

A. INTRODUCTION

As described in detail in Chapter 1, “Project Description,” the proposed project is a proposed redevelopment of the Armory building in the Kingsbridge Heights neighborhood of the Bronx with approximately 795,000 gross square feet (gsf) of new uses, including approximately 457 parking spaces. The project site occupies most of the block bounded by West 195th Street, Reservoir Avenue, West Kingsbridge Road, and Jerome Avenue.

This chapter examines the potential effects of the proposed project on the study area’s transportation systems.

PRINCIPAL CONCLUSIONS*TRAFFIC*

In accordance with 2012 *City Environmental Quality Review (CEQR) Technical Manual* guidelines, peak hour vehicular and pedestrian volumes expected as a result of the proposed project were estimated for the critical peak hours (discussed in detail later in this chapter). In the weekday midday peak hour, the proposed project would generate 253 vehicle trips arriving at the project site and 39 vehicle trips leaving the project site, for a total of 292 vehicle trips. In the weekday PM peak hour, it would generate 600 inbound vehicle trips plus 161 outbound vehicle trips for a total of 761 vehicle trips. In the Saturday midday peak hour, it would generate 748 inbound vehicle trips plus 17 outbound vehicle trips for a total of 765 vehicle trips. In the Saturday PM peak hour, it would generate 252 vehicle trips arriving and 610 vehicle trips leaving, for a total of 862 vehicle trips.

Of the 17 study area intersections analyzed, the proposed project would cause significant traffic impacts at five intersections in the weekday midday peak hour, nine in the weekday PM peak hour, seven in the Saturday midday peak hour, and nine in the Saturday PM peak hour. Traffic capacity improvements to mitigate these significant impacts are addressed in Chapter 14, “Mitigation.”

*TRANSIT**Subway Station Operation*

The proposed project is expected to result in 2,499 (2,313 in and 186 out) and 2,940 (752 in and 2186 out) projected-generated subway trips during the weekday PM and Saturday PM peak hours, respectively. These trips were distributed to the two nearby subway stations serving the study area. The following stations and station elements were assessed for the weekday PM and Saturday PM peak period subway station operation analyses:

- Kingsbridge Road Station (No.4 line) stairways and control areas, including the Manhattan bound platform stairways (P1/P3 and P5/P7), Woodlawn bound platform stairways (P2/P4 and P6/P8), street-level stairways (S1 and S3), and the control area (R290) with five two-way turnstiles; and

Kingsbridge Armory National Ice Center

- Kingsbridge Road Station (B/D lines) stairways and control areas, including the Manhattan bound platform stairways (M6/M7, M10/M11, and M14/M15), Bronx bound platform stairways (M8/M9, M12/M13, and M16/M17), street-level stairways (S7), and the control area (N220) with five two-way turnstiles and two High Exit-only Turnstiles (HXT).

Based on the impact analyses, the proposed project is not expected to result in any significant adverse subway station impacts.

Subway Line-Haul

It was estimated that the proposed project would add more than 200 riders per line per direction during the weekday PM and Saturday midday and PM peak hours. In order to assess the worst-case condition, weekday PM and Saturday PM peak hours for the No. 4, B, and D lines were selected for the line-haul analyses. The line-haul analyses concluded that the projected increase in the ridership with the proposed project would not result in an exceedance of the maximum peak-period loading guideline capacity on the subway lines analyzed. Therefore, the proposed project would not result in any significant adverse subway line-haul impacts.

New York City Transit (NYCT) Bus

NYCT bus trips anticipated to be generated by the proposed project were distributed to local bus routes serving the study area. No individual bus route would experience 50 or more peak hour bus trips in one direction—the CEQR recommended threshold for undertaking a quantified bus analysis. Therefore, a detailed bus line-haul analysis was not required and the proposed project is not expected to result in any significant adverse bus impacts.

PEDESTRIANS

Weekday and Saturday midday and PM peak period pedestrian conditions were evaluated at key sidewalk, corner reservoir, and crosswalk elements at 4 area intersections in the vicinity of the project site. With the proposed project, potential significant adverse pedestrian impacts are anticipated for seven pedestrian analysis locations at three intersections as summarized below:

Goulden Avenue and West 197th Street

- The west sidewalk north of West 197th Street during the weekday PM, Saturday midday, and Saturday PM peak periods.
- The north crosswalk during the weekday PM, Saturday midday, and Saturday PM peak periods.
- The south crosswalk during the weekday PM, Saturday midday, and Saturday PM peak periods.

Reservoir Avenue and West 195th Street

- The south sidewalk east of Reservoir Avenue during the weekday PM, Saturday midday, and Saturday PM peak periods.
- The east crosswalk during the weekday PM, Saturday midday and Saturday PM peak periods.

Jerome Avenue and West Kingsbridge Road

- The north sidewalk west of Jerome Avenue during the Saturday PM peak period.
- The north crosswalk during the weekday PM, Saturday midday, and Saturday PM peak periods.

Measures to mitigate these potential significant adverse pedestrian impacts are discussed in Chapter 14, “Mitigation.”

Although significant adverse pedestrian impacts have not been identified on the east sidewalk of Goulden Avenue south of West 197th Street, pedestrian conditions at this sidewalk would be revisited once the facility is operational. At that time, a survey of patrons attending major events would be conducted as part of the Traffic Monitoring Plan discussed in Chapter 14, “Mitigation.” Based on the monitoring plan results, if necessary, additional pedestrian improvement measures would be considered at this location in coordination with New York City Department of Transportation (NYCDOT).

VEHICULAR AND PEDESTRIAN SAFETY

Based on accident data for the study area intersections obtained from the New York State Department of Transportation (NYSDOT) for the time period between May 31, 2009 and May 31, 2012, four study area intersections have been defined as high pedestrian accident locations. These intersections are West Kingsbridge Road and Jerome Avenue, West Fordham Road and University Avenue, West Fordham Road and Jerome Avenue, and East Fordham Road and East Kingsbridge Road/Elm Place/Bainbridge Avenue.

For the high pedestrian accident locations, measures to improve vehicular and pedestrian safety include installation of crosswalk countdown timers, restriping faded crosswalks, and installation of warning signs to alert drivers about the high pedestrian activities at the intersections.

PARKING

The proposed project would provide approximately 457 accessory parking spaces in the Armory’s cellar levels. The maximum project-generated demand of 1,055 spaces and 1,018 spaces would be reached during 8-9 PM and 2-3 PM on a weekday and Saturday, respectively, with a peak event underway. Parking demands generated by the proposed project during peak demand periods would not be fully accommodated by the on-site garage. However, this parking shortfall could be accommodated by spaces at the Lehman College parking lot located in the close vicinity of the project site, near the intersection of Goulden Avenue and West 197th Street. Since the excess demand could be accommodated within a reasonable walking distance of the project site, the proposed project would not result in a parking shortfall.

B. PRELIMINARY ANALYSIS METHODOLOGY

The *CEQR Technical Manual* describes a two-tiered screening procedure for the preparation of a “preliminary analysis” to determine if quantified analyses of transportation conditions are warranted. As discussed below, the preliminary analysis begins with a trip generation analysis (Level 1) to estimate the volume of person and vehicle trips attributable to the proposed actions. According to the *CEQR Technical Manual*, if the proposed actions are expected to result in fewer than 50 peak hour vehicle trips and fewer than 200 peak hour transit or pedestrian trips, further quantified analyses are not warranted. When these thresholds are exceeded, detailed trip assignments (Level 2) are performed to estimate the incremental trips that could be incurred at specific transportation elements and to identify potential locations for further analyses. If the trip assignments show that the proposed actions would generate 50 or more peak hour vehicle trips at an intersection, 200 or more peak hour subway trips at a station, 50 or more peak hour bus trips in one direction along a bus route, or 200 or more peak hour pedestrian trips traversing a pedestrian element, then further quantified analyses may be warranted to assess the potential for significant adverse impacts on traffic, transit, pedestrians, parking, and vehicular and pedestrian safety.

C. LEVEL 1 SCREENING ASSESSMENT

A Level 1 trip generation screening assessment was conducted to estimate the volume of person and vehicle trips by mode expected to be generated by the proposed project during the weekday midday and PM and Saturday midday and PM peak hours. These estimates were then compared to the CEQR analysis thresholds to determine if a Level 2 screening and/or quantified analyses would be warranted.

ANALYSIS FRAMEWORK

For travel demand screening purposes, the proposed project was conservatively assumed to be operating at full capacity with a 5,000 spectator event underway on the main central rink during the weekday evening and Saturday midday hours, simultaneously with typical daily activities taking place at the other 8 ice rinks.

In addition, for Saturday conditions, it was assumed that the proposed project could host two back-to-back events at the main central rink. The first of these could be a major event with 5,000 spectators during the afternoon (3-6 PM) hour followed by a second event—such as a 1,500-spectator college game—during the evening (7-10 PM) hours.

The proposed project would not hold two back-to-back major events with 5,000 spectators because of logistical constraints; considerable time is required between major events for ice preparation (i.e., cutting/resurfacing of the ice), and cleaning and preparing the facility for the next event. In addition, it would be logistically challenging to have a turnover of approximately 8,500 spectators within an hour—with 4,000 spectators (80 percent) leaving the facility after the end of an event and another 4,500 spectators (90 percent) entering the facility for the next scheduled event. Furthermore, no other permutations for major events—for example, two back-to-back events with 4,000 spectators each—were considered for analysis purposes since such arrangements were not deemed reasonable by the applicant. Therefore, for the transportation analyses purposes, a major event with 5,000 spectators on a Saturday afternoon followed by a 1,500 spectator college game during Saturday evening hours will represent a reasonable worst case scenario.

TRANSPORTATION PLANNING ASSUMPTIONS

As described in Chapter 1, “Project Description,” the proposed project would redevelop the Armory with approximately 795,000 gsf of new development, including 9 ice rinks; approximately 64,000 gsf of related program space, including a wellness/off-ice training center, curling rinks, and lockers/equipment storage; approximately 58,000 gsf of related food and beverage, concession, and retail space; and approximately 50,000 gsf of community facility space, which is assumed to include fitness and recreation facilities, multipurpose rooms, child care, and meeting rooms for local community use. The proposed ice rinks are intended for use by high school and college leagues, open skating times, instructional training, adult professional (minor league), non-professional hockey games, figure skating, speed skating and neighborhood students and residents. The central, main rink would have a capacity of approximately 5,000 seats; the other rinks would have limited, temporary bleacher seating (approximately 100 seat-capacity per rink).

For trip generation purposes, the transportation conditions resulting from the proposed project were separated by typical daily activities, the peak event conditions and community facility use as discussed below:

TYPICAL DAILY ACTIVITIES

During typical weekdays and weekends, there would be a variety of activities on the 9 ice rinks, including high school and college league games, open ice skating, instructional training, adult non-professional and professional (minor league) hockey games, figure skating, and speed skating, as well as other ice-centric events (see **Tables 8-1 and 8-2**). One of the ice rinks would be reserved for general ice skating for the entire day, while activities on the other 8 rinks would vary by the time of day. The proposed project would be in operation for approximately 20 hours each day, from 5:00 AM to 1:00 AM. Generally, typical activities taking place over the 20 hour period would be scheduled as follows:

- The early morning hours (5:00 AM – 9:00 AM) would be reserved for private skating and high school practice sessions;
- The morning to afternoon hours (9:00 AM – 3:00 PM) would be reserved for various school games, youth league games, training, and public skating;
- The late-afternoon to evening hours (3:00 PM – 9:00 PM) would be reserved for private skating sessions, open hockey games, private hockey games, and youth league games; and,
- The evening to late-night hours (9:00 PM – 1:00 AM) would be reserved for training sessions as well as open hockey, college hockey, and adult league games.

**Table 8-1
Projected Weekday Peak-Season Schedule**

Time	Lower Rink 1	Lower Rink 2	Upper Rink 1	Upper Rink 2	Main Rink	Lower Rink 3	Lower Rink 4	Upper Rink 3	Upper Rink 4
5-6 AM 6-7 AM	General Skating Session	Contract Ice (Private Skating)	High School Practice Sessions						
7-8 AM 8-9 AM	General Skating Session								
9-10 AM 10-11 AM	General Skating Session	School Game 1	School Game 1	School Game 1	School Game 1	School Game 1	School Game 1	School Game 1	School Game 1
11-12 Noon 12-1 PM	General Skating Session	School Game 2	School Game 2	School Game 2	School Game 2	School Game 2	School Game 2	School Game 2	School Game 2
1-2 PM 2-3 PM	General Skating Session	School Game 3	School Game 3	School Game 3	School Game 3	School Game 3	School Game 3	School Game 3	School Game 3
3-4 PM 4-5 PM	General Skating Session	Open Hockey Game 1	Private Hockey Game	Private Hockey Game	Private Skating	High School Game 1			
5-6 PM 6-7 PM	General Skating Session	Open Hockey Game 2							
7-8 PM 8-9 PM	General Skating Session	Open Hockey Game 3	Youth League Games 1 and 2	Youth League Games 1 and 2	Youth League Games 1 and 2	Youth League Games 1 and 2	Youth League Games 1 and 2	Youth League Games 1 and 2	Youth League Games 1 and 2
9-10 PM 10-11 PM	General Skating Session	Open Hockey Game 4	Private Hockey Game	Training Session 1	College Hockey Game 1	Adult League Game 1	Adult League Game 1	Adult League Game 1	Adult League Game 1
11-12 Mid. 12-1 AM	General Skating Session	Open Hockey Game 5		Training Session 2	College Hockey Game 2	Adult League Game 2	Adult League Game 2	Adult League Game 2	Adult League Game 2
VACANT									

In terms of duration, the hockey games would run generally for one and a half hours. Open skating and training sessions would run for one hour each. For the arrival and departure patterns, it was assumed that patrons would arrive in the hour before the start of their game/session and would depart in the hour after the end of their game/session.

Table 8-2

Projected Weekend Peak-Season Schedule

Time	Lower Rink 1	Lower Rink 2	Upper Rink 1	Upper Rink 2	Main Rink	Lower Rink 3	Lower Rink 4	Upper Rink 3	Upper Rink 4
5-6 AM 6-7 AM	General Skating Session	Contract Ice (Private Skating)	High School Practice Sessions						
7-8 AM 8-9 AM	General Skating Session								
9-10 AM 10-11 AM	General Skating Session	Open Hockey	Youth League	Youth League	Youth League	Youth League	Youth League	Youth League	Youth League
11-12 Noon 12-1 PM	General Skating Session	Open Hockey	Youth League	Youth League	Youth League	Youth League	Youth League	Youth League	Youth League
1-2 PM 2-3 PM	General Skating Session	Open Hockey	Youth League	Youth League	Youth League	Youth League	Youth League	Youth League	Youth League
3-4 PM 4-5 PM	General Skating Session	Open Hockey	High School Game	High School Game	College League Game	Youth League	Youth League	Youth League	Youth League
5-6 PM 6-7 PM	General Skating Session		Adult League	Adult League	General Skating Session				
7-8 PM 8-9 PM	General Skating Session	Open Hockey	Adult League	Adult League	General Skating Session	Training & Dev't/Camps	Training & Dev't/Camps	Training & Dev't/Camps	Training & Dev't/Camps
9-10 PM 10-11 PM	General Skating Session	Open Hockey	Adult League	Adult League	General Skating Session	Adult League	Adult League	Adult League	Open Hockey
11-12 Mid. 12-5 AM	General Skating Session	Open Hockey	Adult League	Adult League	General Skating Session	Adult League	Adult League	Adult League	Open Hockey
VACANT									

PEAK EVENT

The main rink would host a variety of events throughout the year primarily during weekday evenings and on weekends during the afternoon and evening hours. Although attendance at these events would vary, for travel demand estimation purposes, a three hour duration maximum capacity event with 5,000 spectators was conservatively assumed as a “major event.” In addition, for Saturday conditions, it was assumed that the proposed project could host two back-to-back events at the main rink. The first of these could be a major event with 5,000 spectators during the afternoon (3-6 PM) hours followed by a second event—such as a 1,500-spectator college game—during the evening (7-10 PM) hours. On a day when a major event is scheduled, other typical daily activities identified in **Tables 8-1 and 8-2** would not be scheduled for the main rink. However, typical activities on the other eight remaining rinks would continue to occur as scheduled.

COMMUNITY FACILITY USE

The project’s proposed community facility use is anticipated to provide amenities such as basketball courts, fitness rooms, multi-purpose rooms, child care, and meeting rooms for the local community use. The community facility would operate during the hours of 9 AM to 9 PM on weekdays and weekends, and is expected to generate trips by patrons from the surrounding neighborhood. The proposed community facility would not host any tournaments, and any seats and/or bleachers provided in this space would generally be used by the typical daily users.

TRAVEL DEMAND FACTORS

The travel demand assumptions relied on the experience of the applicant for the purposes of providing trip generation inputs in estimating the person and vehicular trip activities for the proposed project. In addition to providing the number of players¹ and patrons participating in various ice-centric activities during various hours of the day, the inputs provided information on the number of handlers (parents/guardians) and spectators expected in various team events. To

¹ A total of 15 players per team were assumed for the regular hockey games at the proposed facility. The number of players per team participating in major events could range between 20-25.

account for parents/guardians and general spectators, per discussions with the New York City Department of Transportation (DOT), a factor of “2.5” patrons/player was used to estimate the level of activity for all ice-centric activities, with the exception of the 5,000-spectator major event and the 1,500-spectator college game.

