (Mid-night - 4 AM)
Weekdays	6	10	8	9	60
Saturdays	12	10	11	12	60
Sundays	10	12	12	12	60

Table 6.9: Bx40 average frequency (minutes)

Days of the Week	Morning Rush (7 AM - 9 AM)	Midday (11 AM - 1 PM)	Afternoon Rush (4 PM - 7PM)	Evening (7 PM - 9 PM)	Night (Mid-night - 4 AM)
Weekdays	12	20	15	20	60
Saturdays	24	20	20	24	60
Sundays	20	24	24	24	60

Table 6.10: Bx42 average frequency (minutes)

Days of the Week	Morning Rush (7 AM - 9 AM)	Midday (11 AM - 1 PM)	Afternoon Rush (4 PM - 7PM)	Evening (7 PM - 9 PM)	Night (Mid-night - 4 AM)
Weekdays	12	20	15	17	--
Saturdays	20	20	18	24	--
Sundays	20	24	24	24	--

BxM4

This express service operates daily between Woodlawn and 26th Street/5th Avenue in Manhattan. On weekdays, it runs towards 26th Street from 5:30 AM to 10:35 PM and towards Woodlawn from 7:15 AM to 11:45 AM.

Table 6.11: BxM4 average frequency (minutes)

Days of the Week	Morning Rush (7 AM - 9 AM)	Midday (11 AM - 1 PM)	Afternoon Rush (4 PM - 7PM)	Evening (7 PM - 9 PM)	Night (Mid-night - 4 AM)
Weekdays	30	60	30	60	--
Saturdays	60	60	60	60	--
Sundays					

Appendix III: Community Outreach and Public Involvement

As part of the Cromwell Avenue-Jerome Avenue Transportation Study planning process, DCP worked in collaboration with the community and local stakeholders to identify traffic and transportation needs in the study area. We met several times with members of CDs 4 and 5 to encourage full participation from the local residents, businesses and institutions in the study area.

The first event was a walking tour through the study area on Saturday, October 25, 2014. It was an opportunity to observe problematic locations and



Community walking tour



Transportation focus group

hear from the community about issues related to transportation and open space that need to be addressed. The second series of events consisted of two transportation focus groups—one with CD 4 on November 5, 2014 and the other with CD 5 on December 18, 2014. These focus groups were geared exclusively towards existing transportation issues that affected vehicular traffic, pedestrian safety and circulation, access to public transportation and bicycle network connectivity. Finally DCP organized several visioning workshops and open houses beginning in the fall of 2014 and continuing through the publication of this report where the community provided feedback on issues and potential remedies.

Figure 6.1 is a map showing all the locations for which DCP received feedback. Tables 6.12 and 6.13 provide details on the comments we received on each of these issues as well as unmapped issues. All comments received were considered and explored, but we were only able to address those issues that fell within the goals of this study.

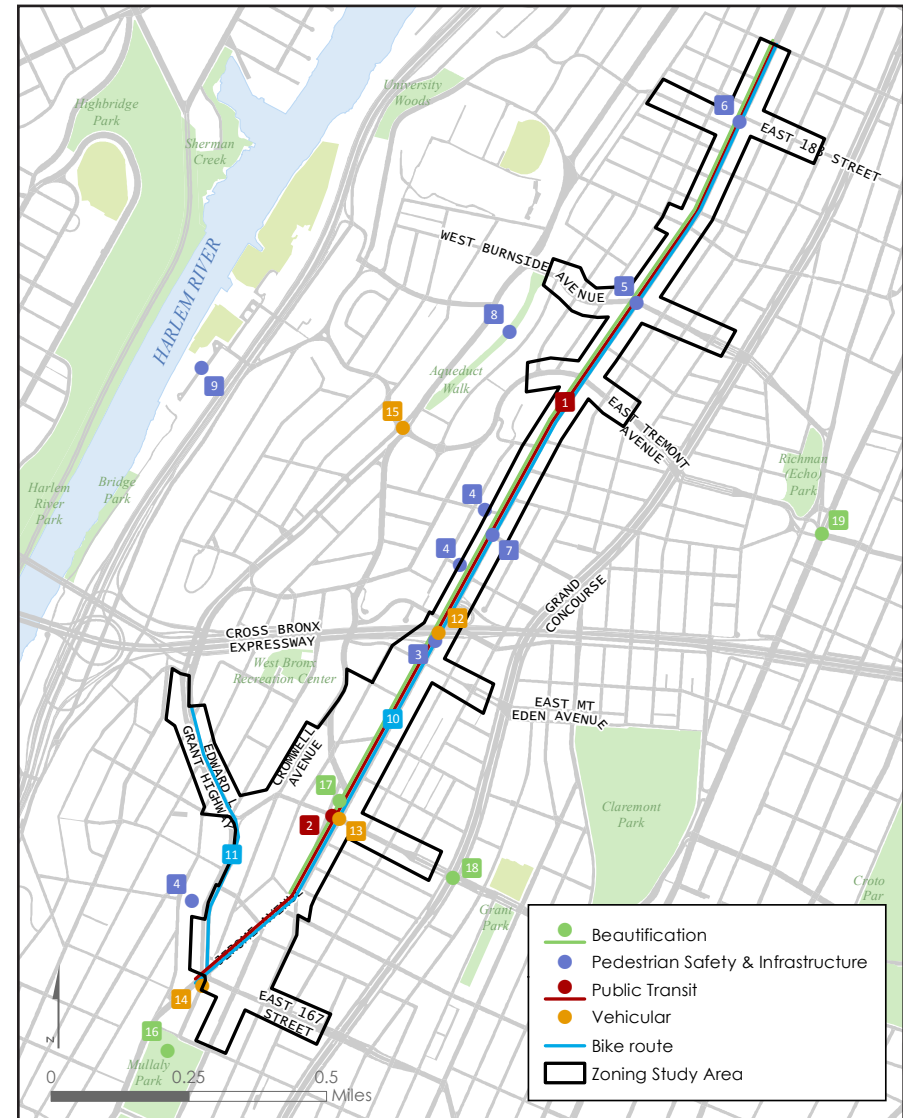


Figure 6.1: Map of transportation challenges identified by community

Category	Sub-Category	Issue Number on Map	Location	Brief Description of Issue/Concern or Solution Proposed
Public Transit	Bus Stops	1	Jerome Avenue, north of 175 th Street	Buses stop in main travel lane instead of pulling into stop in service lane
	Bus Stops	2	170 th Street between Jerome Avenue and Plaza Drive	Bus bunching (this is due to two bus routes sharing same bus stop)
Pedestrian Safety and Infrastructure	Crossing	3	Cross-Bronx Expressway	This crossing is difficult and dangerous for pedestrians. Residents who walk often avoid this area.
	Pedestrian Infrastructure	4	168 th Street, Clifford Place, 176 th Street	Maintain and improve step streets, which are important to pedestrian mobility in the study area, and also to access the subway stations.
	Pedestrian Infrastructure	5	Burnside Avenue and Jerome Avenue	Long pedestrian crossing at this location due to a wide intersection.
	Sidewalk Conditions	6	183 rd Street and Jerome Avenue	FDNY vehicles on sidewalk block pedestrians from using the sidewalk
	Crossings	7	Jerome Avenue at 175 th Street	Unsafe pedestrian crossing across Jerome Avenue at this location
	Pedestrian Infrastructure	8	Aqueduct Park	Provide better access to Aqueduct Park (wayfinding signs)
	Pedestrian Infrastructure	9	River Park Towers (west of the zoning study area)	Install pedestrian overpass
Bicycling	Bike route	10	Jerome Avenue	Install bike route
	Bike route	11	E.L. Grant Highway	Improve existing bike lane (striped lane) by completely separating bike lane from traffic
Vehicular	Congestion	12	Southern Exit of Cross Bronx Expressway at Jerome Avenue approach	Add a traffic stop light for eastbound traffic coming from the southern exit of the Cross Bronx Expressway, since traffic from this approach often ends up in middle of the intersection when the light turns green for the other direction; this contributes to the blocking of traffic flow
	Vehicular Behavior	13	Jerome Avenue and 170 th Street	Illegal left turns observed despite the posting of "No Left Turn" regulations and signage
	Vehicular Behavior	14	167 th Street / Jerome Avenue/ Cromwell Avenue	Close off south approach where aggressive vehicular behavior is often observed
	Congestion	15	University Avenue and Tremont Avenue	Install advance left turn signal
Beautification	Open Space	16	Mullaly Park	Park is underutilized and should be made more usable as a public space
	Open Space	17	Keltch Park	Homelessness problem

	Safety	18	Grand Concourse Underpass	Concerns about feeling safe in the underpass
	Open Space	19	Tremont Avenue and Webster Ave Avenue	Clean up public plaza

Table 6.12: Specific transportation issues and opportunities identified by community

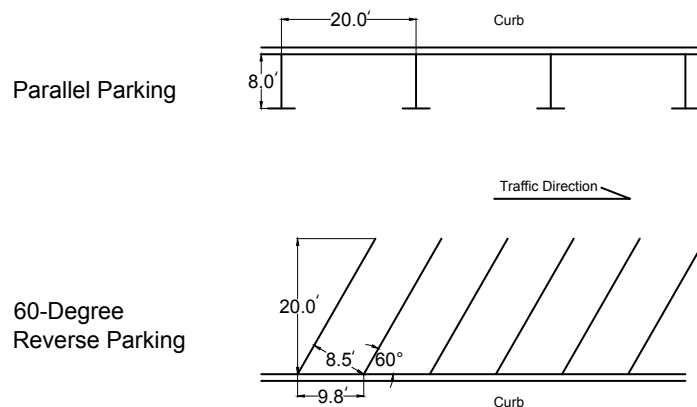
Category	Sub-category	Location	Brief description of issue/concern or solution proposed
Public Transit	Accessibility	Throughout	Add elevators and/or escalators for elderly and handicapped
	Increased Bus Services	Along Jerome Ave	No bus service south of 175 th Street
	Increased Bus Services	Throughout	More bus services in northern portion of the study area, extend bus service along Jerome Ave.
	Increased Bus Services	Throughout	More bus service to Fordham University - currently only Bx3
	Increased Bus Services	Throughout	BX40 - BX42 not on schedule (plan around school dismissals)
	Increased Bus Services	Throughout	Better connectivity to the mall
	Increased Bus Services	Throughout	More BX13 buses in the AM
Bicycling		Throughout	More bikes and citi bikes in the Bronx
Beautification	Streetscape	Under the Elevated Rail Line	Beautify under the el: paint pillars, improve lighting, add green spaces, resolve trash problem.
Pedestrian Safety and Infrastructure	Pedestrian Infrastructure	Jerome Avenue	Add countdown signals and audio assistance at all intersections and slip-guards at curb cuts
		Throughout	Improve senior mobility around the neighborhood
		Throughout	Improve sign visibility at night
Vehicular	Parking	Throughout	Enforce parking, especially illegal parking on sidewalk
		Throughout	Shortage of parking --> street surface lots
		Jerome Avenue	Too much Cross Bronx Expressway traffic on Jerome Avenue
			North/South Access limited-need more connections

Table 6.13: Study area-wide transportation Issues and opportunities identified by community

Appendix IV: Angle Parking

Design Standards

Since 60-degree reverse parking is the most commonly found angle parking design in the city, DCP's angle parking analysis focused on the possibility of installing this type of angle parking in the community. The diagram below illustrates the design standards of 60-degree reverse parking and parallel parking. A typical parallel parking space occupies 20 feet of curb length while an angle parking space occupies less than 10 feet. Therefore, for a road segment of a given length, substituting angle parking for parallel parking will add parking spaces. However, the required street width for angle parking is higher. A 60-degree angle parking lane is at least 20 feet wide while a typical parallel parking lane is only 8 feet wide.



Since an angle parking lane is much wider than a typical parallel parking lane, street width is a key consideration in the search for potential locations for angle parking. Table 6.14 shows the minimum street widths needed to accommodate 60-degree angle parking in different situations. According to the design standards in the table, one-way streets under 36 feet wide and two-way streets under 48 feet wide cannot accommodate angle parking without interfering with traffic flow.

Minimum Street Width	No Parking on Opposite Curb	Angle Parking on one side and Parallel Parking on the other	Angle Parking on Both Curbs
One-Way Street	36 Feet	44 Feet	56 Feet
Two-Way Street	48 Feet	54 Feet	72 Feet

Table 6.14: Minimum street widths required for angle parking

Potential Angle Parking Locations

As mentioned in the recommendations section of this report, after considering existing road characteristics, DCP identified several road segments where 60-degree reverse angle parking could be implemented. The locations are described in this appendix.

- Macombs Road from University Avenue to Grand Avenue and from Mount Eden Avenue to Jerome Avenue



Macombs Road is a 60-foot-wide, two-way street. There are two parallel parking lanes, each of which is 11 feet wide, two traffic lanes and a 13-foot-wide striped area in the center of the roadway. Converting the parallel parking lanes to 60-degree reverse angle parking on both sides can better utilize the road space without interfering with vehicular traffic flows. However, with the implementation of angle parking on both sides of the street, there will not be enough room for separate bike lanes as suggested in the recommendation section. A way to accommodate both recommendations would be to implement angle parking on one side and keep the parallel parking on the other side, so that there is space left for two separated bike lanes.

- *University Avenue from West 180th Street to West Burnside Avenue*

University Avenue is an asymmetric two-way street on this block. The southbound side of the roadway consists of one moving lane, while the northbound side has two. In addition, there are parallel parking lanes on both sides and there is a two-way shared bike route. This road segment features a wide striped area on the northbound side, which is 18



feet at its widest. The parallel parking lane could easily be converted to a reverse angle parking lane on the northbound side by using some of the striped area. The parallel parking lane on the southbound side would remain as is.

- *University Avenue from West 175th Street to West 174th Street*

This segment of University Avenue consists of one northbound and two southbound moving lanes, as well as a protected bike lane and a parallel parking lane on each side. This road segment has a wide striped area on the southbound side between the moving lanes and the bike lane. Although the width of the striped area varies from 6 to 14 feet, this under-utilized space could be used for angle parking. To improve bike safety on this road, one proposal would be to move the bike lane to the curb and install the angle parking lane between the bike lane and the traffic lanes.



Appendix V: Traffic Data Collection and Analysis

An evaluation of the traffic operations at selected locations was performed as part of this study. Traffic data was collected in November 2014 using automatic traffic recorder (ATR) counts for one full week at five locations to identify the daily temporal variation of traffic and peak period turning movement counts at nine intersections necessary to perform the LOS analysis.

ATR counts were conducted at the following locations:

- Jerome Avenue between Mount Hope Place and East 176th Street
- Jerome Avenue between East 171st Street and Macombs Road
- Jerome Avenue between Marcy Place and East Clarke Place
- Edward L. Grant Highway between West 169th Street and the West 168th Street step street
- Cromwell Avenue between Inwood Avenue and Jerome Avenue

Turning movement counts were collected for the morning (7:00 AM – 9:00 AM), midday (12:00 PM – 2:00 PM), evening (4:00 PM – 6:00 PM) and Saturday midday (1:00 PM – 3:00 PM) peak periods at the following intersections:

- Jerome Avenue and Tremont Avenue
- Jerome Avenue and East 175th Street
- Jerome Avenue and the Cross Bronx Expressway (including all six ramps on Jerome Avenue)
- Jerome Avenue and Featherbed Lane/East 174th Street
- Jerome Avenue and Mount Eden Avenue
- Jerome Avenue and 170th Street

- Edward L. Grant Highway and West 170th Street
- Jerome Avenue and East 167th Street
- Cromwell Avenue and West 169th Street

An LOS analysis was performed for the nine intersections for which turning movement counts were done to identify the existing level of traffic congestion in the zoning study area during four peak periods: three weekday periods (morning, midday and evening), and one Saturday period (midday). The analysis was based on the methodology presented in the Highway Capacity Manual (HCM) 2000 using the software release 5.5.

Besides traffic counts, other traffic data required for the analysis was also collected, including number and width of traffic lanes, vehicle classification counts, as well as other relevant roadway information related to physical and operational characteristics. Signal timing for each intersection was obtained from NYCDOT. The HCM methodology expresses the quality of traffic flow in terms of LOS, which is based on the amount of average traffic delay per intersection. For signalized intersections the levels of service range from A (no congestion, with average delay per vehicle of 10 seconds or less) to F (very high congestion, with average delay per vehicle of 80 seconds or greater).

LOS	Delay(seconds/vehicle)
A	Less than 10.1
B	10.1 to 20.0
C	20.1 to 35.0
D	35.1 to 55.0
E	55.1 to 80.0
F	Greater than 80.0

Source: 2000 Highway Capacity Manual

Table 6.15: Signalized intersections level of service (LOS) criteria

Six of the nine analyzed intersections currently operate at acceptable LOS, varying from A to C for all approaches and all peak periods. However, the LOS analysis identified certain deficiencies at the other three analyzed intersections.