To refine the trip generation inputs, observations were conducted at the City Ice Pavilion (CIP) in Long Island City in April 2012 and April 2013 during the peak event season. Similar to the Armory site, the CIP facility is well served by transit services, including a short walk to the number-7 subway line as well as multiple bus routes. However, compared to CIP, the Armory site provides more transit options—including multiple subway lines (the No. 4 and B and D subway lines) and numerous bus routes. Therefore, a considerable number of patrons are expected to use mass transit to travel to and from the project site. For the community facility use, the travel demand assumptions were developed based on established and published sources including recently approved studies. Travel demand factors for the various activities are summarized in **Table 8-3** and are discussed as follows:

GENERAL SKATING SESSIONS

Trip estimates for the general skating sessions were developed assuming 100 patrons on the rink at any given time.

**Table 8-3
Travel Demand Assumptions**

Modal Split/Vehicle Occupancy	Open Ice	Open Hockey Game	Youth League	Private Skating	Private Hockey Game	High School Game	School Game	Adult League Game	College Game	Peak Event
Auto	67%	50%	50%	30%	50%	20%	20%	50%	30%	30%
Subway	11%	45%	30%	50%	40%	20%	20%	30%	30%	50%
City Bus	11%	5%	10%	10%	5%	10%	0%	10%	30%	5%
Walk Only	11%	0%	10%	10%	5%	10%	0%	10%	10%	5%
School Bus	N/A	N/A	N/A	N/A	N/A	40%	60%	N/A	N/A	N/A
Charter Bus	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10%
Auto Occupancy	1.92	1.14	1.92	1.92	1.14	1.92	1.92	1.92	1.92	2.75
School Bus Occupancy	N/A	N/A	N/A	N/A	N/A	35	35	N/A	N/A	N/A
Charter Bus Occupancy	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20

Note: N/A implies “Not Applicable.”
Source: Based on travel surveys conducted at the City Ice Pavilion in Long Island City in April 2012 and April 2013.

OPEN HOCKEY/PRIVATE HOCKEY GAMES

Trip estimates for the open hockey/private hockey games were developed for two teams—a total of 30 players, with 15 players in each team—participating in game at each of the rink. In addition, the number of participants in the open hockey/private hockey games was increased by a factor of “2.5” to account for spectators and game officials.

YOUTH LEAGUE

Trip estimates for the youth league component were developed for two teams—a total of 30 players, with 15 players in each team—participating in a game at each of the rinks. In addition, given the age of players in the youth leagues, the number of participants was increased by a factor of “2.5” to account for handlers (i.e., parents/guardians) per player.

PRIVATE SKATING SESSIONS

Trip estimates for the private skating sessions were developed assuming that there would be 20 skaters per rink for figure skating sessions and 30 players per rink for hockey games. In addition, the number of participants in the private skating sessions was increased by a factor of “2.5” to account for spectators.

HIGH SCHOOL GAMES

Trip estimates for the high school games were developed for two teams with a total of 30 players (15 players in each team). In addition, the number of participants in the high school games was increased by a factor of “2.5” to account for spectators.

SCHOOL GAMES

Trip estimates for the general school games were developed for two teams—a total of 30 players, with 15 players in each team—participating in a game at each of the rinks. In addition, the number of participants was increased by a factor of “2.5” to account for handlers (i.e., parents/guardians) per player. Also, since these games would be scheduled during regular school hours with students traveling from local elementary and middle schools, most of the trips (approximately 60 percent) were assumed to be via school buses.

ADULT LEAGUE GAMES

Trip estimates for the adult league component were developed for two teams with a total of 30 players (15 players in each team). In addition, the number of participants in the league games was increased by a factor of “2.5” to account for spectators.

COLLEGE GAMES

Trip estimates for the college game component were developed for two teams with a total of 30 players (15 players in each team). In terms of spectators, a typical college game was assumed to attract up to approximately 1,500 spectators in attendance.

PEAK EVENTS

Trip estimates for the peak event conditions were developed for a major event with the maximum attendance capacity of 5,000 spectators, as well as a college game with an attendance capacity of 1,500 spectators. For temporal (arrival and departure) distribution, it was assumed that 90 percent of the patrons would arrive in the hour before the start of the event and approximately 90 percent would depart in the hour following the end of the event. For the weekday conditions, a major event with 5,000 spectators was assumed to take place during the evening hours. For the Saturday conditions, it was assumed that two back-to-back events could be hosted at the main rink. The first of these could be a major event with 5,000 spectators during the afternoon (3-6 PM) hours, followed by a second event—such as a 1,500-spectator college game—during the evening (7-10 PM) hours.

COMMUNITY FACILITY USE

Trip estimates for the community facility component were developed using person and delivery trip generation factors from the *Jamaica Plan FEIS* (2007) and the *ITE Trip Generation Manual (Athletic Club Rate)*. Temporal distributions, directional distributions, and vehicle occupancies were also taken from the *Jamaica Plan FEIS*. For modal splits, information from the *Gateway*

Estates II FEIS (2009) was consulted. Travel demand factors for the community facility component are summarized in **Table 8-4**.

Table 8-4
Travel Demand Assumptions — Community Facility Use

Daily Person Trip	(1)		(2)	
Generation Rate	48.0		43.0	
	Trips/KSF		Trips/KSF	
	Midday	PM	Saturday Midday	Saturday PM
Temporal	(1)	(1)	(1)	(1)(3)
	10%	7%	14%	14%
Direction	(1)	(1)	(1)	(1)
In	55%	29%	49%	51%
Out	45%	71%	51%	49%
Total	100%	100%	100%	100%
Modal Split	(4)	(4)	(4)	(4)
Auto	10%	10%	10%	10%
Taxi	1%	1%	1%	1%
Subway	10%	10%	10%	10%
Bus	4%	4%	4%	4%
Walk	75%	75%	75%	75%
Total	100%	100%	100%	100%
Vehicle Occupancy	(1)	(1)	(1)	(1)
Auto	1.65	1.65	1.65	1.65
Taxi	1.40	1.40	1.40	1.40
Daily Delivery Trip	(1)		(1)	
Generation Rate	0.29		0.04	
	Trips/KSF		Trips/KSF	
	Midday	PM	Saturday Midday	Saturday PM
Delivery Temporal	(1)	(1)	(1)	(1)(3)
	11%	1%	0%	0%
Delivery Direction	(1)	(1)	(1)	(1)
In	50%	50%	50%	50%
Out	50%	50%	50%	50%
Total	100%	100%	100%	100%

Sources:
 (1) Jamaica Plan FEIS (2007).
 (2) ITE Trip Generation, Athletic Club Rate.
 (3) Assumed Saturday PM similar to Saturday Midday.
 (4) Gateway Estates II FEIS (February 2009).

EMPLOYEES

The proposed ice rinks and related uses could employ up to approximately 210 personnel. Trip estimates for these employees were developed using temporal distributions from the *CEQR Technical Manual*. Directional distributions were taken from the *Webster Avenue Rezoning FEIS (2011)* and modal split and vehicle occupancy were obtained from Reverse-Journey-to-Work (RJTW) data from the 2000 U.S. Census database. Travel demand factors for employees are summarized in **Table 8-5**.

DELIVERIES

In addition to the delivery trips expected to be generated by the community facility component, delivery trips would also be generated by the accessory food and beverage, concession, and retail components of the proposed project. Delivery trips generated by these accessory uses were estimated using the trip generation rate and temporal distributions for local retail use identified in the *CEQR Technical Manual* as presented in **Table 8-5**.

Table 8-5

Travel Demand Assumptions — Employee and Delivery Trips

Daily Person Trip				
Number of employees	210		210	
	Employees		Employees	
	Midday	PM	Saturday Midday	Saturday PM
Temporal	(1)	(1)	(1)	(1)(2)
	50%*	14%	17%	17%
Direction	(3)	(3)	(3)	(3)
In	39%	5%	60%	40%
Out	61%	95%	40%	60%
Total	100%	100%	100%	100%
Modal Split	(4)	(4)	(4)	(4)
Auto	47%	47%	47%	47%
Taxi	2%	2%	2%	2%
Subway	22%	22%	22%	22%
Bus	18%	18%	18%	18%
Walk	11%	11%	11%	11%
Total	100%	100%	100%	100%
Vehicle Occupancy	(3)(4)	(3)(4)	(3)(4)	(3)(4)
Auto	1.16	1.16	1.16	1.16
Taxi	1.40	1.40	1.40	1.40
Concession Deliveries (58,000 sf)				
Daily Delivery Trip	(1)		(1)	
Generation Rate	0.35		0.04	
	Trips/KSF		Trips/KSF	
	Midday	PM	Saturday Midday	Saturday PM
Delivery Temporal	(1)	(1)	(1)	(1)(2)
	11%	2%	11%	11%
Delivery Direction	(1)	(1)	(1)	(1)
In	50%	50%	50%	50%
Out	50%	50%	50%	50%
Total	100%	100%	100%	100%
Sources:				
(1) 2012 CEQR Technical Manual.				
(2) Assumed Saturday PM similar to Saturday Midday.				
(3) Webster Avenue Rezoning FEIS (2011).				
(4) 2000 Census Reverse Journey to Work Data for Bronx tracts 265, 267, 401, 403.01, 407.01, 409, and 411.				
* Temporal distribution adjusted for lunch hour trips.				

Estimates of person and vehicle trips were prepared by incorporating the trips generated by the typical daily ice-centric activities, trips generated by the community facility use, employees and deliveries, and the trips generated during the peak event conditions. As shown in **Table 8-6**, the overall peak hour of activities for the weekday conditions would occur during the evening pre-event hour of 6–7 PM, when patrons would be arriving for a 5,000 person event scheduled at the main rink and typical daily activities (including youth league games) would be underway on the remaining eight rinks. Specifically, during this peak hour, the proposed project would generate up to approximately 5,532 person trips and 761 vehicle trips. In addition to the 6-7 PM pre-event peak hour, the proposed project would generate up to approximately 5,230 person trips and 750 vehicle trips during late-evening, post-event 10-11 PM hour. During the daytime hours, the proposed project would generate up to approximately 1,179 person trips and 292 vehicle trips during the afternoon 2-3 PM hour.

Table 8-6
Total Trip Generation Summary: Weekday

Time Period	Total Person Trips/Hour	Total Vehicle Trips/Hour	Total Subway Trips/Hour	Total City Bus Trips/Hour	Total Walk Only Trips/Hour
4 AM – 5 AM	800	128	235	81	81
5 AM – 6 AM*	50	8	15	5	5
6 AM – 7 AM	800	128	235	81	81
7 AM – 8 AM	800	128	235	81	81
8 AM – 9 AM	940	137	179	11	11
9 AM – 10 AM	800	128	235	81	81
10 AM – 11 AM	940	137	179	11	11
11 AM – 12 PM	940	137	179	11	11
12 PM – 1 PM	940	137	179	11	11
1 PM – 2 PM	940	137	179	11	11
2 PM – 3 PM	1,179	292	273	97	256
3 PM – 4 PM	940	137	179	11	11
4 PM – 5 PM	835	222	226	69	64
5 PM – 6 PM	1,715	414	540	145	140
6 PM – 7 PM	5,532	761	2,499	306	418
7 PM – 8 PM	1,715	437	561	155	150
8 PM – 9 PM	730	236	226	63	58
9 PM – 10 PM	1,335	303	497	104	99
10 PM – 11 PM	5,230	750	2,476	288	283
11 PM – 12 AM	730	236	226	63	58
12 AM – 1 AM*	50	8	15	5	5
1 AM – 2 AM	730	236	226	63	58

Note: *Although minimal person trip activity is expected to occur during the 5-6 AM and 12-1 AM hours, for trip generation purposes 50 trips were assumed to occur.

For Saturday, the overall peak hour of activities would occur during the evening 6-7 PM hour which would account for the overlapping of events, i.e., departure and arrival of patrons for consecutive events. Specifically, this hour would represent a post-event condition for the 5,000-person event and a pre-event condition for the 1,500-person event (see **Table 8-7**). During this peak hour, the proposed project would generate up to approximately 6,527 person trips and 862 vehicle trips. In addition to the 6-7 PM peak hour, the proposed project would generate up to approximately 5,672 person trips and 765 vehicle trips during the 2-3 PM afternoon peak hour, which would represent the pre-event condition for the 5,000-person event.

Although, the proposed project could generate approximately 750 peak hour vehicle trips during the weekday late-evening (10-11 PM) hour, based on the Automated Traffic Recorder (ATR) counts, the background traffic levels in the study area during this hour would be generally lower than the two peak hours selected for analysis. Therefore, a detailed analysis of traffic capacity conditions during the weekday 10-11 PM hour is not warranted.

Table 8-7

Total Trip Generation Summary: Saturday

Time Period	Total Person Trips/Hour	Total Vehicle Trips/Hour	Total Subway Trips/Hour	Total City Bus Trips/Hour	Total Walk Only Trips/Hour
4 AM – 5 AM	800	128	235	81	81
5 AM – 6 AM*	50	8	15	5	5
6 AM – 7 AM	800	128	235	81	81
7 AM – 8 AM	800	128	235	81	81
8 AM – 9 AM	835	245	247	79	74
9 AM – 10 AM	800	128	235	81	81
10 AM – 11 AM	1,465	409	436	142	137
11 AM – 12 PM	1,465	409	436	142	137
12 PM – 1 PM	205	81	58	16	11
1 PM – 2 PM	1,715	437	561	155	150
2 PM – 3 PM	5,672	765	2,514	323	529
3 PM – 4 PM	1,085	273	372	92	87
4 PM – 5 PM	1,255	324	352	121	116
5 PM – 6 PM	1,620	292	661	129	124
6 PM – 7 PM	6,527	862	2,940	366	575
7 PM – 8 PM	1,620	304	667	135	135
8 PM – 9 PM	1,780	466	631	169	158
9 PM – 10 PM	880	210	391	72	61
10 PM – 11 PM	2,185	418	939	143	132
11 PM – 12 AM	310	127	106	22	11
12 AM – 1 AM	520	182	169	43	32

Note: *Although minimal person trip activity is expected to occur during the 5-6 AM hour, for trip generation purposes 50 trips were assumed to occur.

D. LEVEL 2 SCREENING ASSESSMENT

A Level 2 screening assessment involves the distribution and assignment of projected trips to the transportation network and the determination of whether specific locations are expected to receive incremental trips exceeding CEQR thresholds. If the results of this analysis show that the proposed actions would generate 50 or more peak hour vehicle trips through an intersection, 50 or more peak hour bus riders on a bus route in a single direction, 200 or more peak hour subway passengers per station element, or 200 or more peak hour pedestrian trips per pedestrian element, further quantified analyses may be warranted to evaluate the potential for significant adverse traffic, transit, pedestrian, and parking impacts. For the Level 2 screening assessment, project-generated trips were assigned to specific intersections, transit routes, and pedestrian elements near the project site. The results of the assessment are discussed as follows:

TRAFFIC

As shown above, incremental vehicle trips resulting from the proposed project would exceed the CEQR Level 1 screening threshold during the weekday midday and PM and Saturday midday and PM peak hours. These vehicle trips were assigned to area intersections based on the most likely travel routes to and from the project sites, the configuration of the roadway network, and the anticipated locations of site access and egress. For a conservative analysis, all auto trips were assigned to the project site block assuming that they would seek parking in the on-site 457-space parking garage with entrances on Reservoir Avenue and West 195th Street. Traffic assignments are discussed in detail later in this chapter under Section F, “Traffic.”

In coordination with NYCDOT, 17 area intersections were identified for detailed analysis during the weekday midday and PM, and Saturday midday and PM peak hours. These study area intersections are presented in **Figure 8-1** and are listed as follows:

1. Sedgwick Avenue and West Fordham Road;
2. Dr. MLK Jr. Boulevard/University Avenue and West Fordham Road;
3. Jerome Avenue and West Fordham Road;
4. Bailey Avenue and West Kingsbridge Road;
5. Sedgwick Avenue and West Kingsbridge Road;
6. University Avenue and West Kingsbridge Road;
7. Aqueduct/Grand Avenue and West Kingsbridge Road/Reservoir Avenue;
8. Davidson Avenue and West Kingsbridge Road;
9. Jerome Avenue and West Kingsbridge Road;
10. Grand Concourse and West Kingsbridge Road;
11. Jerome Avenue and West 195th Street;
12. Jerome Avenue and West 196th Street;
13. Reservoir Avenue and West 195th Street;
14. West Fordham Road and Major Deegan Expressway (I-87) northbound ramp;
15. West Fordham Road and Major Deegan Expressway (I-87) southbound ramp;
16. East Fordham Road and Tiebout Avenue/East Kingsbridge Road; and
17. East Fordham Road and Elm Place/Bainbridge Avenue/ East Kingsbridge Road.