East 167th Street and Jerome Avenue – This complex five-legged signalized intersection operates at an acceptable LOS (B to D). However, the eastbound approach of Edward L. Grant Highway during the weekday AM and Midday periods and the northbound approach of Jerome Avenue during the weekday PM and Saturday midday periods operate at LOS E.

West 170th Street and Edward L. Grant Highway – The westbound approach of West 170th Street operates at an LOS of F during the weekday AM and PM periods and at an LOS of E during Saturday midday. The eastbound approach of West 170th Street operates at an LOS of E during the weekday PM. All other approaches operate at acceptable LOSs.

CBE Northbound Exit Ramp and Jerome Avenue – At the highly congested intersection of Jerome Avenue at the entrance and exit ramps of the Northbound CBE, the northbound Jerome Avenue through movements during the weekday midday and Saturday midday periods operate at LOS E. The eastbound left from the southbound I-95 exit ramp operates at LOS E during the weekday AM period.

Intersection	Approach	Existing Weekday AM			Existing Weekday Midday			Existing Weekday PM			Existing Saturday Midday		
		v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS
East 167 th Street/Edward L Grant Hwy. and Cromwell Avenue and Jerome Avenue	Eastbound LTR	0.95	57.3	E	0.95	57.3	E	0.78	40.5	D	0.74	38.5	D
	Westbound L	0.48	31.3	C	0.48	31.3	C	0.45	30.5	C	0.4	29.6	C
	Westbound TR	0.33	10.6	B	0.33	10.6	B	0.51	13	B	0.3	10.1	B
	Northbound R	0.08	24.3	C	0.11	24.6	C	0.05	24	C	0.03	23.8	C
	Northbound LTR	0.82	39.6	D	0.73	35.4	D	1.04	73.9	E	1.02	73.6	E
	Southbound LTR	0.37	26.2	C	0.58	30.5	C	0.44	26	C	0.68	32.7	C
		Intersection Delay: 40.4		LOS: D	Intersection Delay: 40.2		LOS: D	Intersection Delay: 27.8		LOS: C	Intersection Delay: 28.6		LOS: C
West 170 th Street/Jesup Avenue and Edward L Grant Hwy.	Eastbound LTR	0.8	46.2	D	0.49	39.6	D	0.88	59.7	E	0.52	40.7	D
	Westbound LTR	0.98	80.5	F	0.67	46.5	D	1.03	92.4	F	0.87	60.8	E
	Northbound LT	0.3	10	A	0.22	9.2	A	0.33	10.3	B	0.2	9.1	A
	Southbound Def L	0.56	16.5	B	0.4	12.6	B	0.47	14.5	B	--	--	--
	Southbound TR	0.54	14.2	B	0.41	11.9	B	0.54	14	B	--	--	--
	Southbound LTR	--	--	--	--	--	--	--	--	--	0.37	10.8	B
		Intersection Delay: 33.7		LOS: C	Intersection Delay: 22.8		LOS: C	Intersection Delay: 38.9		LOS: D	Intersection Delay: 28.6		LOS: C

Intersection	Approach	Existing Weekday AM			Existing Weekday Midday			Existing Weekday PM			Existing Saturday Midday		
EB/WB and NB/SB		v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS
170 th Street and Jerome Avenue	Eastbound LTR	0.32	22.7	C	0.21	21.3	C	0.27	22	C	0.58	27.1	C
	Westbound LTR	0.33	22.8	C	0.38	23.4	C	0.42	24	C	0.37	23.1	C
	Northbound LTR	0.33	12.4	B	0.31	12.1	B	0.35	12.5	B	0.68	18.8	B
	Southbound LTR	0.29	12	B	0.22	11.3	B	0.22	11.2	B	0.57	16.6	B
		Intersection Delay: 17.9		LOS: B	Intersection Delay: 18.0		LOS: B	Intersection Delay: 18.4		LOS: B	Intersection Delay: 21.2		LOS: C
East 175 th Street and Jerome Avenue	Eastbound	--	--	--	--	--	--	--	--	--	--	--	--
	Westbound LTR	0.20	21.3	C	0.14	20.6	C	0.20	21.2	C	0.13	20.6	C
	Northbound LTR	0.60	16.9	B	0.58	16.6	B	0.54	16.3	B	0.57	15.9	B
	Southbound LTR	0.67	18.8	B	0.59	16.8	B	0.56	16.0	B	0.61	17.9	B
		Intersection Delay: 18.3		LOS: B	Intersection Delay: 17.1		LOS: B	Intersection Delay: 17.0		LOS: B	Intersection Delay: 17.2		LOS: B
Tremont Avenue and Jerome Avenue	Eastbound LTR	0.44	23.2	C	0.32	21.4	C	0.66	28.7	C	0.33	21.5	C
	Westbound LTR	0.34	21.7	C	0.36	22.0	C	0.63	27.8	C	0.37	22.1	C
	Northbound LTR	0.52	25.0	C	0.46	23.7	C	0.73	31.4	C	0.50	24.6	C
	Southbound LT	0.38	22.9	C	0.43	23.9	C	0.60	28.9	C	0.51	25.9	C
	Southbound R	0.10	18.9	B	0.16	19.6	B	0.18	19.9	B	0.14	19.3	B
		Intersection Delay: 23.2		LOS: C	Intersection Delay: 22.6		LOS: C	Intersection Delay: 28.9		LOS: C	Intersection Delay:		LOS: C
Featherbed Lane and Jerome Avenue	Eastbound Def L	0.51	32.1	C	0.41	27.3	C	0.62	41.8	D	--	--	--
	Eastbound TR	0.33	23.7	C	0.35	24.0	C	0.40	25.0	C	--	--	--
	Eastbound LTR	--	--	--	--	--	--	--	--	--	0.53	26.6	C
	Westbound LTR	0.64	28.8	C	0.55	26.6	C	0.85	38.5	D	0.63	29.0	C
	Northbound LTR	0.43	13.0	B	0.40	12.6	B	0.42	12.9	B	0.44	13.1	B
	Southbound LTR	0.53	14.6	B	0.37	12.4	B	0.37	12.3	B	0.49	13.9	B
		Intersection Delay: 18.8		LOS: B	Intersection Delay: 17.4		LOS: B	Intersection Delay: 22.7		LOS: C	Intersection Delay: 18.7		LOS: B

Intersection	Approach	Existing Weekday AM			Existing Weekday Midday			Existing Weekday PM			Existing Saturday Midday		
EB/WB and NB/SB		v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS
I-95 Southbound Ramp Exit Left and Jerome Avenue	Eastbound	--	--	--	--	--	--	--	--	--	--	--	--
	Westbound L	0.64	23.6	C	0.33	18.2	B	0.27	17.3	B	0.40	19.1	B
	Northbound T	0.63	29.8	C	0.49	24.8	C	0.38	21.9	C	0.81	42.6	D
	Northbound R	0.41	1.0	A	0.49	1.4	A	0.55	1.8	A	0.36	0.8	A
	Southbound T	0.08	17.3	B	0.84	47.5	D	0.86	49.2	C	0.58	27.6	C
		Intersection Delay: 18.4		LOS: B	Intersection Delay: 22.4		LOS: C	Intersection Delay: 21.6		LOS: C	Intersection Delay: 23.0		LOS: C
I-95 Northbound Ramp Exit Left and Jerome Avenue	Eastbound L	0.92	70.8	E	0.69	34.8	C	0.74	29.6	C	0.57	29.0	C
	Westbound	--	--	--	--	--	--	--	--	--	--	--	--
	Northbound T	0.71	49.4	D	0.80	60.0	E	0.82	38.4	D	0.83	65.0	E
	Southbound T	0.12	13.7	B	0.13	13.8	B	0.11	13.6	B	0.27	15.0	B
		Intersection Delay: 53.2		LOS: D	Intersection Delay: 44.1		LOS: D	Intersection Delay: 31.9		LOS: C	Intersection Delay: 41.8		LOS: D
Mount Eden Avenue and Jerome Avenue	Eastbound LTR	0.41	19.2	B	0.41	19.3	B	0.50	20.8	C	0.54	21.7	C
	Westbound LTR	0.29	17.1	B	0.28	16.8	B	0.22	16.1	B	0.23	16.3	B
	Northbound LTR	0.34	22.1	C	0.39	22.6	C	0.42	23.3	C	0.52	27.0	C
	Southbound LTR	0.34	17.0	B	0.35	17.1	B	0.34	17.0	B	0.48	18.8	B
		Intersection Delay: 18.9		LOS: B	Intersection Delay: 19.2		LOS: B	Intersection Delay: 19.8		LOS: B	Intersection Delay: 21.7		LOS: C

Note: The Level of Service (LOS) analysis for the intersections of Jerome Avenue with West Mount Eden Avenue, Cross Bronx Expressway Northbound and Southbound ramps have been adjusted to account for existing queuing conditions.

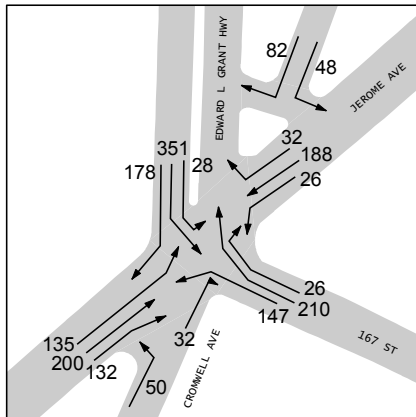
Unsignalized Intersection	Approach	Existing Weekday AM			Existing Weekday Midday			Existing Weekday PM			Existing Saturday Midday		
EB/WB and NB/SB		v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS
West 169 th Street and Cromwell Avenue	Eastbound	--	--	--	--	--	--	--	--	--	--	--	--
	Westbound LT	0.01	7.4	A	0.02	7.5	A	0.02	7.5	A	0.01	8.0	A
	Northbound	--	--	--	--	--	--	--	--	--	--	--	--
	Southbound LTR	0.22	11.2	B	0.26	11.4	B	0.26	11.6	B	0.34	12.3	B

Table 6.16: Summary of level of service analysis

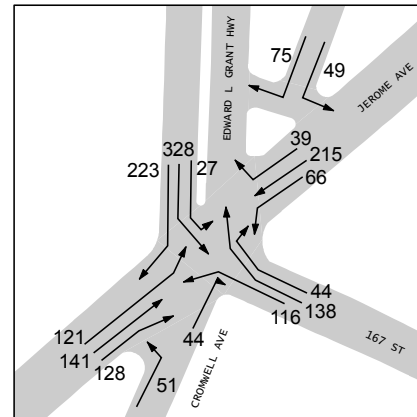
Traffic Counts

167th Street and Jerome Avenue

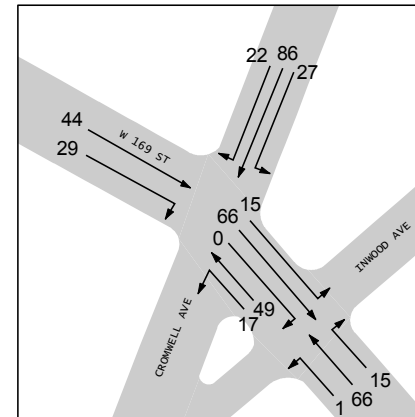
AM Weekday



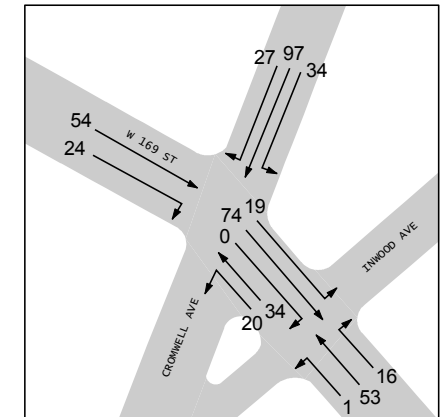
Midday Weekday



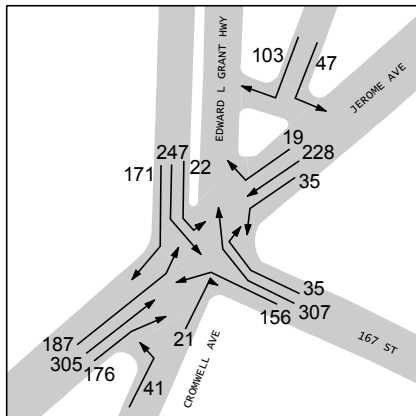
AM Weekday



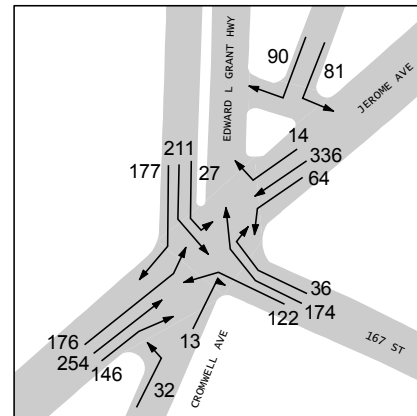
Midday Weekday



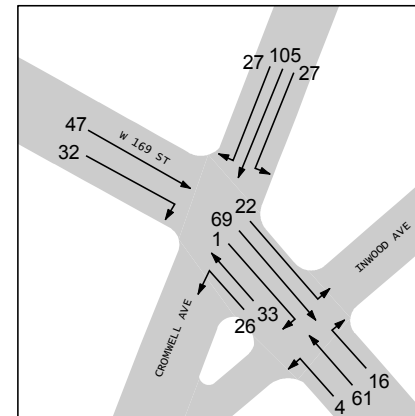
PM Weekday



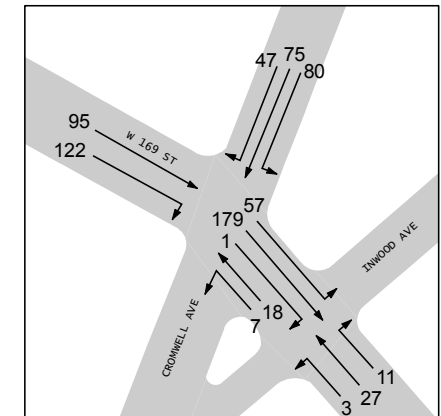
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PM Weekday

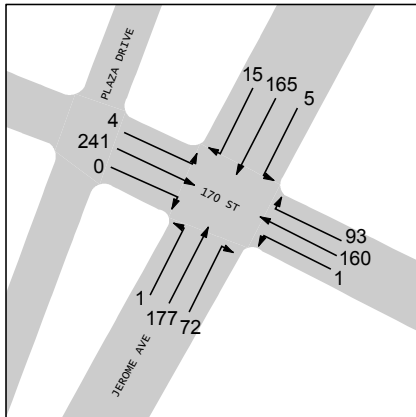


Midday Saturday

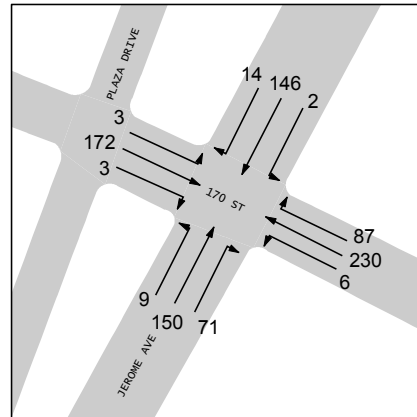


170th Street and Jerome Avenue

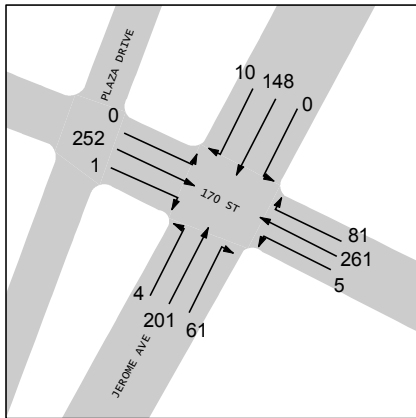
AM Weekday



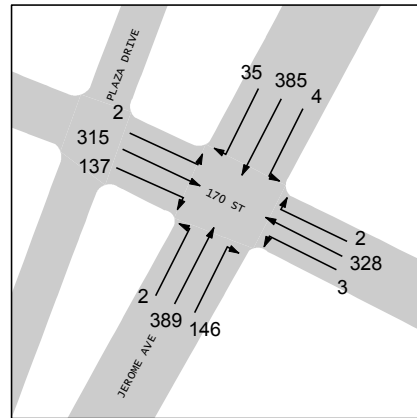
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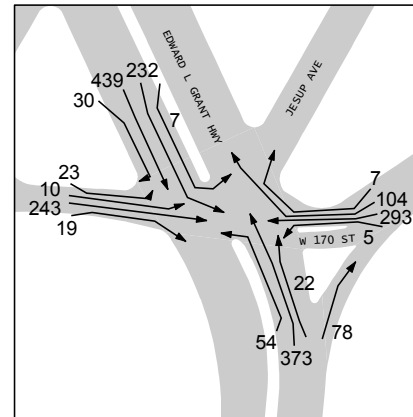
PM Weekday