TRANSIT

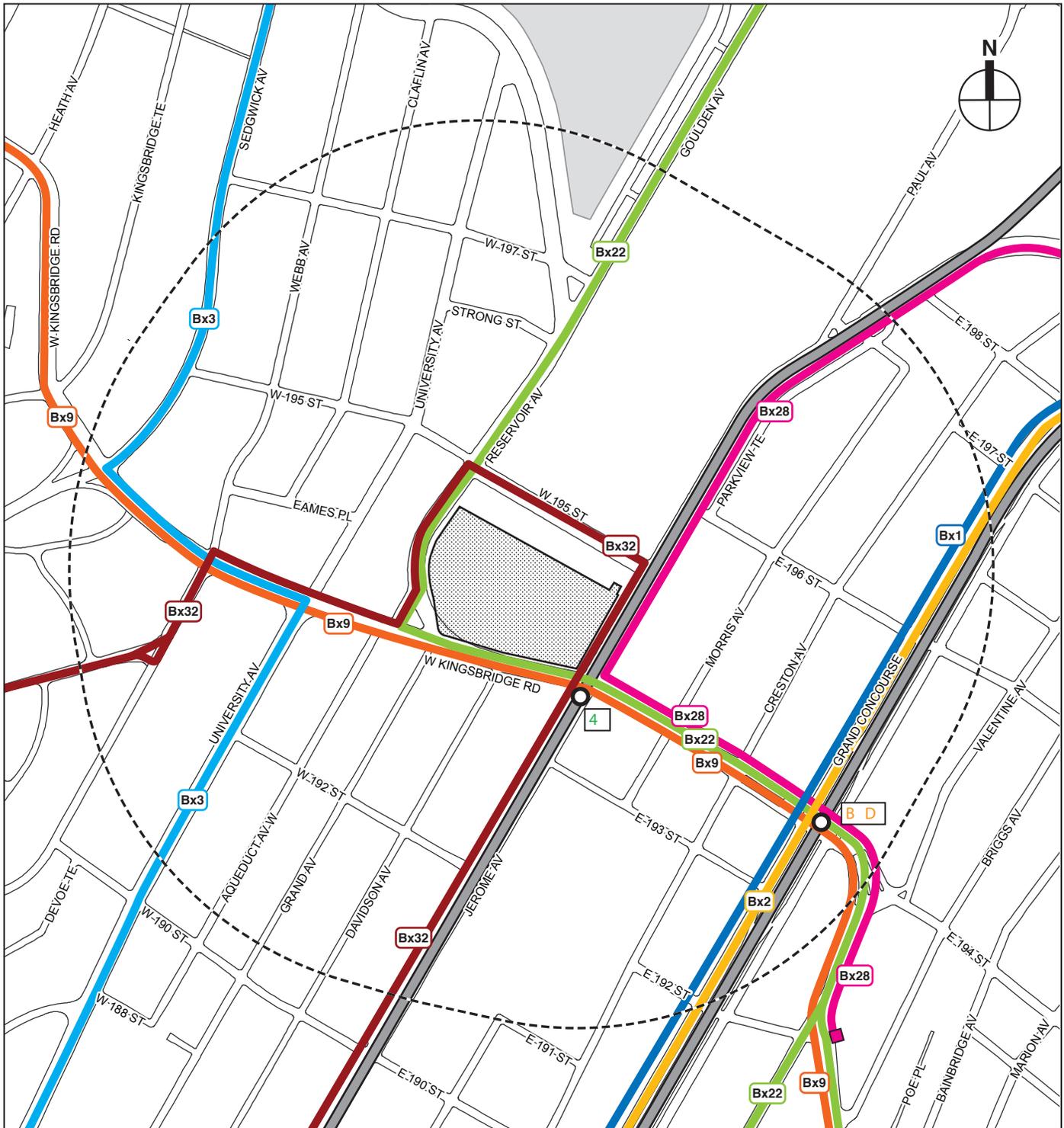
SUBWAY

The project site is located adjacent to the New York City Transit (NYCT) Kingsbridge Road subway station which provides service to the No. 4 subway line operating between Woodlawn-Jerome Avenue, Bronx and New Lots Avenue, Brooklyn. In addition, the Kingsbridge Road subway station providing service to the B and D subway lines is located a few blocks from the project site. The transit services in the study area are depicted in **Figure 8-2**. As summarized in **Tables 8-6 and 8-7**, the proposed project is expected to generate approximately 2,499 and 2,940 peak hour subway trips during the weekday PM and Saturday PM peak hours, respectively. Typically, subway station elements would be evaluated for the AM and PM commuter peak hours. However, to address worst-case conditions, the weekday pre-game and weekend dual event (pre-game for 7 PM start and post-game for 6 PM finish) conditions were analyzed.

Based on the distribution of project generated trips to the Kingsbridge Road subway stations, the following stations and station elements were identified for a detailed analysis for the weekday and Saturday PM peak periods.

Kingsbridge Road Subway Station (No. 4 line)

- Control area (R290) with five two-way turnstiles;
- Street-level stairways on the west sidewalk along Jerome Avenue (S1 and S3); and
- Platform-level stairways serving Manhattan-bound (P1/P3 and P5/P7) and Woodlawn-bound (P2/P4 and P6/P8).



-  Project Site
-  Study Area Boundary (1/4-Mile Perimeter)
-  Bus Route
-  Bus Route Terminus
-  Subway Line
-  Subway Station

0 800 FEET
SCALE

Kingsbridge Armory National Ice Center

Kingsbridge Road Subway Station (B/D lines)

- Control area (N220) with five two-way turnstiles and two High Exit only Turnstiles (HXT);
- Street-level stairway on the northwest corner of Grand Concourse and Kingsbridge Road (S7); and
- Platform-level stairways serving Manhattan-bound (M6/M7, M10/M11, and M14/M15) and Bronx-bound (M8/M9, M12/M13, and M16/M17).

SUBWAY LINE-HAUL

To determine whether a subway line-haul analysis is warranted, the estimated incremental ridership for each subway line by direction was compared to the CEQR analysis threshold of 200 subway riders per line per direction. Based on the subway trip assignments, all three subway lines would incur more than 200 additional riders per line per direction during the weekday PM, Saturday midday, and Saturday PM peak hours. Since the projected peak ridership increment would be above the CEQR line-haul analysis threshold, the No. 4 and B/D lines during the weekday and Saturday PM peak hours were identified for the line-haul analyses to address the worst-case condition on the subway system.

NYCT BUS

Based on the travel demand estimates and the availability and service frequencies of the bus routes—Bx1, Bx2, Bx3, Bx9, Bx22, Bx28 and Bx32—in the study area (see **Figure 8-2**), it was determined that no individual bus route would experience 50 or more peak hour bus trips in one direction—the CEQR-recommended threshold for undertaking a quantified bus analysis. Consequently, the proposed project would not result in any significant adverse bus impacts and a quantitative bus line-haul analysis is not warranted.

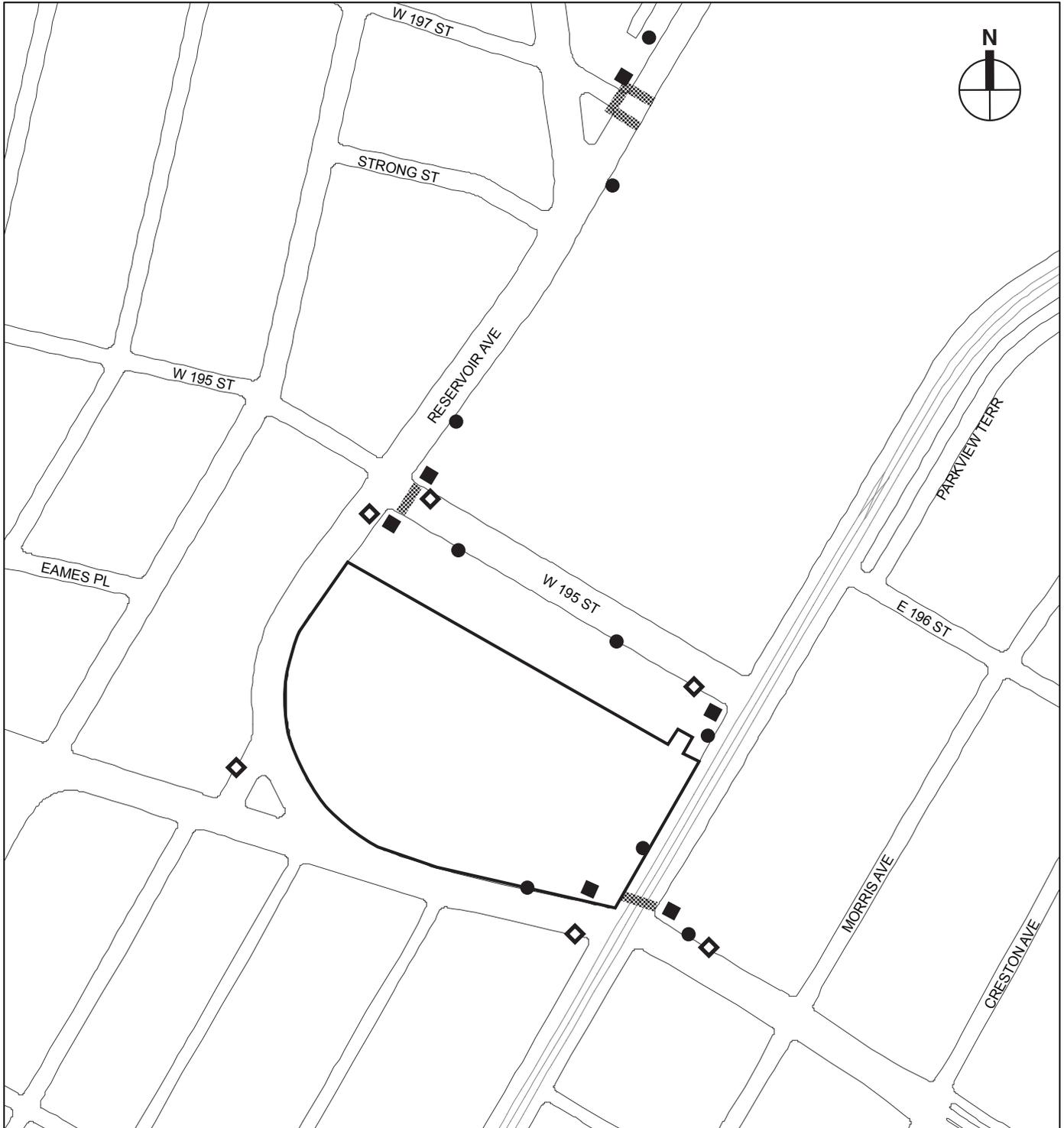
PEDESTRIANS

Pedestrian trip assignments were developed by distributing person trips generated by the proposed project to surrounding pedestrian facilities, including sidewalks, corner reservoirs, and crosswalks, adjacent to and near the project site. Pedestrian assignments for sidewalks, corners and crosswalks are discussed in detail later in this chapter under Section H, “Pedestrians.”

Based on the *CEQR Technical Manual*, quantified pedestrian analyses would be required for pedestrian elements incurring 200 or more incremental peak hour trips. Based on this Level 2 pedestrian assignment, various sidewalks, crosswalks, and corner reservoirs in the vicinity of the proposed development site would exceed 200 peak hour trips. As depicted in **Figure 8-3**, the following four pedestrian locations—including sidewalks, crosswalks, and their adjoining corner reservoir spaces—were selected for detailed analysis pedestrian analysis locations for the weekday midday and PM, and Saturday midday and PM peak hours:

- Reservoir Avenue and West 195th Street;
- Goulden Avenue and West 197th Street;
- Jerome Avenue and West 195th Street; and
- Jerome Avenue and West Kingsbridge Road.

The specific pedestrian elements at the above locations selected for detailed analysis are summarized in **Table 8-8**.



-  Project Site
-  Bus Stop
-  Sidewalk
-  Corner
-  Crosswalk



**Table 8-8
Pedestrian Analysis Locations**

Intersection	Elements	Locations
Goulden Avenue and West 197th Street	Crosswalk	North
		South
		West
	Corner	Northwest corner
Sidewalk	East sidewalk on Goulden Avenue between West 197th Street and Strong Street	
	West sidewalk on Goulden Avenue between Parking Lot and West 197th Street	
Reservoir Avenue and West 195th Street	Crosswalk	East crosswalk
	Corner	North-East corner
		South-East corner
	Sidewalk	East sidewalk on Reservoir Avenue between Strong Street and West 195th Street
South sidewalk on West 195th Street between Reservoir Avenue and Jerome Avenue - West of Entrance		
Jerome Avenue and West 195th Street	Corner	Southwest corner
	Sidewalk	South sidewalk on West 195th Street between Reservoir Avenue and Jerome Avenue - East of Entrance
		West sidewalk on Jerome Avenue between West 195th Street and West Kingsbridge Road - North
Jerome Avenue and West Kingsbridge Road	Crosswalk	North crosswalk
	Corner	Northeast corner
		Northwest corner
	Sidewalk	West sidewalk on Jerome Avenue between West 195th Street and West Kingsbridge Road - South
North sidewalk on West Kingsbridge Road between Jerome Avenue and Morris Avenue		
North sidewalk on West Kingsbridge Road between Jerome Avenue and Davidson Avenue		

E. TRANSPORTATION ANALYSIS METHODOLOGIES

TRAFFIC OPERATIONS

The operation of all of the signalized and unsignalized intersection analysis locations were assessed using methodologies presented in the *2000 Highway Capacity Manual (HCM)* using the *Highway Capacity Software (HCS+ 5.5)*, which is the analysis methodology approved for use by NYCDOT. The *HCM* procedure evaluates the levels of service (LOS) for signalized and unsignalized intersections using average stop control delay, in seconds per vehicle, as described below.

SIGNALIZED INTERSECTIONS

The average control delay per vehicle is the basis for determining levels of service for individual lane groups (grouping of movements in one or more travel lanes), the overall approaches to each intersection, and the overall intersection itself. Levels of service are defined in **Table 8-9**.

Table 8-9
LOS Criteria for Signalized Intersections

LOS	Average Control Delay
A	≤ 10.0 seconds
B	>10.0 and ≤ 20.0 seconds
C	>20.0 and ≤ 35.0 seconds
D	>35.0 and ≤ 55.0 seconds
E	>55.0 and ≤ 80.0 seconds
F	>80.0 seconds
Source: Transportation Research Board. <i>Highway Capacity Manual</i> , 2000.	

LOS A describes operations with low delays, i.e., 10.0 seconds or less per vehicle. This occurs when signal progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all.

LOS B describes operations with delays in excess of 10.0 seconds up to 20.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. Again, most vehicles do not stop at the intersection.

LOS C describes operations with delays in excess of 20.0 seconds up to 35.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. The number of vehicles stopping is noticeable at this level, although many still pass through the intersection without stopping.

LOS D describes operations with delays in excess of 35.0 seconds up to 55.0 seconds per vehicle. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity (v/c) ratios. Many vehicles stop, and the proportion of vehicles not stopping declines.

LOS E describes operations with delays in excess of 55.0 seconds up to 80.0 seconds per vehicle. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios.

LOS F describes operations with delays in excess of 80.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios with cycle failures. Poor progression and long cycle lengths may also contribute to such delays. Often, vehicles do not pass through the intersection in one signal cycle.

Based on *CEQR Technical Manual* guidelines, LOS A, B, and C are considered acceptable, LOS D is considered marginally acceptable up to mid-LOS D (45 seconds of delay for signalized intersections) and unacceptable above mid-LOS D, and LOS E and F indicate congestion. These guidelines are applicable to individual traffic movements and overall intersection levels of service.

UNSIGNALIZED INTERSECTIONS

For unsignalized intersections, the average control delay is defined as the total elapsed time from which a vehicle stops at the end of the queue until the vehicle departs from the stop line. Level of service criteria for unsignalized intersections are summarized in **Table 8-10**.

For unsignalized intersections, LOS E is considered the limit of acceptable delay, while LOS F is considered unacceptable to most drivers. LOS F conditions exist when there are insufficient gaps of suitable size in a major vehicular traffic stream to allow side street traffic to cross safely.

Table 8-10
LOS Criteria for Unsignalized Intersections

LOS	Average Control Delay
A	≤ 10.0 seconds
B	> 10.0 and ≤ 15.0 seconds
C	> 15.0 and ≤ 25.0 seconds
D	> 25.0 and ≤ 35.0 seconds
E	> 35.0 and ≤ 50.0 seconds
F	> 50.0 seconds
Source: Transportation Research Board. <i>Highway Capacity Manual</i> , 2000.	

Significant Impact Criteria

The assessment of potential significant traffic impacts of a proposed action is based on significant impact criteria defined in the *CEQR Technical Manual*. No Action LOS A, B, or C conditions that deteriorate to unacceptable LOS D, E, or F in the future With Action condition are considered a significant traffic impact.

For future With Action LOS A, B, or C conditions that deteriorate to unacceptable LOS D, mitigation to mid-LOS D (45.0 seconds of delay for signalized intersections and 30.0 seconds of delay for unsignalized intersections) needs to be considered to fully mitigate the impact.

For a No Action LOS D, an increase of delay by five or more seconds in the With Action condition is considered a significant impact if the With Action delay meets or exceeds 45.0 seconds. For a No Action LOS E, the threshold is a four second increase in With Action delay; for a No Action LOS F, a three second increase in delay in the With Action condition is significant. For unsignalized intersections, for the minor street to generate a significant impact, 90 passenger car equivalents (PCEs) must be identified in the With Action condition in any peak hour.

TRANSIT OPERATIONS

SUBWAY STATION ELEMENTS

The methodology for assessing station circulation (stairs, escalators, and passageways) and fare control (regular turnstiles, high entry/exit turnstiles, and high exit turnstiles) elements compares the user volume with the analyzed element's design capacity, resulting in a volume-to-capacity (v/c) ratio.

For stairs, the design capacity considers the effective width of a tread, which accounts for railings or other obstructions, the friction or counter-flow between upward and downward pedestrians (up to 10 percent capacity reduction is applied to account for counter-flow friction), surging of exiting pedestrians (up to 25 percent capacity reduction is applied to account for detraining surges near platforms), and the average area required for circulation. For passageways, similar considerations are made. For escalators and turnstiles, capacities are measured by the number and width of an element and the NYCT optimum capacity per element, which also account for the potential for surging of exiting pedestrians. In the analysis for each of these elements, volumes and capacities are presented for 15-minute intervals.

The estimated v/c ratio is compared with NYCT criteria to determine a level of service (LOS) for the operation of an element, as summarized in **Table 8-11**.