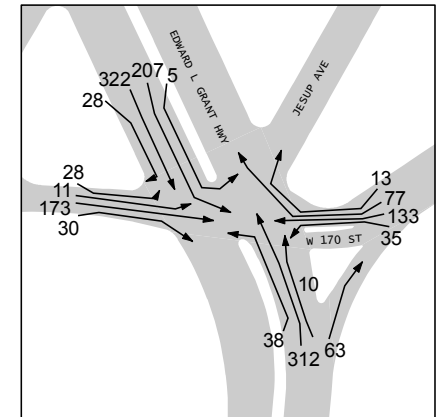
Midday Saturday

170th Street and Edward L. Grant Highway

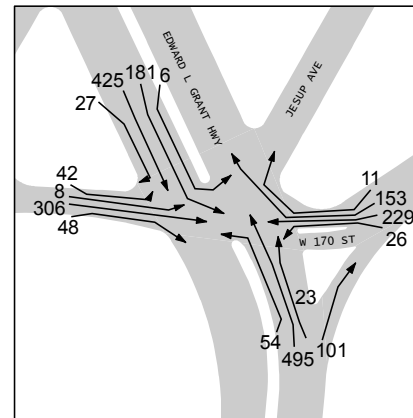
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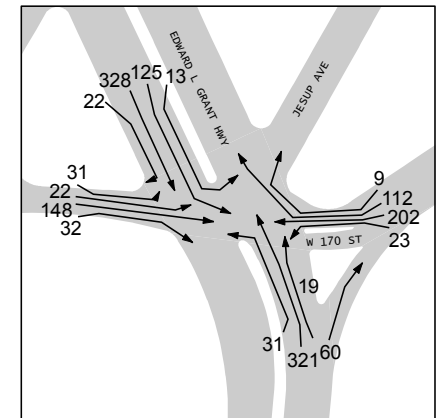
Midday Weekday



PM Weekday

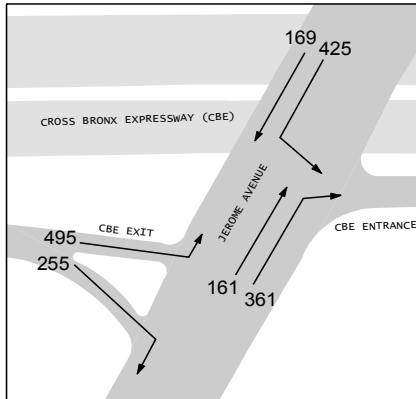


Midday Saturday

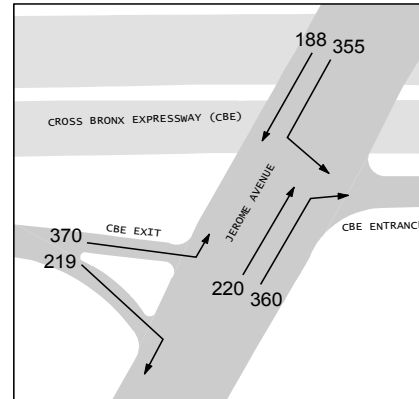


Cross Bronx Expressway Northbound Ramps and Jerome AvenueCross Bronx Expressway Southbound Ramps and Jerome Avenue

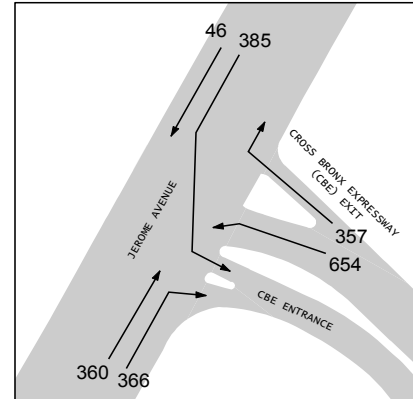
AM Weekday



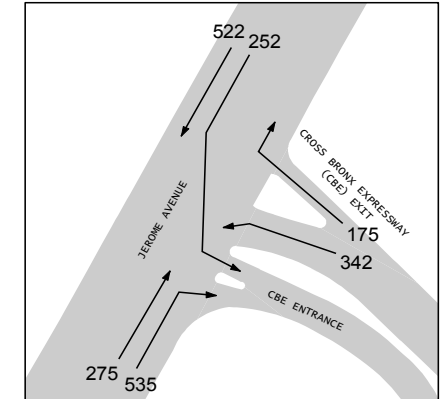
Midday Weekday



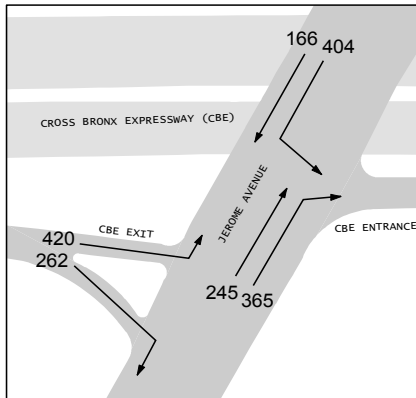
AM Weekday



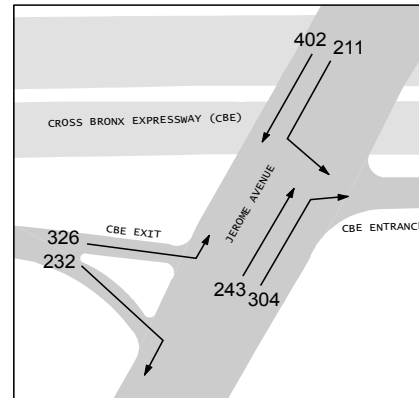
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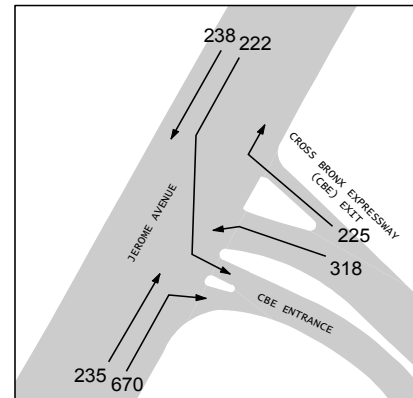
PM Weekday



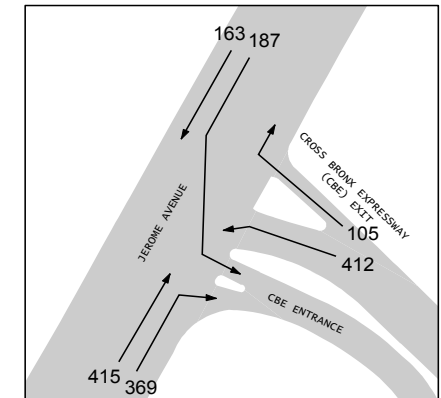
Midday Saturday



PM Weekday

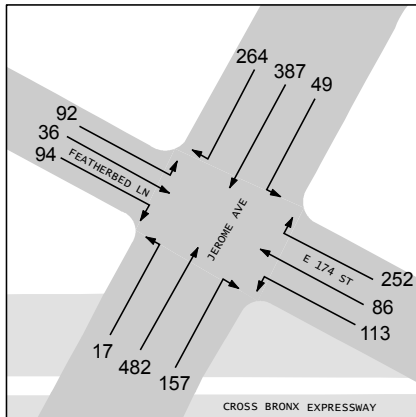


Midday Saturday

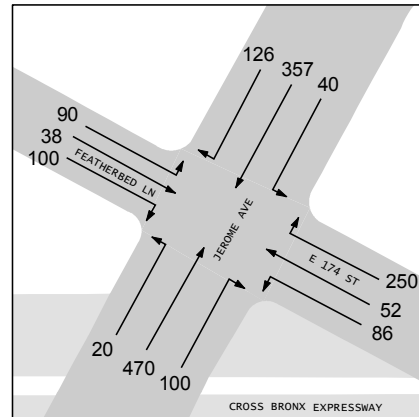


174th Street and Jerome Avenue

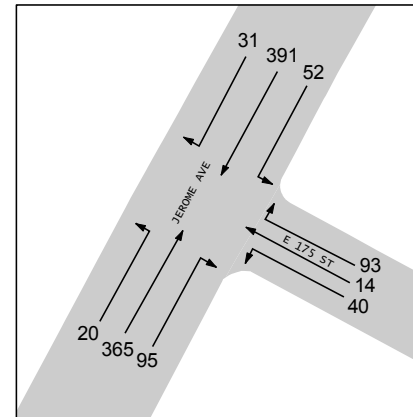
AM Weekday



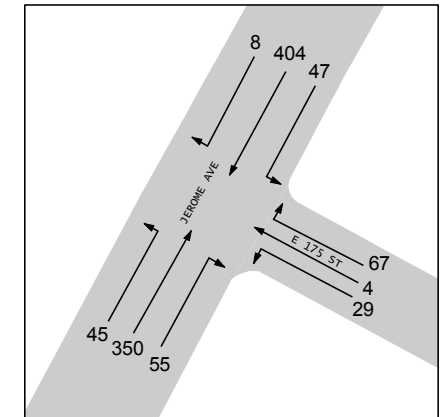
Midday Weekday

175th Street and Jerome Avenue

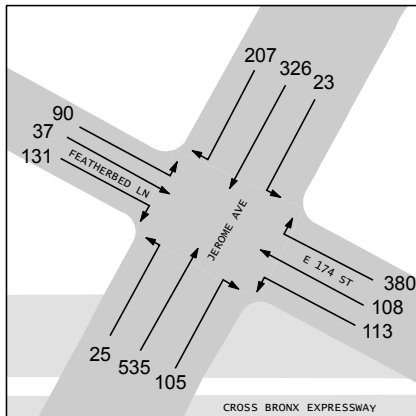
AM Weekday



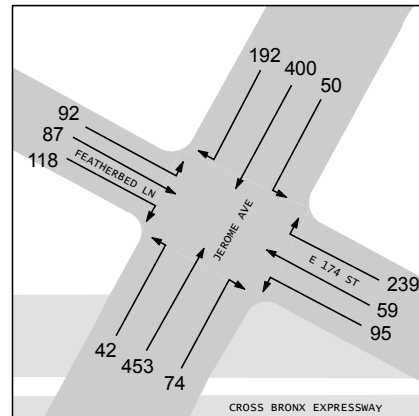
Midday Weekday



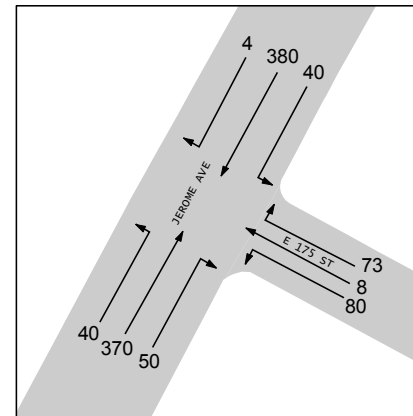
PM Weekday



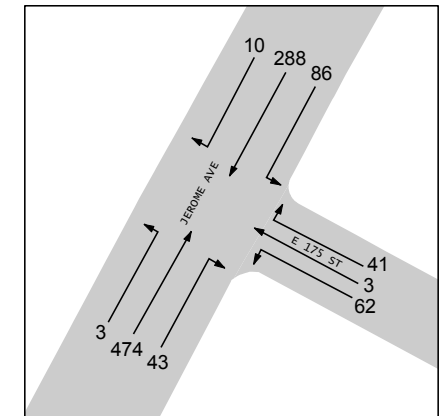
Midday Saturday



PM Weekday

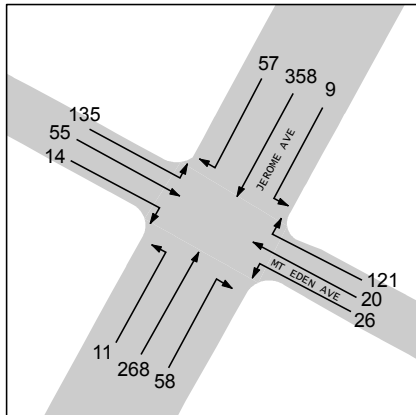


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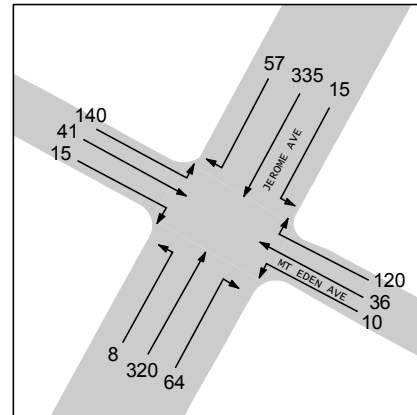


Mount Eden Avenue and Jerome Avenue

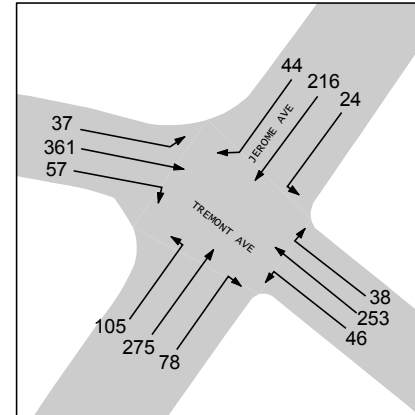
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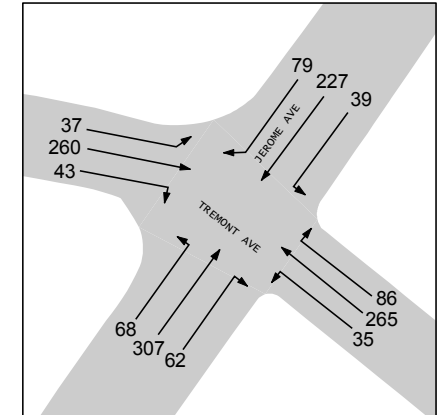
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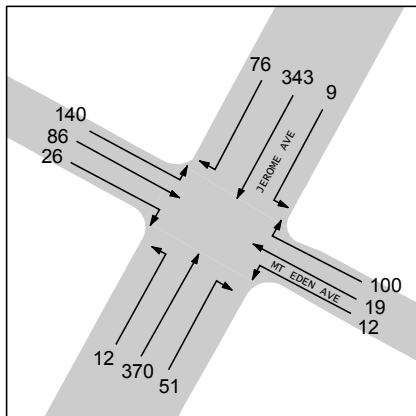
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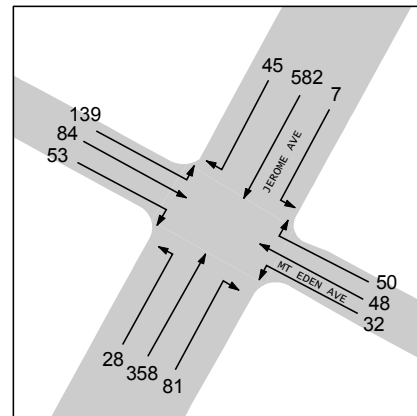
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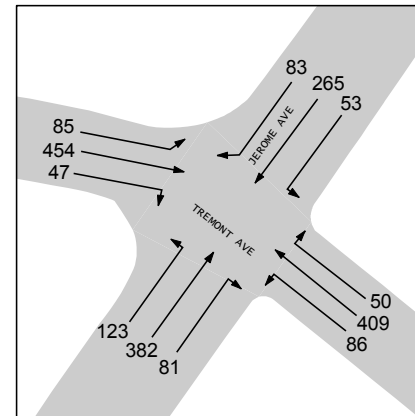
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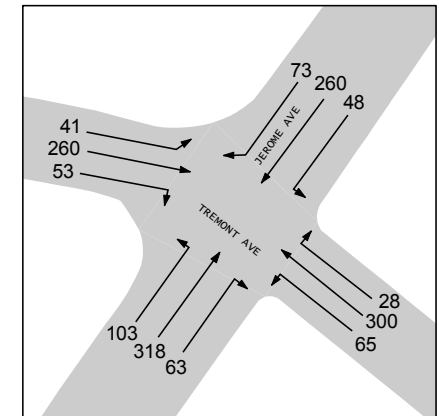
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PM Weekday



Midday Saturday

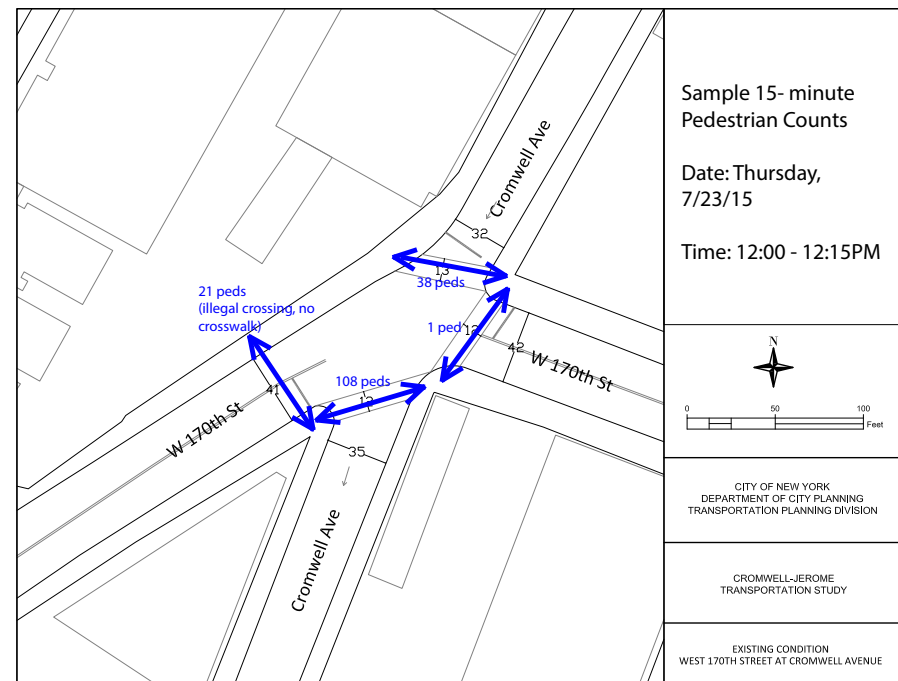


Appendix VI: Pedestrian Volumes

Pedestrian sample counts were conducted at two locations frequented by pedestrians: West 170th Street and Cromwell Ave and 170th Street and Jerome Avenue. The results are discussed in this appendix.