Table 8-11
Level of Service Criteria for Subway Station Elements

LOS	V/C Ratio
A	0.00 to 0.45
B	0.45 to 0.70
C	0.70 to 1.00
D	1.00 to 1.33
E	1.33 to 1.67
F	Above 1.67
Source: New York City Mayor's Office of Environmental Coordination, 2012 <i>CEQR Technical Manual.</i>	

At LOS A (“free flow”) and B (“fluid flow”), there is sufficient area to allow pedestrians to freely select their walking speed and bypass slower pedestrians. When cross and reverse flow movement exists, only minor conflicts may occur. At LOS C (“fluid, somewhat restricted”), movement is fluid although somewhat restricted. While there is sufficient room for standing without personal contact, circulation through queuing areas may require adjustments to walking speed. At LOS D (“crowded, walking speed restricted”), walking speed is restricted and reduced. Reverse and cross flow movement is severely restricted because of congestion and the difficult passage of slower moving pedestrians. At LOS E (“congested, some shuffling and queuing”) and F (“severely congested, queued”), walking speed is restricted. There is also insufficient area to bypass others, and opposing movement is difficult. Often, forward progress is achievable only through shuffling, with queues forming.

Significant Impact Criteria

The determination of significant impacts for station elements varies based on their type and use. For stairs and passageways, significant impacts are defined in terms of width increment threshold (WIT) based on the minimum amount of additional capacity that would be required either to mitigate the location to its service conditions under the No Action levels, or to bring it to a v/c ratio of 1.00 (LOS C/D), whichever is greater. Significant impacts are typically considered to occur once the WITs in **Table 8-12** are reached or exceeded.

Table 8-12
Significant Impact Guidance for Stairs and Passageways

With Action V/C Ratio	WIT for Significant Impact (inches)	
	Stairway	Passageway
1.00 to 1.09	8.0	13.0
1.10 to 1.19	7.0	11.5
1.20 to 1.29	6.0	10.0
1.30 to 1.39	5.0	8.5
1.40 to 1.49	4.0	6.0
1.50 to 1.59	3.0	4.5
1.60 and up	2.0	3.0
Notes: WIT = Width Increment Threshold		
Sources: New York City Mayor's Office of Environmental Coordination, <i>CEQR Technical Manual</i> (January 2012 edition).		

For escalators and control area elements, impacts are significant if the proposed action causes a v/c ratio to increase from below 1.00 to 1.00 or greater. Where a facility is already at or above its

capacity (a v/c of 1.00 or greater) in the No Action condition, a 0.01 increase in v/c ratio is also significant.

SUBWAY AND BUS LINE HAUL CAPACITIES

As per the *CEQR Technical Manual*, line-haul capacities are evaluated when a proposed action is anticipated to generate a perceptible number of passengers on particular subway and bus routes. For subways, if a subway line is expected to incur 200 or more passengers in one direction of travel during the commuter peak hours, a detailed review of ridership level at its maximum load point and/or other project-specific load points would be required to determine if the route's guideline (or practical) capacity would be exceeded. NYCT operates six different types of subway cars with different seating and guideline capacities. The peak period guideline capacity of a subway car, which ranges from 110 to 175 passengers, is compared with ridership levels to determine the acceptability of conditions.

Bus line-haul capacities are evaluated when a proposed action is anticipated to generate 50 or more bus passengers to a single bus line in one direction. The assessment of bus line-haul conditions involves analyzing bus routes at their peak load points and, if necessary, also their bus stops closest to the project site to identify the potential for the analyzed routes to exceed their guideline (or practical) capacities. NYCT and the MTA Bus Company operate three types of buses: standard and articulated buses, and over-the-road coaches. During peak hours, standard buses operate with up to 54 passengers per bus, articulated buses operate with up to 85 passengers per bus, and over-the-road coaches operate with up to 55 passengers per bus.

Significant Impact Criteria

For subways, projected increases from the No Action condition within guideline capacity to a With Action condition that exceeds guideline capacity may be a significant impact if the proposed project is generating five more transit riders per car. Since there are constraints on what service improvements are available to NYCT, significant line-haul capacity impacts on subway routes are generally disclosed but would usually remain unmitigated. For buses, an increase in bus load levels greater than the maximum capacity at any load point is defined as a potential significant adverse impact. While subject to operational and fiscal constraints, bus impacts can typically be mitigated by increasing service frequency. Therefore, mitigation of bus line-haul capacity impacts, where appropriate, would be recommended for NYCT's approval.

PEDESTRIAN OPERATIONS

The adequacy of the study area's sidewalks, crosswalks, and corner reservoir capacities in relation to the demand imposed on them is evaluated based on the methodologies presented in the 2000 *Highway Capacity Manual* (HCM), pursuant to procedures detailed in the *CEQR Technical Manual*.

Sidewalks are analyzed in terms of pedestrian flow. The calculation of the average pedestrians per minute per foot (PMF) of effective walkway width is the basis for a sidewalk level of service (LOS) analysis. The determination of walkway LOS is also dependent on whether the pedestrian flow being analyzed is best described as "non-platoon" or "platoon." Non-platoon flow occurs when pedestrian volume within the peak 15-minute period is relatively uniform, whereas platoon flow occurs when pedestrian volumes vary significantly with the peak 15-minute period. Such variation typically occurs near bus stops, subway stations, and/or where adjacent crosswalks account for much of the walkway's pedestrian volume.

Crosswalks and street corners are not easily measured in terms of free pedestrian flow, as they are influenced by the effects of traffic signals. Street corners must be able to provide sufficient

space for a mix of standing pedestrians (queued to cross a street) and circulating pedestrians (crossing the street or moving around the corner). The HCM methodologies apply a measure of time and space availability based on the area of the corner, the timing of the intersection signal, and the estimated space used by circulating pedestrians.

The total “time-space” available for these activities, expressed in square feet-second, is calculated by multiplying the net area of the corner (in square feet) by the signal’s cycle length. The analysis then determines the total circulation time for all pedestrian movements at the corner per signal cycle (expressed as pedestrians per second). The ratio of net time-space divided by the total pedestrian circulation volume per signal cycle provides the LOS measurement of square feet per pedestrian (SFP).

Crosswalk LOS is also a function of time and space. Similar to the street corner analysis, crosswalk conditions are first expressed as a measurement of the available area (the crosswalk width multiplied by the width of the street) and the permitted crossing time. This measure is expressed in square feet-second. The average time required for a pedestrian to cross the street is calculated based on the width of the street and an assumed walking speed. The ratio of time-space available in the crosswalk to the total crosswalk pedestrian occupancy time is the LOS measurement of available square feet per pedestrian. The LOS analysis also accounts for vehicular turning movements that traverse the crosswalk. The LOS standards for sidewalks, corner reservoirs, and crosswalks are summarized in **Table 8-13**.

**Table 8-13
Level of Service Criteria for Pedestrian Elements**

LOS	Sidewalks		Corner Reservoirs and Crosswalks
	Non-Platoon Flow	Platoon Flow	
A	≤ 5 PMF	≤ 0.5 PMF	> 60 SFP
B	> 5 and ≤ 7 PMF	> 0.5 and ≤ 3 PMF	> 40 and ≤ 60 SFP
C	> 7 and ≤ 10 PMF	> 3 and ≤ 6 PMF	> 24 and ≤ 40 SFP
D	> 10 and ≤ 15 PMF	> 6 and ≤ 11 PMF	> 15 and ≤ 24 SFP
E	> 15 and ≤ 23 PMF	> 11 and ≤ 18 PMF	> 8 and ≤ 15 SFP
F	> 23 PMF	> 18 PMF	≤ 8 SFP

Notes: PMF = pedestrians per minute per foot; SFP = square feet per pedestrian.
Source: New York City Mayor’s Office of Environmental Coordination, *CEQR Technical Manual* (January 2012 edition).

SIGNIFICANT IMPACT CRITERIA

The determination of significant pedestrian impacts considers the level of predicted deterioration in pedestrian flow or decrease in pedestrian space between the No Action and Action conditions. For different pedestrian elements, flow conditions, and area types, the CEQR procedure for impact determination corresponds with various sliding-scale formulas, as further detailed below.

Sidewalks

There are two sliding-scale formulas for determining significant sidewalk impacts. For non-platoon flow, the increase in average pedestrian flow rate (Y) in PMF needs to be greater or equal to 3.5 minus X divided by 8.0 (where X is the No Action pedestrian flow rate in PMF [$Y \geq 3.5 - X/8.0$]) for it to be a significant impact. For platoon flow, the sliding-scale formula is $Y \geq 3.03 - X/8.0$. Since deterioration in pedestrian flow within acceptable levels would not constitute a significant impact, these formulas would apply only if the With Action pedestrian flow

exceeds LOS C in non-CBD areas, such as the project area. **Table 8-14** summarizes the sliding scale guidance provided by the *CEQR Technical Manual* for determining potential significant sidewalk impacts.

Table 8-14
Significant Impact Guidance for Sidewalks

Non-Platoon Flow				Platoon Flow			
Sliding Scale Formula: $Y \geq 3.5 - X/8.0$				Sliding Scale Formula: $Y \geq 3.03 - X/8.0$			
Non-CBD Areas		CBD Areas		Non-CBD Areas		CBD Areas	
No Action Ped. Flow (X, PMF)	Action Ped. Flow Incr. (Y, PMF)	No Action Ped. Flow (X, PMF)	Action Ped. Flow Incr. (Y, PMF)	No Action Ped. Flow (X, PMF)	Action Ped. Flow Incr. (Y, PMF)	No Action Ped. Flow (X, PMF)	Action Ped. Flow Incr. (Y, PMF)
7.5 to 7.8	≥ 2.6	–	–	3.5 to 3.8	≥ 2.6	–	–
7.9 to 8.6	≥ 2.5	–	–	3.9 to 4.6	≥ 2.5	–	–
8.7 to 9.4	≥ 2.4	–	–	4.7 to 5.4	≥ 2.4	–	–
9.5 to 10.2	≥ 2.3	–	–	5.5 to 6.2	≥ 2.3	–	–
10.3 to 11.0	≥ 2.2	10.4 to 11.0	≥ 2.2	6.3 to 7.0	≥ 2.2	6.4 to 7.0	≥ 2.2
11.1 to 11.8	≥ 2.1	11.1 to 11.8	≥ 2.1	7.1 to 7.8	≥ 2.1	7.1 to 7.8	≥ 2.1
11.9 to 12.6	≥ 2.0	11.9 to 12.6	≥ 2.0	7.9 to 8.6	≥ 2.0	7.9 to 8.6	≥ 2.0
12.7 to 13.4	≥ 1.9	12.7 to 13.4	≥ 1.9	8.7 to 9.4	≥ 1.9	8.7 to 9.4	≥ 1.9
13.5 to 14.2	≥ 1.8	13.5 to 14.2	≥ 1.8	9.5 to 10.2	≥ 1.8	9.5 to 10.2	≥ 1.8
14.3 to 15.0	≥ 1.7	14.3 to 15.0	≥ 1.7	10. to 11.0	≥ 1.7	10. to 11.0	≥ 1.7
15.1 to 15.8	≥ 1.6	15.1 to 15.8	≥ 1.6	11.1 to 11.8	≥ 1.6	11.1 to 11.8	≥ 1.6
15.9 to 16.6	≥ 1.5	15.9 to 16.6	≥ 1.5	11.9 to 12.6	≥ 1.5	11.9 to 12.6	≥ 1.5
16.7 to 17.4	≥ 1.4	16.7 to 17.4	≥ 1.4	12.7 to 13.4	≥ 1.4	12.7 to 13.4	≥ 1.4
17.5 to 18.2	≥ 1.3	17.5 to 18.2	≥ 1.3	13.5 to 14.2	≥ 1.3	13.5 to 14.2	≥ 1.3
18.3 to 19.0	≥ 1.2	18.3 to 19.0	≥ 1.2	14.3 to 15.0	≥ 1.2	14.3 to 15.0	≥ 1.2
19.1 to 19.8	≥ 1.1	19.1 to 19.8	≥ 1.1	15.1 to 15.8	≥ 1.1	15.1 to 15.8	≥ 1.1
19.9 to 20.6	≥ 1.0	19.9 to 20.6	≥ 1.0	15.9 to 16.6	≥ 1.0	15.9 to 16.6	≥ 1.0
20.7 to 21.4	≥ 0.9	20.7 to 21.4	≥ 0.9	16.7 to 17.4	≥ 0.9	16.7 to 17.4	≥ 0.9
21.5 to 22.2	≥ 0.8	21.5 to 22.2	≥ 0.8	17.5 to 18.2	≥ 0.8	17.5 to 18.2	≥ 0.8
22.3 to 23.0	≥ 0.7	22.3 to 23.0	≥ 0.7	18.3 to 19.0	≥ 0.7	18.3 to 19.0	≥ 0.7
> 23.0	≥ 0.6	> 23.0	≥ 0.6	> 19.0	≥ 0.6	> 19.0	≥ 0.6

Notes: PMF = pedestrians per minute per foot; Y = increase in average pedestrian flow rate in PMF; X = No Action pedestrian flow rate in PMF.
Sources: New York City Mayor's Office of Environmental Coordination, *CEQR Technical Manual* (January 2012 edition).

Corner Reservoirs and Crosswalks

The determination of significant corner and crosswalk impacts is also based on a sliding scale using the following formula: $Y \geq X/9.0 - 0.31$, where Y is the decrease in pedestrian space in SFP and X is the No Action pedestrian space in SFP. Since a decrease in pedestrian space within acceptable levels would not constitute a significant impact, this formula would apply only if the Action pedestrian space falls short of LOS C in non-CBD areas such as the project area. **Table 8-15** summarizes the sliding scale guidance provided by the *CEQR Technical Manual* for determining potential significant corner reservoir and crosswalk impacts.

VEHICULAR AND PEDESTRIAN SAFETY EVALUATION

An evaluation of vehicular and pedestrian safety is necessary for locations within the traffic and pedestrian study areas that have been identified as high accident locations, where 48 or more total reportable and non-reportable crashes or five or more pedestrian/bicyclist injury crashes occurred in any consecutive 12 months of the most recent three-year period for which data are available. For these locations, accident trends are identified to determine whether projected vehicular and pedestrian traffic would further impact safety at these locations. The determination of potential significant safety impacts depends on the type of area where the project site is located, traffic volumes, accident types and severity, and other contributing factors. Where appropriate, measures to improve traffic and pedestrian safety are identified and coordinated with NYCDOT.

Table 8-15

Significant Impact Guidance for Corners and Crosswalks

Sliding Scale Formula: $Y \geq X/9.0 - 0.31$			
Non-CBD Areas		CBD Areas	
No Action Pedestrian Space (X, SFP)	Action Pedestrian Space Reduction (Y, SFP)	No Action Pedestrian Space (X, SFP)	Action Pedestrian Space Reduction (Y, SFP)
25.8 to 26.6	≥ 2.6	–	–
24.9 to 25.7	≥ 2.5	–	–
24.0 to 24.8	≥ 2.4	–	–
23.1 to 23.9	≥ 2.3	–	–
22.2 to 23.0	≥ 2.2	–	–
21.3 to 22.1	≥ 2.1	21.3 to 21.5	≥ 2.1
20.4 to 21.2	≥ 2.0	20.4 to 21.2	≥ 2.0
19.5 to 20.3	≥ 1.9	19.5 to 20.3	≥ 1.9
18.6 to 19.4	≥ 1.8	18.6 to 19.4	≥ 1.8
17.7 to 18.5	≥ 1.7	17.7 to 18.5	≥ 1.7
16.8 to 17.6	≥ 1.6	16.8 to 17.6	≥ 1.6
15.9 to 16.7	≥ 1.5	15.9 to 16.7	≥ 1.5
15.0 to 15.8	≥ 1.4	15.0 to 15.8	≥ 1.4
14.1 to 14.9	≥ 1.3	14.1 to 14.9	≥ 1.3
13.2 to 14.0	≥ 1.2	13.2 to 14.0	≥ 1.2
12.3 to 13.1	≥ 1.1	12.3 to 13.1	≥ 1.1
11.4 to 12.2	≥ 1.0	11.4 to 12.2	≥ 1.0
10.5 to 11.3	≥ 0.9	10.5 to 11.3	≥ 0.9
9.6 to 10.4	≥ 0.8	9.6 to 10.4	≥ 0.8
8.7 to 9.5	≥ 0.7	8.7 to 9.5	≥ 0.7
7.8 to 8.6	≥ 0.6	7.8 to 8.6	≥ 0.6
6.9 to 7.7	≥ 0.5	6.9 to 7.7	≥ 0.5
6.0 to 6.8	≥ 0.4	6.0 to 6.8	≥ 0.4
5.1 to 5.9	≥ 0.3	5.1 to 5.9	≥ 0.3
< 5.1	≥ 0.2	< 5.1	≥ 0.2

Notes: SFP = square feet per pedestrian; Y = decrease in pedestrian space in SFP; X = No Action pedestrian space in SFP.
Sources: New York City Mayor's Office of Environmental Coordination, *CEQR Technical Manual* (January 2012 edition).

PARKING CONDITIONS ASSESSMENT

The parking analysis identifies the extent to which off-street parking is available and utilized under existing and future conditions. It takes into consideration anticipated changes in area parking supply and provides a comparison of parking needs versus availability to determine if a parking shortfall is likely to result from parking displacement attributable to or additional demand generated by a proposed action. Typically, this analysis encompasses a study area within a quarter-mile of the project site. If the analysis identifies a shortfall in parking within the quarter-mile study area, the study area could sometimes be extended to a half-mile to identify additional parking supply.

For areas in New York City other than Manhattan and CBD areas, a parking shortfall that exceeds more than half the available on-street and off-street parking spaces within a quarter-mile of the project site may be considered significant. Additional factors, such as the availability and extent of transit in the area, proximity of the project to such transit, and patterns of automobile usage by area residents, could be considered to determine the significance of the identified parking shortfall. In some cases, if there is adequate parking supply within a half-mile of the project site, the projected parking shortfall may also not necessarily be considered significant.

F. TRAFFIC

ROADWAY NETWORK

The study area consists of a network of local streets through a primarily residential area, with a concentration of local retail uses along Kingsbridge Road in the immediate vicinity of the project

site and sections of Fordham Road in the broader area. The major north-south roadways in the study area include University Avenue, Jerome Avenue, and Grand Concourse. The Major Deegan Expressway (I-87), located approximately ½-mile west of the project site, is a major highway in the study area.

The following is a brief description of the key roadways/streets within the study area:

Kingsbridge Road is major east-west roadway which operates with two travel lanes and curbside parking in each direction. It extends westward from its intersection with Fordham Road across and under the Grand Concourse (via an underpass), past the project site and major intersections with Jerome Avenue and University Avenue, to Bailey Avenue where it transitions into West 225th Street. Kingsbridge Road is a local bus route in the study area.

Jerome Avenue extends north-south along the east side of the project site below the elevated No. 4 subway viaduct. Within the study area, it operates with one travel lane in each direction between the columns that support the subway viaduct overhead. The space outside of the columns is used for curbside parking on each side of the street. Jerome Avenue is generally lined with commercial uses and is serviced by local bus routes in the study area.

West 195th Street is an east-west connector street operating between Sedgwick Avenue in the west and Jerome Avenue in the east. It runs along the northern boundary of the project site, with Public School 86 located on the north side of the street directly across from the project site. West 195th Street generally operates with one travel lane and curbside parking in each direction. The parking along the south side of the street (adjacent to the project site) is angled parking, while parking along the north side of the street is the more typical parallel parking.

Reservoir Avenue is a north-south roadway along the west side of the project site, starting at Kingsbridge Road to the south and extending north past Public School 86 and Walton High School to the north. Reservoir Avenue generally operates with two travel lanes in each direction with curbside parking on both sides of the street.

University Avenue is a north-south roadway and is one of the major feeder routes to and from the area. It generally operates with two travel lanes and curbside parking in each direction. University Avenue is a major bus route in the study area.

The Grand Concourse is a major north-south arterial road traveling throughout the length of the Bronx. Within the study area, the mainline section of the Grand Concourse operates with two travel lanes in each direction with exclusive left turn lanes at major intersections. Adjacent northbound and southbound “service roads” provide access to the mainline and generally have two additional traffic lanes in each direction with curbside parking.

Fordham Road is a major east-west roadway, traversing a major retail corridor between University Avenue and areas well east of the Grand Concourse, continuing to the Pelham Parkway area in the East Bronx. Fordham Road extends west into Manhattan across the University Heights Bridge, becoming West 207th Street. Fordham Road generally operates with two travel lanes and curbside parking in both directions.

Most other local streets in the study area are residential streets providing curbside parking on both sides of the street.

TRAFFIC CONDITIONS

Baseline traffic volumes for the study area intersections were established based on field counts (including manual turning movement counts and ATR counts) conducted in May 2012 and April

2013. To supplement the field data, inventories of roadway geometry, traffic controls, bus stops, and parking regulations/activities were recorded to provide inputs for the operational analyses. In addition, official signal timings obtained from NYCDOT were used in the analysis for all the signalized intersections. **Figures 8-4 to 8-7** show the 2013 baseline traffic volumes for the weekday midday and PM, and Saturday midday and PM peak hours, respectively. Traffic volume levels along key corridors within the study area are discussed as follows.

Within the study area, West Fordham Road carries the heaviest two-way traffic volumes ranging from approximately 2,145 vehicles per hour (vph) to approximately 2,590 vph during the four peak hours. The Grand Concourse also carries heavy two-way traffic volumes in the range of approximately 1,200 vph to 1,660 vph during the four peak hours. Two-way peak hour volumes on Kingsbridge Road in the vicinity of the project site are generally in the range of approximately 1,340 vph. Jerome Avenue carries two-way traffic volumes in the range of 640 vph to 800 vph. Reservoir Avenue generally carries two-way traffic volumes in the range of 385 vph to 535 vph. Two-way traffic volumes on West 195th Street range between approximately 320 vph to approximately 475 vph. All other minor cross-streets carry low traffic volumes in the study area.

LEVELS OF SERVICE

Table 8-16 presents the service conditions for the study area intersections. Locations with notable service constraints, those operating at mid-LOS D (delays in excess of 45.0 seconds for a signalized intersection and 30.0 seconds for an unsignalized intersection) or worse are described below.

WEST FORDHAM ROAD AND MAJOR DEEGAN EXPRESSWAY (I-87) SOUTHBOUND RAMP

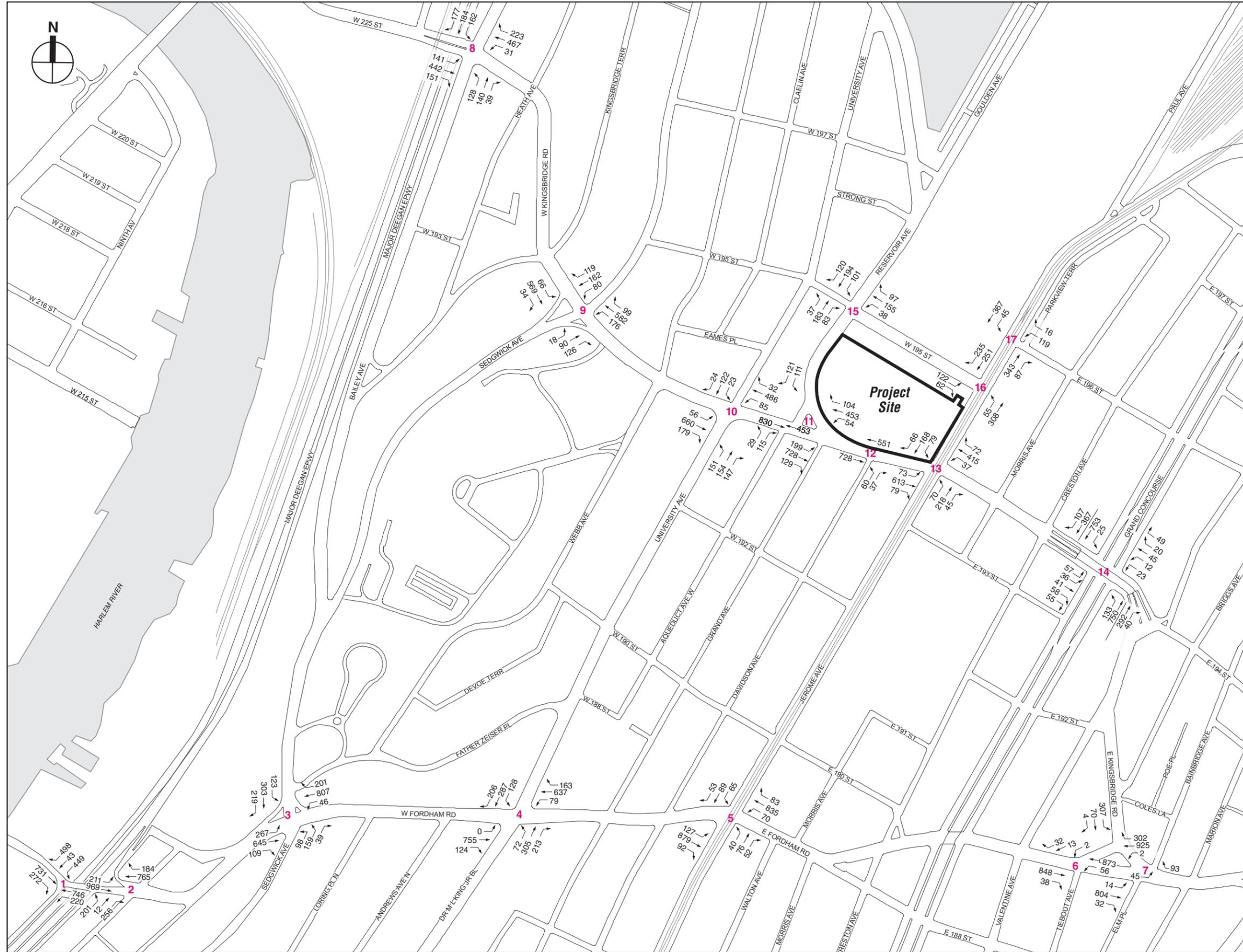
- The southbound approach operates at LOS F in the weekday midday, PM, and Saturday midday peak hours and LOS E in the Saturday PM peak hour.

WEST FORDHAM ROAD AND MAJOR DEEGAN EXPRESSWAY (I-87) NORTHBOUND RAMP

- The northbound right-turn movement operates at beyond mid-LOS D in the weekday midday, PM, and Saturday PM peak hours and LOS E in the Saturday midday peak hour.
- The northbound left-through movement operates at beyond mid-LOS D in the Saturday midday and PM peak hours.

SEDGWICK AVENUE AND WEST FORDHAM ROAD

- The eastbound left-turn movement operates at beyond mid-LOS D in the weekday midday peak hour and LOS F in the Saturday PM peak hour.
- The northbound left-turn movement operates at beyond mid-LOS D in the weekday midday peak hour.



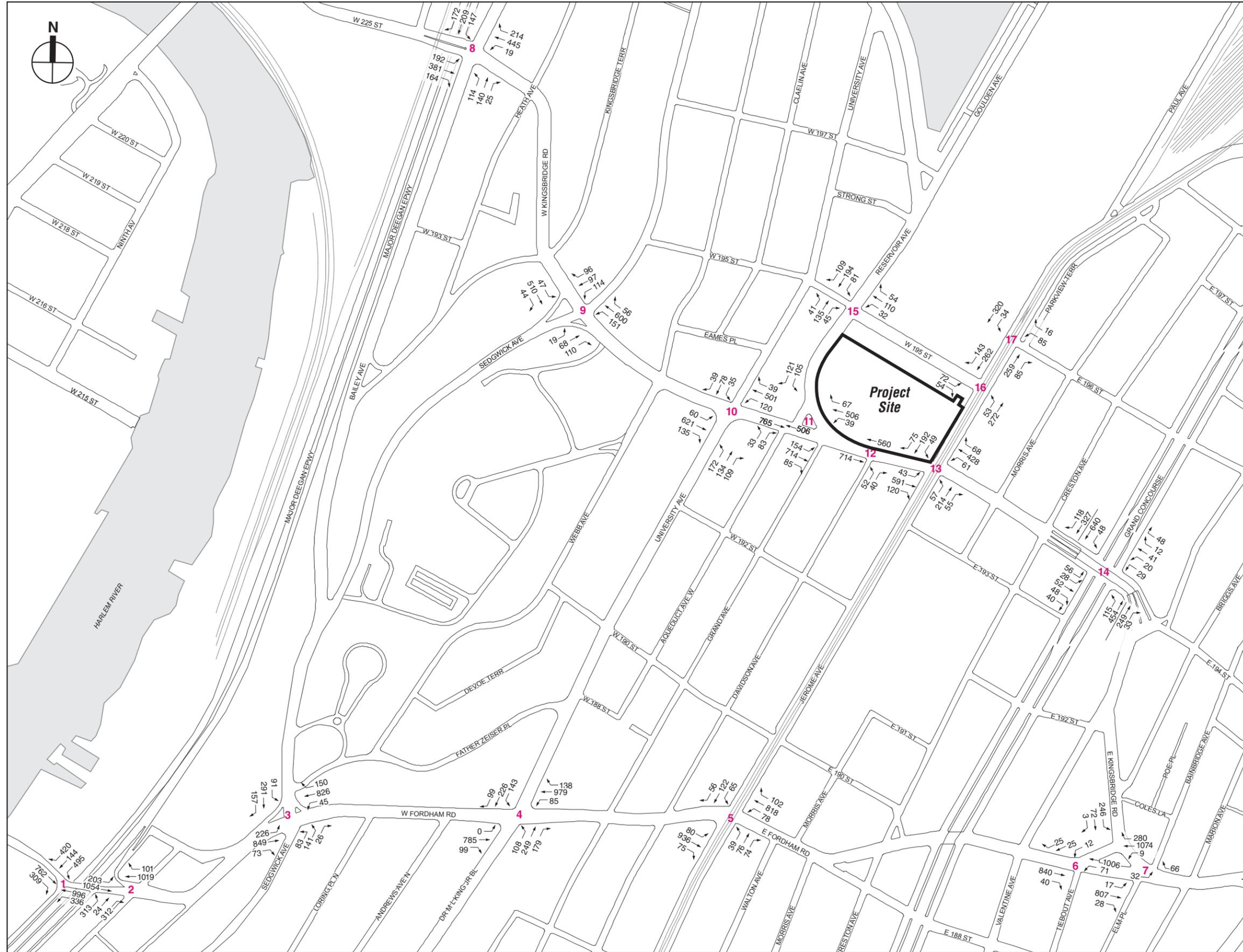


Table 8-16
2013 Existing Conditions Level of Service Analysis

Intersection	Weekday Midday				Weekday PM				Saturday Midday				Saturday PM			
	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS
Signalized Intersections																
West Fordham Road & Major Deegan SB Off-Ramp																
Eastbound	T	0.52	26.1	C	T	0.69	30.3	C	T	0.63	31.7	C	T	0.72	34.2	C
	R	0.38	25.1	C	R	0.46	27.1	C	R	0.68	39.9	D	R	0.13	23.9	C
Westbound	L	0.41	21.1	C	L	0.45	30.4	C	L	0.62	32.3	C	L	0.61	34.4	C
	T	0.32	8.0	A	T	0.34	8.2	A	T	0.42	8.9	A	T	0.42	8.9	A
Southbound	LTR	1.05	90.7	F	LTR	1.05	93.7	F	LTR	1.07	98.3	F	LTR	0.89	59.5	E
	Intersection	39.3		D	Intersection	40.3		D	Intersection	42.0		D	Intersection	30.5		C
West Fordham Road & Major Deegan NB On-Ramp																
Eastbound	L	0.56	17.8	B	L	0.81	31.0	C	L	0.70	25.7	C	L	0.86	38.8	D
	T	0.43	13.1	B	T	0.53	14.4	B	T	0.51	14.1	B	T	0.45	13.3	B
Westbound	T	0.39	21.4	C	T	0.39	21.4	C	T	0.48	22.7	C	T	0.46	22.4	C
	LT	0.51	38.1	D	LT	0.64	42.3	D	LT	0.80	51.0	D	LT	0.75	47.6	D
Northbound	R	0.69	45.8	D	R	0.75	49.2	D	R	0.83	56.0	E	R	0.81	53.7	D
	Intersection	22.0		C	Intersection	24.6		C	Intersection	26.8		C	Intersection	27.2		C
West Fordham Road & Sedgwick Avenue																
Eastbound	L	0.89	48.2	D	L	0.85	41.3	D	L	0.82	39.8	D	L	1.03	89.2	F
	TR	0.48	14.0	B	TR	0.62	16.6	B	TR	0.58	18.2	B	TR	0.71	21.3	C
Westbound	LT	0.80	34.9	C	LT	0.83	37.1	D	LT	0.77	34.2	C	LT	0.83	37.5	D
	R	0.38	24.9	C	R	0.35	24.4	C	R	0.26	23.4	C	R	0.27	23.6	C
Northbound	DefL	0.66	53.4	D	LTR	0.57	38.8	D	LTR	0.43	31.9	C	LTR	0.44	32.1	C
	TR	0.56	39.9	D												
Southbound	LT	0.67	40.9	D	LT	0.61	39.4	D	LT	0.52	33.3	C	LT	0.57	34.4	C
	Intersection	31.9		C	Intersection	30.5		C	Intersection	28.6		C	Intersection	36.3		D
West Fordham Road & Dr. MLK Jr Boulevard/University Avenue																
Eastbound	T	0.68	35.0-	C	T	0.65	34.3	C	TR	0.90	47.6	D	TR	0.95	55.3	E
	R	0.73	54.6	D	R	0.65	46.4	D								
Westbound	L	0.37	23.2	C	L	0.27	20.9	C	L	0.40	26.0	C	L	0.73	43.8	D
	T	0.45	19.7	B	T	0.41	19.1	B								
Northbound	R	0.56	27.1	C	R	0.68	32.9	C	TR	0.82	30.0	C	TR	0.65	24.1	C
	L	0.43	36.6	D	L	0.47	37.6	D								
Southbound	T	0.57	35.6	D	T	0.51	33.8	C	T	0.41	31.6	C	T	0.38	31.0	C
	R	0.73	47.6	D	R	0.65	42.6	D	R	0.52	36.2	D	R	0.50	35.6	D
Southbound	L	0.81	66.0	E	L	0.86	71.7	E	L	0.68	47.6	D	L	0.35	32.7	C
	T	0.52	34.0	C	T	0.46	32.5	C	T	0.39	31.1	C	T	0.37	30.7	C
Southbound	R	0.65	41.4	D	R	0.74	46.3	D	R	0.24	29.0	C	R	0.49	35.3	D
	Intersection	34.5		C	Intersection	34.7		C	Intersection	36.6		D	Intersection	38.6		D
West Fordham Road & Jerome Avenue																
Eastbound	LT	0.86	22.8	C	LT	0.80	18.6	B	LTR	0.95	37.1	D	LTR	0.95	38.2	D
	R	0.17	7.8	A	R	0.14	7.5	A								
Westbound	LT	0.69	14.5	B	LT	0.64	13.1	B	LT	0.75	20.9	C	LT	0.83	25.0	C
	R	0.16	7.6	A	R	0.15	7.5	A								
Northbound	LTR	0.75	59.6	E	LTR	0.90	77.4	E	LTR	0.54	40.2	D	LTR	0.87	65.1	E
	LTR	0.95	90.0	F	LTR	1.02	110.4	F								
Southbound	LTR	0.95	90.0	F	LTR	1.02	110.4	F	LTR	0.85	60.7	E	LTR	0.99	88.7	F
	Intersection	26.9		C	Intersection	28.6		C								
East Fordham Road & East Kingsbridge Road/ Tiebout Avenue																
Eastbound	T	0.49	9.5	A	T	0.46	9.2	A	TR	0.51	9.7	A	TR	0.57	10.7	B
	R	0.15	7.4	A	R	0.10	6.8	A								
Westbound	LT	0.61	11.6	B	LT	0.72	14.2	B	LT	0.71	13.9	B	LT	0.67	12.9	B
	LTR	0.24	40.3	D	LTR	0.23	40.2	D								
Southbound	LTR	0.24	40.3	D	LTR	0.23	40.2	D	LTR	0.30	41.7	D	LTR	0.20	39.5	D
	Intersection	11.3		B	Intersection	12.7		B								