West 170th Street and Cromwell Avenue

This is a relatively busy intersection. The presence of the Family Life Academy Charter School, the 170th Street retail corridor and the nearby subway station generate pedestrian foot traffic through this area. Many of the pedestrians were observed crossing illegally at the southwest leg of 170th Street where there are currently no crosswalks. The highest volume of pedestrians crossing was collected at the south crosswalk of Cromwell Avenue with 108 pedestrians crossing in 15 minutes.



170th Street and Jerome Avenue

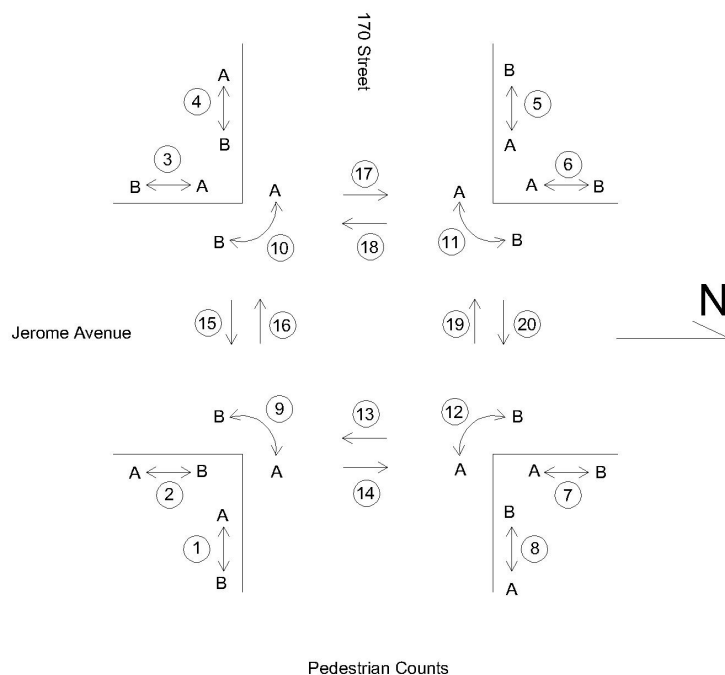
One of the busiest intersections in the Bronx, this is an intermodal transportation hub and is located at the center of the study area. The sidewalks linked to the northwest and northeast corners of this intersection seem to generate the highest volume of pedestrian foot traffic.

Location: Jerome Avenue at 170th Street

Date: 11/12/2014

Weather: Cloudy, Cool

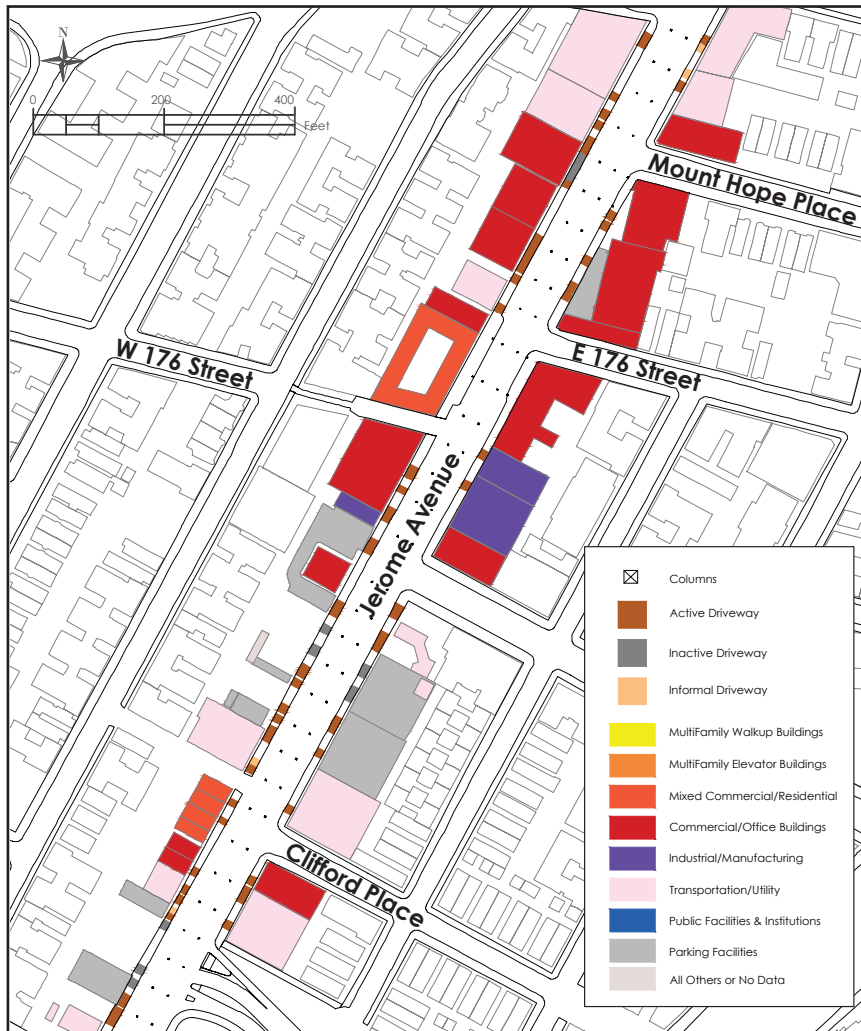
Surveyors: Lise, Alan, Le



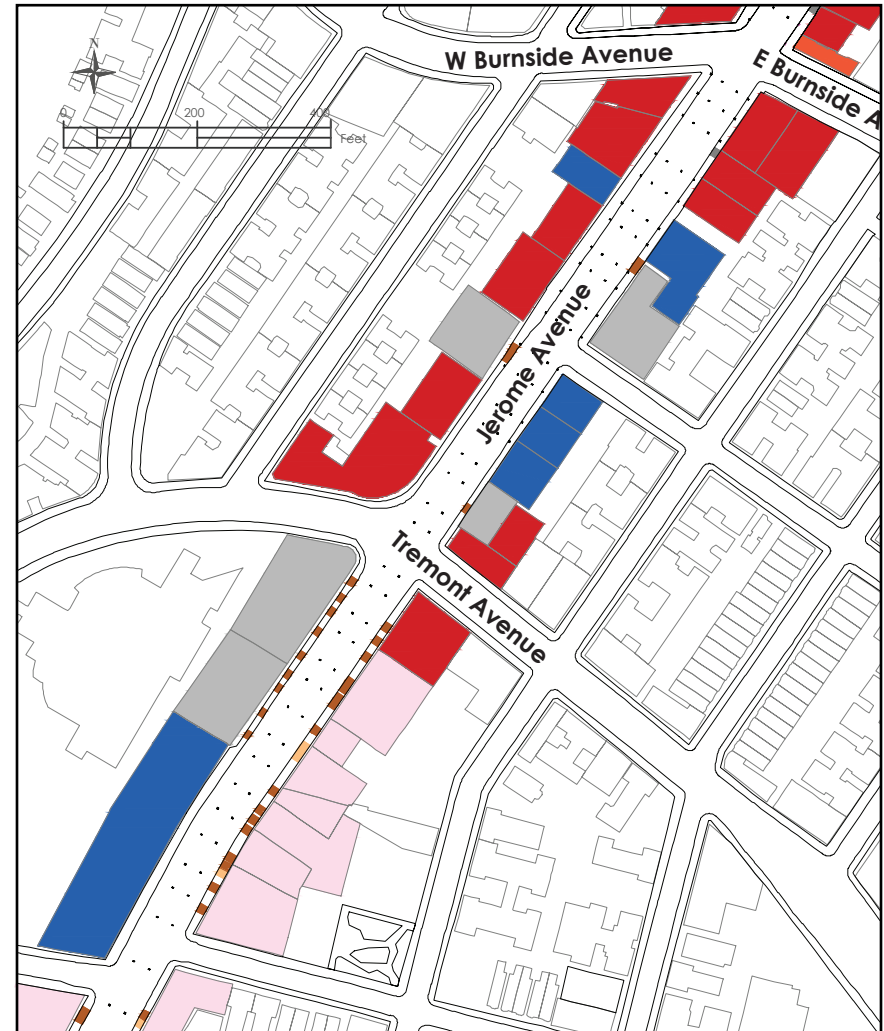
Time	Pedestrian Movement							
13:45-14:00	1A	1B	16	2A	2B	14	9A	9B
	13	10	8	27	29	37	6	1
14:00-14:15	3A	3B	17	4A	4B	15	10A	10B
	26	24	35	9	19	16	2	3
14:15-14:30	5A	5B	20	6A	6B	18	11A	11B
	35	25	62	80	52	43	11	13
14:30-14:45	7A	7B	13	8A	8B	19	12A	12B
	30	30	44	109	152	71	95	85