Table 8-16 (cont'd)

2013 Existing Conditions Level of Service Analysis

Intersection	Weekday Midday				Weekday PM				Saturday Midday				Saturday PM			
	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS
Signalized Intersections (cont'd)																
East Fordham Road & East Kingsbridge Road/ Elm Place/ Bainbridge Avenue																
Eastbound	LT	0.62	12.9	B	LT	0.62	12.9	B	LTR	0.67	14.2	B	LTR	0.69	14.6	B
	R	0.13	7.9	A	R	0.07	7.2	A								
Westbound	LT	0.54	11.1	B	LT	0.62	12.3	B	LT	0.58	11.7	B	LT	0.55	11.2	B
	R	0.55	14.6	B	R	0.47	13.0	B	R	0.43	12.3	B	R	0.30	10.5	B
Southbound	LTR	0.68	49.4	D	LTR	0.57	46.1	D	LTR	0.58	46.2	D	LTR	0.53	44.9	D
	Intersection	17.7	B	Intersection	16.5	B	Intersection	16.8	B	Intersection	16.4	B	Intersection	16.4	B	B
West Kingsbridge Road & Bailey Avenue																
Eastbound	L	0.61	28.1	C	L	0.60	26.6	C	L	0.70	27.5	C	L	0.48	17.6	B
	TR	0.35	15.6	B	TR	0.32	15.2	B	TR	0.35	12.0	B	TR	0.34	12.0	B
Westbound	L	0.12	13.9	B	L	0.05	12.7	B	L	0.06	10.0+	B	L	0.06	10.0-	A
	TR	0.54	18.7	B	TR	0.46	17.3	B	TR	0.45	13.4	B	TR	0.43	13.1	B
Northbound	DefL	0.76	56.9	E	DefL	0.75	56.4	E	DefL	0.69	43.6	D	DefL	0.80	62.3	E
	TR	0.40	30.3	C	TR	0.21	27.0	C	TR	0.35	23.9	C	TR	0.28	22.8	C
Southbound	LTR	0.70	37.4	D	LTR	0.75	39.2	D	LTR	0.74	32.2	C	LTR	0.84	37.3	D
	Intersection	25.7	C	Intersection	26.0	C	Intersection	21.2	C	Intersection	23.1	C	Intersection	23.1	C	C
West Kingsbridge Road & Sedgwick Avenue																
Eastbound	L	0.27	15.9	B	L	0.26	16.5	B	L	0.17	11.5	B	L	0.21	12.2	B
	T	0.37	15.3	B	T	0.37	15.4	B	T	0.31	11.7	B	T	0.34	11.9	B
Westbound	L	0.62	27.2	C	L	0.74	34.8	C	L	0.46	16.5	B	L	0.48	17.3	B
	TR	0.49	17.3	B	TR	0.62	19.8	B	TR	0.46	13.4	B	TR	0.45	13.3	B
Northbound	LT	0.13	26.2	C	LT	0.13	26.2	C	LT	0.11	20.4	C	LT	0.12	20.4	C
Southbound	LTR	0.91	59.5	E	LTR	0.92	61.1	E	LTR	0.72	35.4	D	LTR	0.60	29.8	C
	Intersection	26.5	C	Intersection	27.9	C	Intersection	17.2	B	Intersection	16.1	B	Intersection	16.1	B	B
West Kingsbridge Road & University Avenue																
Eastbound	LTR	0.84	28.7	C	LTR	0.68	21.9	C	LTR	0.83	26.7	C	LTR	0.67	20.6	C
Westbound	LTR	0.63	20.9	C	LTR	0.71	23.3	C	LTR	0.83	29.0	C	LTR	0.74	23.4	C
Northbound	LT	0.98	79.5	E	LT	0.90	63.7	E	LT	0.70	31.0	C	LT	0.64	28.4	C
	R	0.45	33.1	C	R	0.50	35.3	D	R	0.28	19.8	B	R	0.45	23.4	C
Southbound	LTR	0.44	32.4	C	LTR	0.40	31.4	C	LTR	0.33	20.4	C	LTR	0.40	21.7	C
	Intersection	35.2	D	Intersection	30.1	C	Intersection	27.2	C	Intersection	22.9	C	Intersection	22.9	C	C
West Kingsbridge Road & Reservoir Avenue/ Aqueduct Avenue																
Eastbound	T	0.51	17.5	B	T	0.54	17.9	B	T	0.53	14.3	B	T	0.45	13.3	B
Westbound	T	0.27	14.1	B	T	0.27	14.1	B	T	0.26	11.2	B	T	0.26	11.2	B
Northbound	LR	0.39	31.1	C	LR	0.37	30.7	C	LR	0.30	23.1	C	LR	0.26	22.5	C
Southbound	L	0.19	27.1	C	L	0.23	27.7	C	L	0.18	21.3	C	L	0.13	20.7	C
	R	0.30	29.5	C	R	0.30	29.2	C	R	0.29	23.1	C	R	0.22	22.0	C
	Intersection	19.3	B	Intersection	19.6	B	Intersection	15.2	B	Intersection	14.2	B	Intersection	14.2	B	B
West Kingsbridge Road & Davidson Avenue																
Eastbound	T	0.49	17.1	B	T	0.49	17.2	B	T	0.42	12.9	B	T	0.45	13.2	B
Westbound	T	0.40	15.8	B	T	0.34	15.0	B	T	0.37	12.3	B	T	0.38	12.4	B
Northbound	LR	0.30	29.5	C	LR	0.27	28.9	C	LR	0.28	23.0	C	LR	0.28	23.2	C
	Intersection	17.5	B	Intersection	17.2	B	Intersection	13.4	B	Intersection	13.6	B	Intersection	13.6	B	B
West Kingsbridge Road & Jerome Avenue																
Eastbound	LTR	0.84	36.9	D	LTR	0.80	33.6	C	LTR	0.75	24.7	C	LTR	0.71	23.6	C
Westbound	LTR	0.62	27.0	C	LTR	0.63	27.2	C	LTR	0.71	24.2	C	LTR	0.50	18.9	B
Northbound	LTR	0.39	23.2	C	LTR	0.33	22.2	C	LTR	0.34	17.8	B	LTR	0.36	18.1	B
Southbound	LTR	0.41	23.7	C	LTR	0.47	24.7	C	LTR	0.40	18.7	B	LTR	0.41	19.0	B
	Intersection	29.6	C	Intersection	28.3	C	Intersection	22.5	C	Intersection	20.5	C	Intersection	20.5	C	C

Table 8-16 (cont'd)
2013 Existing Conditions Level of Service Analysis

Intersection	Weekday Midday				Weekday PM				Saturday Midday				Saturday PM			
	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS
Signalized Intersections (cont'd)																
East Kingsbridge Road & Grand Concourse (Main Line)																
Eastbound	LTR	0.55	35.1	D	LTR	0.48	33.3	C	LTR	0.35	25.7	C	Defl.	0.29	25.9	C
													TR	0.25	24.6	C
Westbound	LTR	0.29	29.4	C	LTR	0.30	29.5	C	LTR	0.20	23.5	C	LTR	0.18	23.1	C
Northbound	L	0.68	34.7	C	L	0.74	37.6	D	L	0.48	26.0	C	L	0.47	25.7	C
	T	0.48	17.0	B	T	0.51	17.3	B	T	0.30	18.1	B	T	0.31	18.3	B
Southbound	L	0.12	13.5	B	L	0.27	17.1	B	L	0.16	17.3	B	L	0.15	17.1	B
	T	0.48	16.9	B	T	0.48	17.0	B	T	0.42	19.8	B	T	0.43	19.9	B
	Intersection	21.3	C	Intersection	21.5	C	Intersection	20.9	C	Intersection	20.7	C				
East Kingsbridge Road & Grand Concourse (Service Road)																
Eastbound	LTR	0.55	35.1	D	LTR	0.48	33.3	C	LTR	0.35	25.7	C	Defl.	0.29	25.9	C
													TR	0.25	24.6	C
Westbound	LTR	0.29	29.4	C	LTR	0.30	29.5	C	LTR	0.20	23.5	C	LTR	0.18	23.1	C
Northbound	TR	0.43	16.9	B	TR	0.42	16.7	B	TR	0.38	19.8	B	TR	0.40	20.1	C
Southbound	TR	0.65	22.2	C	TR	0.70	24.1	C	TR	0.64	26.2	C	TR	0.60	24.9	C
	Intersection	24.5	C	Intersection	24.7	C	Intersection	24.1	C	Intersection	23.4	C				
West 195th Street & Reservoir Avenue																
Westbound	LTR	0.81	42.6	D	LTR	0.73	36.1	D	LTR	0.45	26.1	C	LTR	0.48	26.7	C
Northbound	LTR	0.32	12.2	B	LTR	0.23	11.3	B	LTR	0.19	10.9	B	LTR	0.19	10.9	B
Southbound	LTR	0.46	14.2	B	LTR	0.43	13.6	B	LTR	0.34	12.4	B	LTR	0.29	11.8	B
	Intersection	21.8	C	Intersection	19.6	B	Intersection	15.3	B	Intersection	15.7	B				
West 195th Street & Jerome Avenue																
Eastbound	L	0.25	30.7	C	L	0.19	29.7	C	L	0.12	20.5	C	L	0.16	20.9	C
	R	0.22	30.9	C	R	0.14	29.3	C	R	0.12	20.7	C	R	0.12	20.6	C
Northbound	LT	0.28	12.5	B	LT	0.35	13.4	B	LT	0.26	11.3	B	LT	0.25	11.2	B
Southbound	TR	0.50	15.7	B	TR	0.35	13.2	B	TR	0.32	11.8	B	TR	0.28	11.5	B
	Intersection	17.5	B	Intersection	16.0	B	Intersection	12.9	B	Intersection	13.0	B				
West 196th Street & Jerome Avenue																
Westbound	LR	0.38	31.1	C	LR	0.30	29.3	C	LR	0.27	22.8	C	LR	0.36	24.1	C
Northbound	TR	0.29	14.5	B	TR	0.27	14.2	B	TR	0.24	11.1	B	TR	0.26	11.3	B
Southbound	LT	0.35	15.2	B	LT	0.30	14.6	B	LT	0.26	11.3	B	LT	0.25	11.2	B
	Intersection	17.3	B	Intersection	16.5	B	Intersection	12.8	B	Intersection	13.5	B				
Unsignalized Intersections																
West Kingsbridge Road & Reservoir Avenue/ Grand Avenue																
Eastbound	LT	0.98	103.7	F	LT	0.67	38.6	E	LT	0.32	14.2	B	LT	0.37	22.6	C
Westbound	LT	0.25	24.2	C	LT	0.19	24.4	C	LT	0.21	27.7	D	LT	0.06	16.5	C
Notes:																
EB = Eastbound; WB = Westbound; NB = Northbound; SB = Southbound; INT = Intersection.																
L = Left-Turn; T = Through; R = Right-Turn.																
V/C = Volume to Capacity; SPV = Seconds per Vehicle; LOS = Level of Service.																

DR. MLK JR. BOULEVARD/UNIVERSITY AVENUE AND WEST FORDHAM ROAD

- The eastbound approach operates at beyond mid-LOS D in the Saturday midday peak hour and LOS E in the Saturday PM peak hours.
- The eastbound right-turn movement operates at beyond mid-LOS D in the weekday midday and PM peak hours.
- The northbound right-turn movement operates at beyond mid-LOS D in the weekday midday peak hour.

Kingsbridge Armory National Ice Center

- The southbound left-turn movement operates at LOS E in the weekday midday and PM peak hours and beyond mid-LOS D in the Saturday midday peak hour.
- The southbound right-turn movement operates at beyond mid-LOS D in the weekday PM peak hour.

JEROME AVENUE AND WEST FORDHAM ROAD

- The northbound approach operates at LOS E in the weekday midday and PM, and Saturday PM peak hours;
- The southbound approach operates at LOS F in the weekday midday and PM, and Saturday PM peak hours and LOS E in the Saturday midday peak hour.

EAST FORDHAM ROAD AND ELM PLACE/BAINBRIDGE AVENUE/EAST KINGSBRIDGE ROAD

- The southbound approach operates at beyond mid-LOS D in the weekday midday, PM, and Saturday midday peak hours.

BAILEY AVENUE AND WEST KINGSBRIDGE ROAD

- The northbound left-turn movement operates at LOS E in the weekday midday, PM, and Saturday PM peak hours.

SEDGWICK AVENUE AND WEST KINGSBRIDGE ROAD

- The southbound approach operates at LOS E in the weekday midday and PM peak hours.

UNIVERSITY AVENUE AND WEST KINGSBRIDGE ROAD

- The northbound left-through movement operates at LOS E during the weekday midday and PM peak hours.

GRAND AVENUE AND WEST KINGSBRIDGE ROAD/RESERVOIR AVENUE

- The eastbound approach operates at LOS F in the weekday midday peak hour and LOS E in the weekday PM peak hour.

2018 NO BUILD TRAFFIC CONDITIONS

The No Build condition was developed by increasing baseline traffic levels to account for growth in overall travel through and within the study area. As per *CEQR Technical Manual* guidelines, an annual background growth rate of 0.25 percent was applied to the traffic volumes from 2013 to 2018. Trips generated by two potential development projects—including a day-care center located at 2085 Goulden Avenue and the Webster Avenue rezoning—that are expected to be completed and operational in the study area in the future No Build conditions were incorporated into the future No Build traffic volumes. In addition to these two projects, the New York City Department of City Planning (DCP) has proposed rezoning for an approximately 12-block area along East Fordham Road. This proposed rezoning will be completed by the year 2023 and will cover an area generally bounded by East 187th Street to the south, East 191st Street to the North, Southern Boulevard to the east and Bathgate Avenue to the west. Since the proposed East Fordham Road Rezoning will be completed five years after the proposed KNIC, future trips expected to be generated by the proposed rezoning were not included in the No Build condition analysis.

TRAFFIC OPERATIONS

The 2018 No Build peak hour traffic volumes are shown in **Figures 8-8 to 8-11** for the weekday midday and PM, and Saturday midday and PM peak hours, respectively. **Table 8-17** presents the No Build service conditions for the study area intersections. The analysis results indicate the study area’s intersection approaches/lane groups continue to operate at the same LOS as existing conditions or within acceptable levels—at mid-LOS D (delays of 45 seconds or less for a signalized intersection and 30.0 seconds or less for an unsignalized intersection) with the following exceptions.

Table 8-17
2018 No Build Conditions Level of Service Analysis

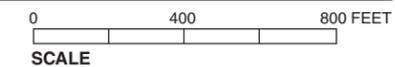
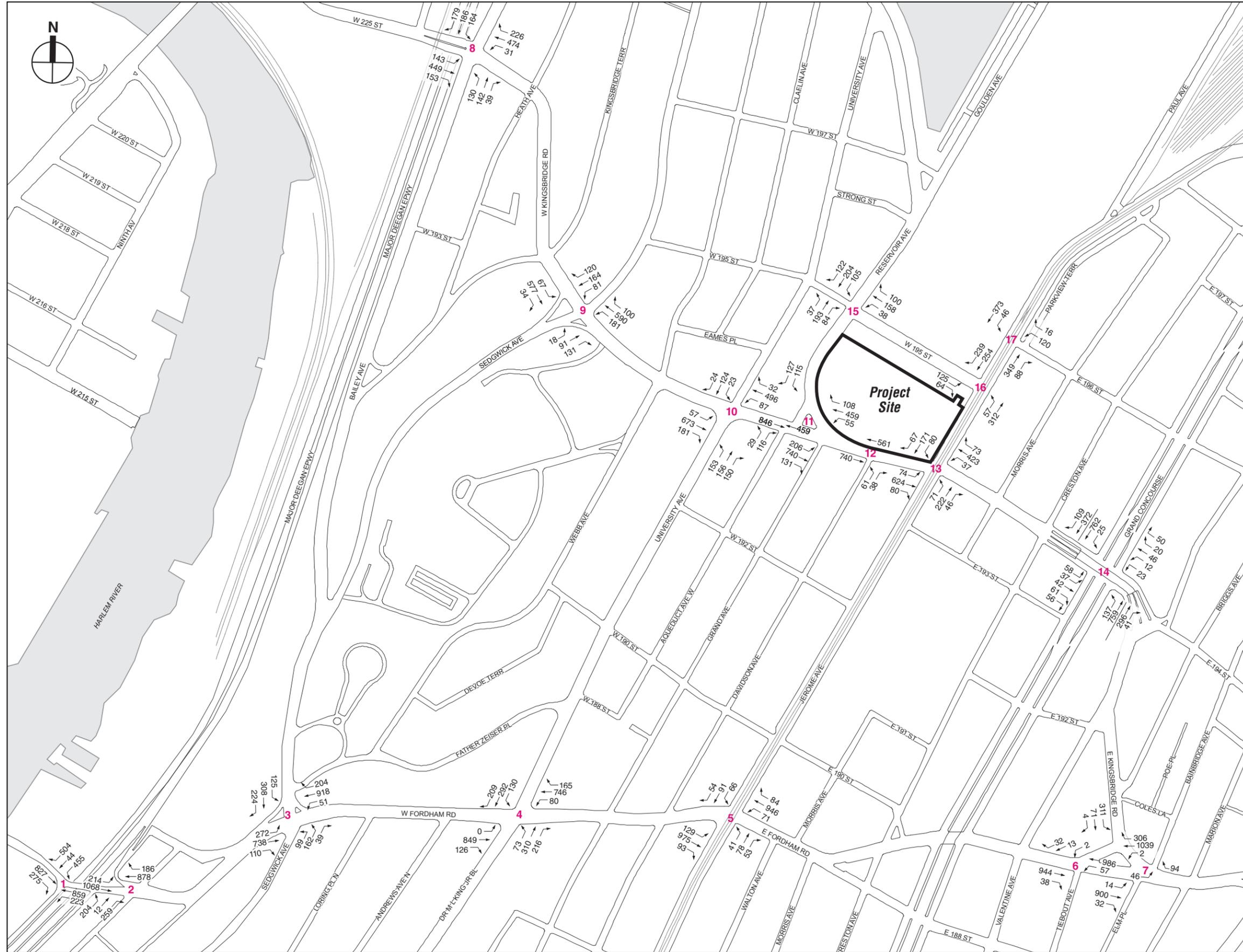
Intersection	Weekday Midday				Weekday PM				Saturday Midday				Saturday PM			
	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS
Signalized Intersections																
West Fordham Road & Major Deegan SB Off-Ramp																
Eastbound	T	0.59	27.5	C	T	0.76	32.3	C	T	0.71	33.9	C	T	0.78	36.5	D
	R	0.39	25.2	C	R	0.47	27.3	C	R	0.70	40.9	D	R	0.13	24.0	C
Westbound	L	0.44	25.4	C	L	0.48	33.9	C	L	0.66	36.3	D	L	0.64	37.3	D
	T	0.37	8.5	A	T	0.39	8.6	A	T	0.47	9.4	A	T	0.47	9.5	A
Southbound	LTR	1.06	96.8	F	LTR	1.07	98.8	F	LTR	1.09	105.3	F	LTR	0.90	61.1	E
	Intersection	40.4	D	Intersection	41.3	D	Intersection	43.7	D	Intersection	31.3	C				
West Fordham Road & Major Deegan NB On-Ramp																
Eastbound	L	0.63	21.1	C	L	0.92	46.8	D	L	0.78	33.7	C	L	0.96	62.6	E
	T	0.48	13.7	B	T	0.56	15.0	B	T	0.56	14.9	B	T	0.48	13.7	B
Westbound	T	0.45	22.2	C	T	0.45	22.3	C	T	0.53	23.6	C	T	0.52	23.3	C
	LT	0.52	38.4	D	LT	0.65	42.7	D	LT	0.80	51.7	D	LT	0.76	48.3	D
Northbound	R	0.70	46.3	D	R	0.77	50.2	D	R	0.84	57.1	E	R	0.82	54.8	D
	Intersection	22.6	C	Intersection	26.4	C	Intersection	27.6	C	Intersection	29.5	C				
West Fordham Road & Sedgwick Avenue																
Eastbound	L	1.00	83.6	F	L	0.98	77.8	E	L	0.94	67.8	E	L	1.04	89.7	F
	TR	0.54	14.9	B	TR	0.67	17.7	B	TR	0.64	19.4	B	TR	0.76	22.9	C
Westbound	LT	0.93	45.8	D	LT	0.96	52.5	D	LT	0.89	42.3	D	LT	0.97	55.3	E
	R	0.38	25.0	C	R	0.36	24.5	C	R	0.27	23.5	C	R	0.28	23.6	C
Northbound	Defl	0.67	55.1	E	LTR	0.58	39.1	D	Defl	0.40	34.4	C	LTR	0.45	32.3	C
	TR	0.57	40.3	D					TR	0.39	31.8	C				
Southbound	LT	0.68	41.5	D	LT	0.63	39.8	D	LT	0.50	32.6	C	LT	0.58	34.6	C
	Intersection	38.5	D	Intersection	38.8	D	Intersection	33.5	C	Intersection	41.8	D				
West Fordham Road & Dr. MLK Jr Boulevard/University Avenue																
Eastbound	T	0.76	37.8	D	T	0.72	36.3	D	TR	0.99	62.3	E	TR	1.02	71.1	E
	R	0.74	56.3	E	R	0.67	47.4	D								
Westbound	L	0.41	25.8	C	L	0.29	22.4	C	L	0.44	29.0	C	L	0.74	48.5	D
	T	0.52	21.0	C	T	0.48	20.3	C								
Northbound	R	0.57	27.5	C	R	0.69	33.8	C	TR	0.90	35.6	D	TR	0.74	26.6	C
	L	0.44	37.2	D	L	0.48	38.4	D								
Southbound	T	0.58	35.8	D	T	0.52	34.1	C	T	0.42	31.8	C	T	0.38	31.0	C
	R	0.74	48.5	D	R	0.66	43.1	D	R	0.53	36.6	D	R	0.51	35.9	D
Southbound	L	0.84	71.0	E	L	0.89	77.1	E	L	0.69	49.1	D	L	0.35	32.9	C
	T	0.53	34.2	C	T	0.47	32.8	C	T	0.40	31.2	C	T	0.37	30.8	C
Southbound	R	0.66	42.2	D	R	0.75	47.4	D	R	0.25	29.0	C	R	0.51	35.7	D
	Intersection	35.6	D	Intersection	35.5	D	Intersection	43.3	D	Intersection	44.7	D				

Table 8-17 (cont'd)
2018 No Build Conditions Level of Service Analysis

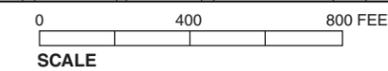
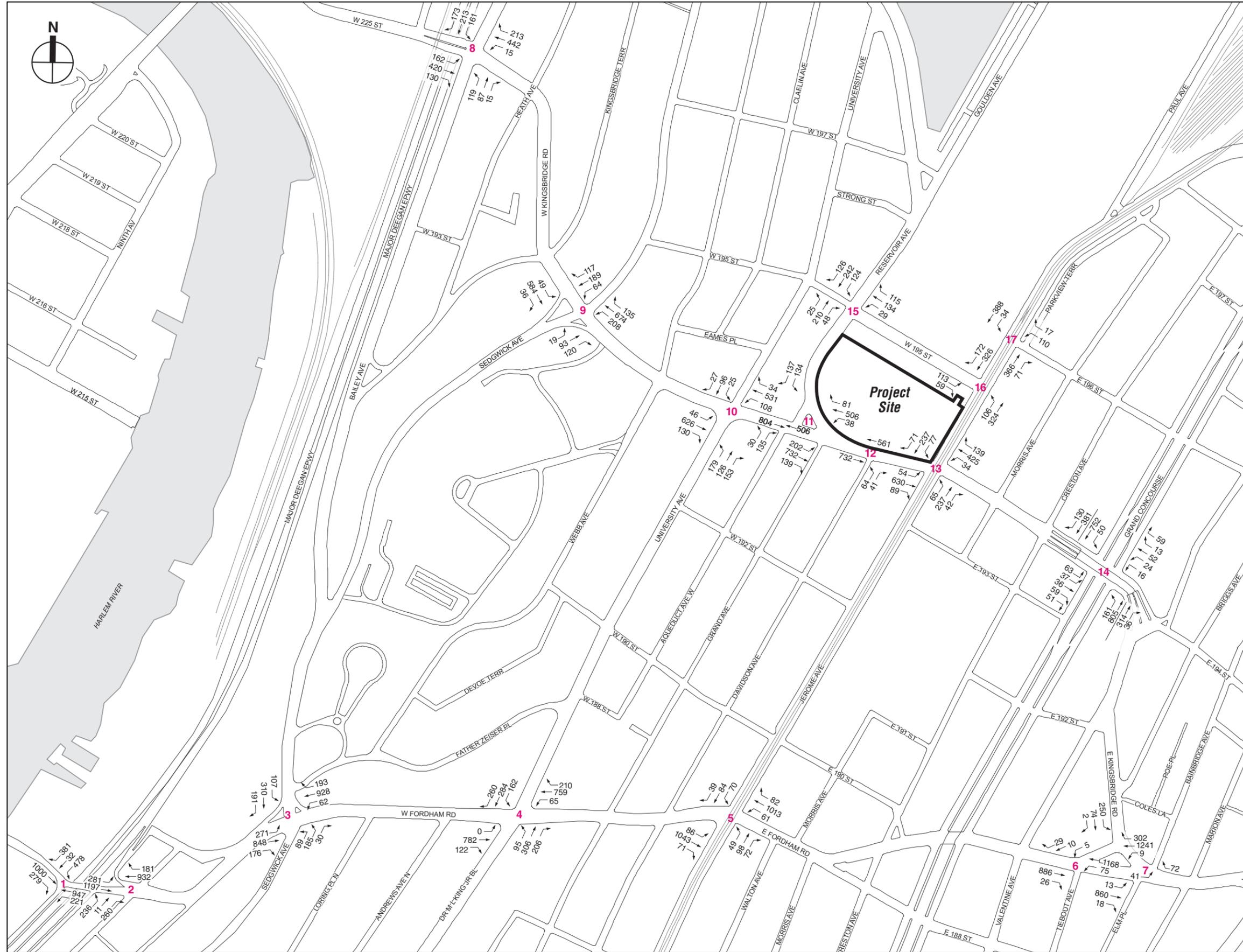
Intersection	Weekday Midday				Weekday PM				Saturday Midday				Saturday PM			
	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS
Signalized Intersections (cont'd)																
West Fordham Road & Jerome Avenue																
Eastbound	LT	0.98	40.9	D	LT	0.90	26.0	C	LTR	1.07	71.5	E	LTR	1.06	67.3	E
	R	0.17	7.8	A	R	0.14	7.5	A								
Westbound	LT	0.80	18.3	B	LT	0.74	15.6	B	LT	0.87	27.8	C	LT	0.94	37.3	D
	R	0.16	7.7	A	R	0.15	7.5	A	R	0.22	11.6	B	R	0.12	10.4	B
Northbound	LTR	0.77	61.6	E	LTR	0.93	82.8	F	LTR	0.55	40.4	D	LTR	0.89	67.8	E
Southbound	LTR	0.97	95.8	F	LTR	1.05	118.0	F	LTR	0.87	63.3	E	LTR	1.01	93.4	F
	Intersection	35.8 D			Intersection	32.8 C			Intersection	50.9 D			Intersection	58.0 E		
East Fordham Road & East Kingsbridge Road/ Tiebout Avenue																
Eastbound	T	0.55	10.3	B	T	0.51	9.7	A	TR	0.56	10.5	B	TR	0.61	11.4	B
	R	0.15	7.4	A	R	0.10	6.8	A								
Westbound	LT	0.69	13.4	B	LT	0.81	17.5	B	LT	0.80	17.5	B	LT	0.76	15.7	B
Southbound	LTR	0.24	40.3	D	LTR	0.23	40.2	D	LTR	0.30	41.7	D	LTR	0.20	39.5	D
	Intersection	12.5 B			Intersection	14.7 B			Intersection	15.0 B			Intersection	14.1 B		
East Fordham Road & East Kingsbridge Road/ Elm Place/ Bainbridge Avenue																
Eastbound	LT	0.71	15.3	B	LT	0.70	15.1	B	LTR	0.76	16.8	B	LTR	0.76	16.8	B
	R	0.13	7.9	A	R	0.07	7.2	A								
Westbound	LT	0.61	12.3	B	LT	0.68	13.7	B	LT	0.64	12.8	B	LT	0.62	12.4	B
	R	0.56	14.8	B	R	0.48	13.1	B	R	0.44	12.4	B	R	0.31	10.5	B
Southbound	LTR	0.69	49.8	D	LTR	0.58	46.3	D	LTR	0.58	46.3	D	LTR	0.54	45.1	D
	Intersection	18.6 B			Intersection	17.6 B			Intersection	18.0 B			Intersection	17.5 B		
West Kingsbridge Road & Bailey Avenue																
Eastbound	L	0.63	29.3	C	L	0.61	27.6	C	L	0.72	28.9	C	L	0.49	18.0	B
	TR	0.36	15.7	B	TR	0.32	15.2	B	TR	0.35	12.1	B	TR	0.35	12.0	B
Westbound	L	0.12	13.9	B	L	0.05	12.8	B	L	0.06	10.0+	B	L	0.06	10.0-	A
	TR	0.55	18.8	B	TR	0.47	17.5	B	TR	0.46	13.5	B	TR	0.44	13.1	B
Northbound	DefL	0.79	59.7	E	DefL	0.77	59.3	E	DefL	0.71	45.7	D	DefL	0.84	68.9	E
	TR	0.40	30.4	C	TR	0.21	27.0	C	TR	0.36	23.9	C	TR	0.29	22.8	C
Southbound	LTR	0.71	37.8	D	LTR	0.76	39.8	D	LTR	0.76	32.7	C	LTR	0.86	38.4	D
	Intersection	26.1 C			Intersection	26.4 C			Intersection	21.6 C			Intersection	23.8 C		
West Kingsbridge Road & Sedgwick Avenue																
Eastbound	L	0.27	16.1	B	L	0.27	16.9	B	L	0.17	11.6	B	L	0.22	12.3	B
	T	0.38	15.4	B	T	0.38	15.5	B	T	0.32	11.7	B	T	0.34	12.0	B
Westbound	L	0.65	28.8	C	L	0.81	41.3	D	L	0.47	16.9	B	L	0.49	17.7	B
	TR	0.50	17.4	B	TR	0.63	20.1	C	TR	0.46	13.5	B	TR	0.46	13.4	B
Northbound	LT	0.13	26.2	C	LT	0.13	26.2	C	LT	0.11	20.4	C	LT	0.12	20.5	C
Southbound	LTR	0.92	61.5	E	LTR	0.93	62.9	E	LTR	0.73	35.9	D	LTR	0.61	30.1	C
	Intersection	27.1 C			Intersection	28.9 C			Intersection	17.4 B			Intersection	16.2 B		
West Kingsbridge Road & University Avenue																
Eastbound	LTR	0.85	29.9	C	LTR	0.71	22.7	C	LTR	0.84	27.8	C	LTR	0.68	20.9	C
Westbound	LTR	0.65	21.7	C	LTR	0.75	25.3	C	LTR	0.85	30.5	C	LTR	0.75	24.1	C
Northbound	LT	1.00	83.6	F	LT	0.91	66.0	E	LT	0.71	31.5	C	LT	0.65	28.8	C
	R	0.46	33.3	C	R	0.52	36.0	D	R	0.28	19.9	B	R	0.45	23.6	C
Southbound	LTR	0.45	32.6	C	LTR	0.40	31.5	C	LTR	0.33	20.4	C	LTR	0.41	21.8	C
	Intersection	36.5 D			Intersection	31.4 C			Intersection	28.2 C			Intersection	23.3 C		
West Kingsbridge Road & Reservoir Avenue/ Aqueduct Avenue																
Eastbound	T	0.52	17.7	B	T	0.56	18.3	B	T	0.54	14.5	B	T	0.46	13.4	B
Westbound	T	0.27	14.1	B	T	0.27	14.1	B	T	0.26	11.2	B	T	0.26	11.2	B
Northbound	LR	0.39	31.2	C	LR	0.38	30.8	C	LR	0.30	23.1	C	LR	0.26	22.5	C
Southbound	L	0.19	27.2	C	L	0.25	28.1	C	L	0.19	21.3	C	L	0.14	20.7	C
	R	0.32	29.8	C	R	0.35	30.3	C	R	0.30	23.2	C	R	0.22	22.0	C
	Intersection	19.5 B			Intersection	20.0+ C			Intersection	15.3 B			Intersection	14.3 B		