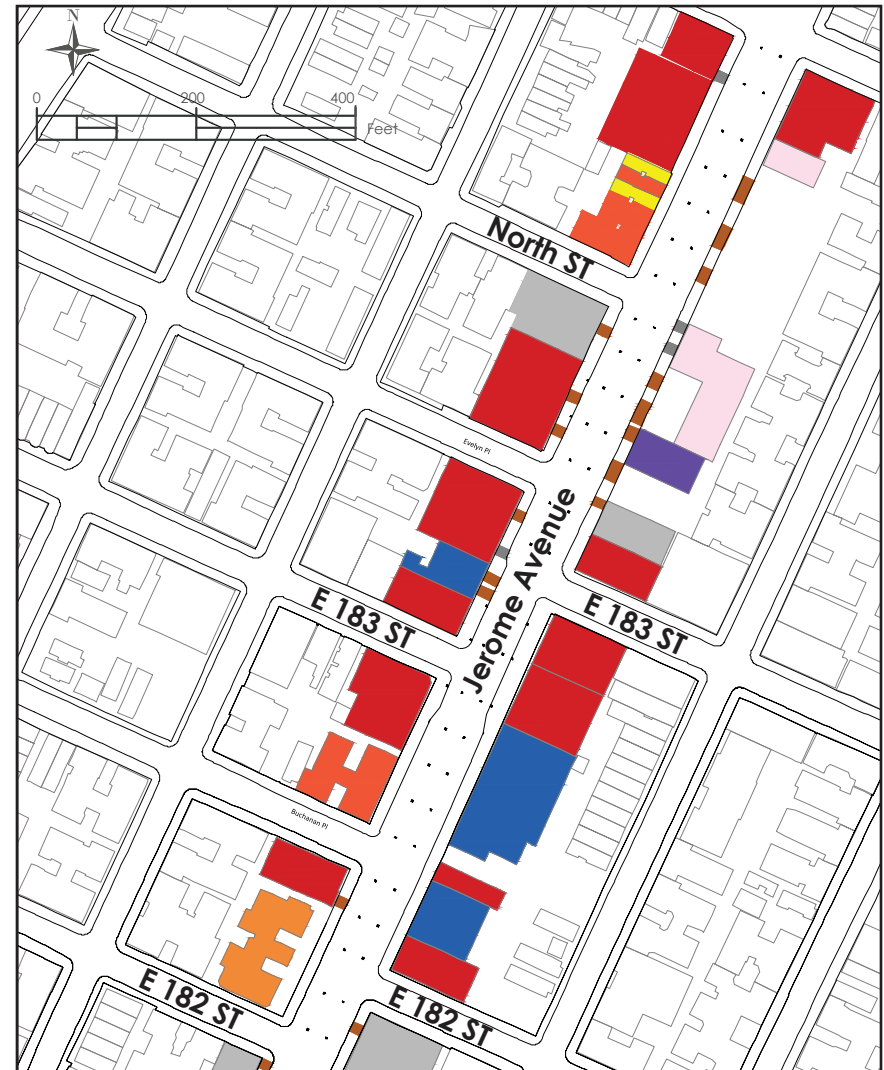
APPENDIX VII: CORRIDOR ANALYSIS

From Cross Bronx Expressway to 177th Street



From 177th Street to Burnside Avenue



From Burnside Avenue to 182nd StreetNorth of 182nd Street

This map illustrates the West Bronx Zoning Study Area, highlighting key transportation and safety infrastructure. The map includes the following features:

- Pedestrian and Bike Safety:** Indicated by green dots and lines, showing routes along major thoroughfares like the Cross Bronx Expressway and local streets such as Jerome Avenue and East 170 Street.
- Transit Service:** Represented by yellow dots and lines, showing bus routes and stations, including the West Bronx Recreation Center and various bus stops along the Cross Bronx Expressway.
- Traffic Safety and Mobility:** Indicated by red dots and lines, showing areas of high traffic volume or potential safety concerns, particularly along the Cross Bronx Expressway and major arterials.
- Other:** Includes landmarks such as the Harlem River, Highbridge Park, and various local streets like West 183 Street and East 170 Street.
- Zoning Study Area:** Outlined by a thick black line, defining the geographic scope of the study.

The map also includes a scale bar (0 to 0.5 miles) and a north arrow for orientation.

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Map Number	Project	Description	Progress
37	Clifford Place Step St HWXS311V1	Repairs	Planned
38	Macombs Rd Project	Pedestrian refuge islands, bulbouts	Completed
39	Davidson Avenue Step Street	Repairs	Planned
40	Jerome Ave at CBE north side ramps	Signal timing adjustment, restriping, pedestrian amenities	No information
41	Jerome Ave at Featherbed Ln	Change curbside regulations to add capacity, signal timing adjustment	No information
42	Walton Ave at E 174th St	Signal timing adjustment	No information
43	Jerome Ave at Mt. Eden Ave	One-way conversion, pedestrian safety measures, change curbside regulations	No information
44	Walton Ave at Mt. Eden Ave	Enlarge medians, remove parking, signal timing adjustment, pedestrian amenities	Completed in 2014
45	Reconstruction of the Grand Concourse-Phase 3	Road reconstruction	No information
46	Edward Grant Highway Safety Improvement	New bus boarding island, pedestrian safety measures	Completed
47	High Bridge Step Street Rehabilitation - Parks	Step street rehabilitation	Planned
48	Grand Concourse Service Rd E 166 to E 171 Reconstruction HWXP136A	Road reconstruction, median widening, new street decorations, rehabilitate infrastructure	Planned. (Anticipated to be completed in 2015.)
49	Safe Routes to Schools - HWCSCH3F	Pedestrian amenities, traffic calming measures, signal timing adjustments, roadway reconstruction	No information
50	Safe Routes to Schools - HWCSCH3F	Pedestrian amenities, traffic calming measures, signal timing adjustments, roadway reconstruction	No information
51	Safe Routes to Schools - HWCSCH3F	Pedestrian amenities, traffic calming measures, signal timing adjustments, roadway reconstruction	No information
52	Safe Routes to Schools - HWCSCH3F	Pedestrian amenities, traffic calming measures, signal timing adjustments, roadway reconstruction	No information
53	Safe Routes to Schools - HWCSCH3F	Pedestrian amenities, traffic calming measures, signal timing adjustments, roadway reconstruction	No information
54	Safe Routes to Schools - HWCSCH3F	Pedestrian amenities, traffic calming measures, signal timing adjustments, roadway reconstruction	No information
55	Safe Routes to Schools - HWCSCH3F	Pedestrian amenities, traffic calming measures, signal timing adjustments, roadway reconstruction	No information
56	Safe Routes to Schools - HWCSCH3F	Pedestrian amenities, traffic calming measures, signal timing adjustments, roadway reconstruction	No information
57	E 168 St - Teller Av & Clay Av Retaining Wall EB Step St RWX018	Repairs	Planned
Not mapped		No information	Completed
Not mapped		No information	Planned
Not mapped		No information	Planned
Not mapped		No information	In progress
Not mapped		Median extension, road reconstruction, new bus stop plaza, new bike connection.	No information
Not mapped		Road diet, median extension, signal timing changes.	No information
Not mapped		Road reconstruction, median widening, traffic regulation	No information
Not mapped		Road diet, new bike connection	No information