Table 8-17 (cont'd)
2018 No Build Conditions Level of Service Analysis

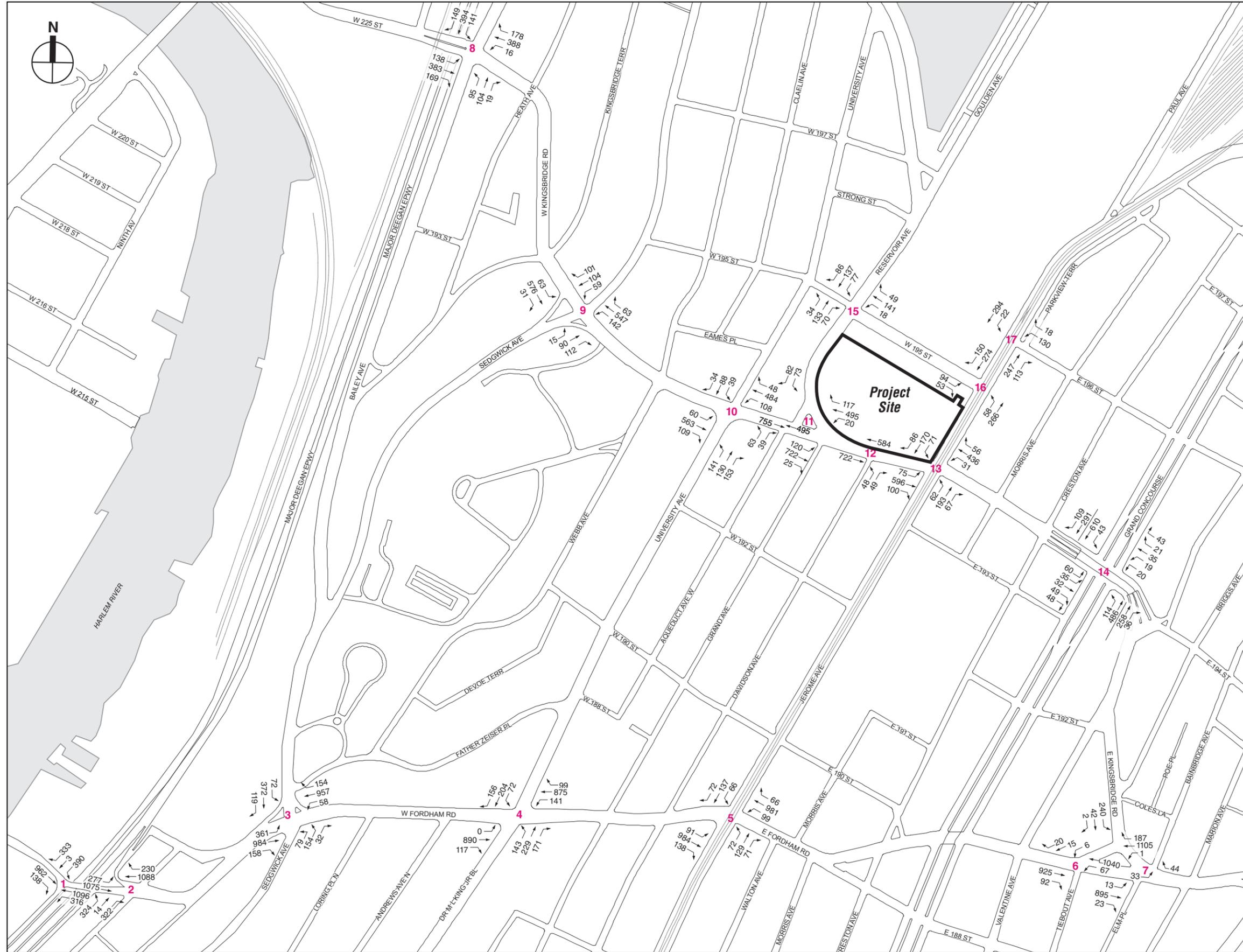
Intersection	Weekday Midday				Weekday PM				Saturday Midday				Saturday PM			
	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS
Signalized Intersections (cont'd)																
West Kingsbridge Road & Davidson Avenue																
Eastbound	T	0.49	17.2	B	T	0.50	17.4	B	T	0.43	13.0	B	T	0.45	13.2	B
Westbound	T	0.41	15.9	B	T	0.35	15.2	B	T	0.37	12.4	B	T	0.38	12.5	B
Northbound	LR	0.30	29.6	C	LR	0.28	29.1	C	LR	0.28	23.1	C	LR	0.29	23.3	C
	Intersection		17.6	B	Intersection		17.4	B	Intersection		13.5	B	Intersection		13.7	B
West Kingsbridge Road & Jerome Avenue																
Eastbound	LTR	0.86	38.6	D	LTR	0.83	35.4	D	LTR	0.76	25.2	C	LTR	0.72	23.9	C
Westbound	LTR	0.64	27.4	C	LTR	0.66	27.8	C	LTR	0.72	24.8	C	LTR	0.51	19.0	B
Northbound	LTR	0.40	23.4	C	LTR	0.34	22.3	C	LTR	0.35	17.9	B	LTR	0.37	18.2	B
Southbound	LTR	0.42	23.9	C	LTR	0.47	24.9	C	LTR	0.40	18.8	B	LTR	0.42	19.1	B
	Intersection		30.4	C	Intersection		29.2	C	Intersection		22.9	C	Intersection		20.7	C
East Kingsbridge Road & Grand Concourse (Main Line)																
Eastbound	LTR	0.56	35.6	D	DefL	0.47	36.2	C	LTR	0.35	25.8	C	DefL	0.29	25.9	C
					TR	0.43	33.2	C					TR	0.26	24.6	C
Westbound	LTR	0.29	29.5	C	LTR	0.29	29.3	C	LTR	0.20	23.5	C	LTR	0.18	23.1	C
Northbound	L	0.72	37.7	D	L	0.78	42.5	D	L	0.49	26.5	C	L	0.48	26.1	C
	T	0.49	17.1	B	T	0.51	17.4	B	T	0.31	18.2	B	T	0.32	18.3	B
Southbound	L	0.12	13.5	B	L	0.28	17.4	B	L	0.16	17.5	B	L	0.15	17.2	B
	T	0.49	17.0	B	T	0.49	17.1	B	T	0.42	19.9	B	T	0.44	20.0+	C
	Intersection		21.7	C	Intersection		22.1	C	Intersection		21.0	C	Intersection		20.8	C
East Kingsbridge Road & Grand Concourse (Service Road)																
Eastbound	LTR	0.56	35.6	D	DefL	0.47	36.2	C	LTR	0.35	25.8	C	DefL	0.29	25.9	C
					TR	0.43	33.2	C					TR	0.26	24.6	C
Westbound	LTR	0.29	29.5	C	LTR	0.29	29.3	C	LTR	0.20	23.5	C	LTR	0.18	23.1	C
Northbound	TR	0.43	17.0	B	TR	0.43	16.8	B	TR	0.38	19.9	B	TR	0.17	16.6	B
Southbound	TR	0.66	22.6	C	TR	0.72	24.9	C	TR	0.65	26.4	C	TR	0.61	25.1	C
	Intersection		24.8	C	Intersection		25.3	C	Intersection		24.2	C	Intersection		22.7	C
West 195th Street & Reservoir Avenue																
Westbound	LTR	0.83	44.7	D	LTR	0.75	37.6	D	LTR	0.46	26.2	C	LTR	0.49	26.8	C
Northbound	LTR	0.33	12.3	B	LTR	0.26	11.6	B	LTR	0.20	11.0	B	LTR	0.20	11.0	B
Southbound	LTR	0.48	14.5	B	LTR	0.48	14.3	B	LTR	0.35	12.5	B	LTR	0.29	11.9	B
	Intersection		22.5	C	Intersection		20.0+	C	Intersection		15.4	B	Intersection		15.8	B
West 195th Street & Jerome Avenue																
Eastbound	L	0.25	30.8	C	L	0.19	29.9	C	L	0.12	20.6	C	L	0.16	21.0	C
	R	0.23	31.0	C	R	0.15	29.4	C	R	0.12	20.7	C	R	0.12	20.7	C
Northbound	LT	0.29	12.6	B	LT	0.36	13.6	B	LT	0.26	11.3	B	LT	0.25	11.2	B
Southbound	TR	0.51	15.8	B	TR	0.35	13.3	B	TR	0.32	11.9	B	TR	0.28	11.5	B
	Intersection		17.6	B	Intersection		16.1	B	Intersection		13.0	B	Intersection		13.0	B
West 196th Street & Jerome Avenue																
Westbound	LR	0.38	31.1	C	LR	0.31	29.4	C	LR	0.27	22.8	C	LR	0.36	24.2	C
Northbound	TR	0.30	14.5	B	TR	0.28	14.3	B	TR	0.24	11.1	B	TR	0.26	11.3	B
Southbound	LT	0.36	15.3	B	LT	0.30	14.6	B	LT	0.26	11.3	B	LT	0.25	11.2	B
	Intersection		17.3	B	Intersection		16.5	B	Intersection		12.8	B	Intersection		13.5	B
Unsignalized Intersections																
West Kingsbridge Road & Reservoir Avenue/ Grand Avenue																
Eastbound	LT	1.04	124.5	F	LT	0.78	50.0	E	LT	0.33	14.5	B	LT	0.39	23.4	C
Westbound	LT	0.26	25.1	D	LT	0.20	25.5	D	LT	0.21	28.8	D	LT	0.06	16.7	C
Notes:																
EB = Eastbound; WB = Westbound; NB = Northbound; SB = Southbound; INT = Intersection.																
L = Left-Turn; T = Through; R = Right-Turn.																
V/C = Volume to Capacity; SPV = Seconds per Vehicle; LOS = Level of Service.																



No Build Traffic Volumes
 Weekday Midday Peak Hour
 Figure 8-8



No Build Traffic Volumes
 Weekday PM Peak Hour
 Figure 8-9



Kingsbridge Armory National Ice Center

West Fordham Road and Major Deegan Expressway (I-87) Northbound Ramp

- The eastbound left-turn movement would degrade from acceptable LOS D to beyond mid-LOS D in the weekday PM peak hour and from acceptable LOS D to LOS E in the Saturday PM peak hour.

Sedgwick Avenue and West Fordham Road

- The eastbound left-turn movement would degrade from beyond mid-LOS D to LOS F in the weekday midday peak hour, and from acceptable LOS D to LOS E in the weekday PM and Saturday midday peak hours.
- The westbound left-through movement would degrade from acceptable LOS D to beyond mid-LOS D in the weekday midday and PM peak hours, and from acceptable LOS D to LOS E in the Saturday PM peak hour.
- The northbound left-turn movement would degrade from mid-LOS D to LOS E in the weekday midday peak hour.

Dr. MLK Jr. Boulevard/University Avenue and West Fordham Road

- The eastbound approach would degrade from beyond mid-LOS D to LOS E in the Saturday midday peak hour.
- The eastbound right-turn movement would degrade from beyond mid-LOS D to LOS E in the weekday midday peak hour.
- The westbound left-turn movement would degrade from acceptable LOS D to beyond mid-LOS D in the Saturday PM peak hour.

Jerome Avenue and West Fordham Road

- The eastbound approach would degrade from acceptable LOS D to LOS E in the Saturday midday and PM peak hours.
- The northbound approach would degrade from LOS E to LOS F in the weekday PM peak hour.

East Fordham Road and Elm Place/Bainbridge Avenue/East Kingsbridge Road

- The southbound approach would degrade from acceptable LOS D to beyond mid-LOS D in the Saturday PM peak hour.

Bailey Avenue and West Kingsbridge Road

- The northbound left-turn movement would degrade from acceptable LOS D to beyond mid-LOS D in the Saturday midday peak hour.

University Avenue and West Kingsbridge Road

- The northbound left-through movement would degrade from LOS E to LOS F during the weekday midday peak hour.

2018 BUILD TRAFFIC CONDITIONS

Overall, the proposed project is forecast to generate a total of 292 vehicles per hour (vph) (253 in and 39 out) during the weekday midday peak hour, 761 vph (600 in and 161 out) during the weekday PM peak hour, 765 vph (748 in and 17 out) during the Saturday midday peak hour, and 862 vph (252 in and 610 out) during the Saturday PM peak hour. Overall traffic distribution and specific traffic assignments (percentages of inbound and outbound trips) for typical daily

activities, the peak event condition, and the community facility/employee components are discussed as follows:

TRIP DISTRIBUTION AND ASSIGNMENT

Typical Daily Activities

Typical daily activities at the proposed project would draw patrons from the neighborhood as well as from a broader area including Manhattan, Queens and area north of the project site including Northern New Jersey and Westchester. In addition to the neighborhood users, several schools and colleges in the area are expected to field their teams at the proposed facility. A list of these potential institutions is presented in **Table 8-18**.

Table 8-18
List of Potential Institutions Fielding Teams at the Proposed KNIC Facility

Colleges	Primary and Secondary Schools	
Fordham University	Allen-Stevenson School	Friends Seminary K-12
Columbia University	Regis High School	Horace Mann School N-12
New York University	St. Bernard's School	Loyola School 9-12
Maritime College	Saint David's School	Packer Collegiate Institute
Manhattan College	Brearley School	Riverdale Country School
Hunter College	Chapin School	Trevor Day School N-12
Baruch College	Spence School	Trinity School K-12
City College	Claremont Preparatory School	Fordham Prep
Barnard College	Columbia Grammar	Stepinac H.S.
	Dalton School K-12	St. Raymond H.S.
	Dwight School N-12	Xavier H.S.
	Ethical Culture Fieldston School	

Given the geographic draw of patrons for the typical daily activities, the traffic will use the major roadways in the study area to access the project site. Specifically, the traffic assignments assume that 24 percent of the traffic would use Fordham Road/West 207th Street, 10 percent would use Jerome Avenue, 15 percent would use the Grand Concourse, 10 percent would use University Avenue, 10 percent would arrive via the Major Deegan Expressway, 17 percent would use Reservoir Avenue, 7 percent would use West 225th Street/West Kingsbridge Road, and the remaining 7 percent would travel along local roadways such as Sedgwick Avenue and East 196th Street. Reverse trips are expected to return along the same general routes on which they arrived.

Community Facility Use

The proposed community facility component would primarily draw patrons from the broader neighborhood. In terms of trip distribution, the traffic volumes generated by the community facility component are expected to follow the same general trip distribution patterns identified for the typical daily activities.

Peak Event Condition

Unlike the typical daily activities, the peak event would draw patrons from a broader area primarily from the tri-state area as well as from the mid-Atlantic states and the New England region. The traffic distribution patterns for the peak event conditions were developed based on the discussions with and information provided by the facility operator and by reviewing the

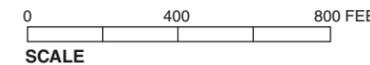
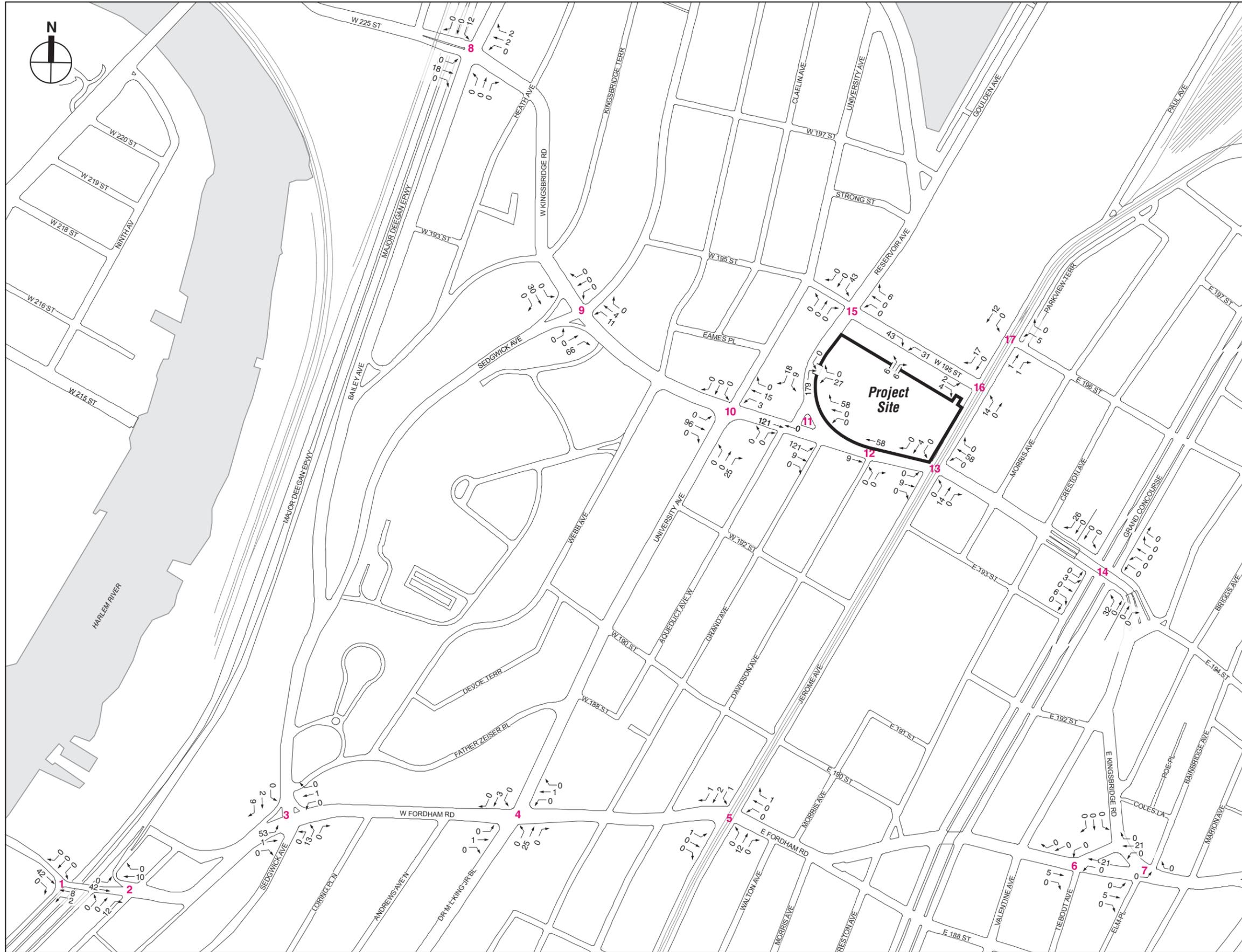
information used in developing assignment patterns for the other major sporting event facilities in the area, such as the Yankee Stadium.

For the peak event conditions, the traffic assignments assume that 10 percent of the traffic would use Fordham Road/West 207th Street, 7 percent would use Jerome Avenue, 15 percent would use the Grand Concourse, 5 percent would use University Avenue, 51 percent would arrive via the Major Deegan Expressway (northbound and southbound), 8 percent would use West 225th Street/West Kingsbridge Road, and the remaining 4 percent would use Reservoir Avenue. Reverse trips are expected to return along the same general routes on which they arrived. The project generated peak hour incremental traffic volumes are shown in **Figures 8-12 to 8-15** for the weekday midday and PM, and Saturday midday and PM peak hours, respectively.

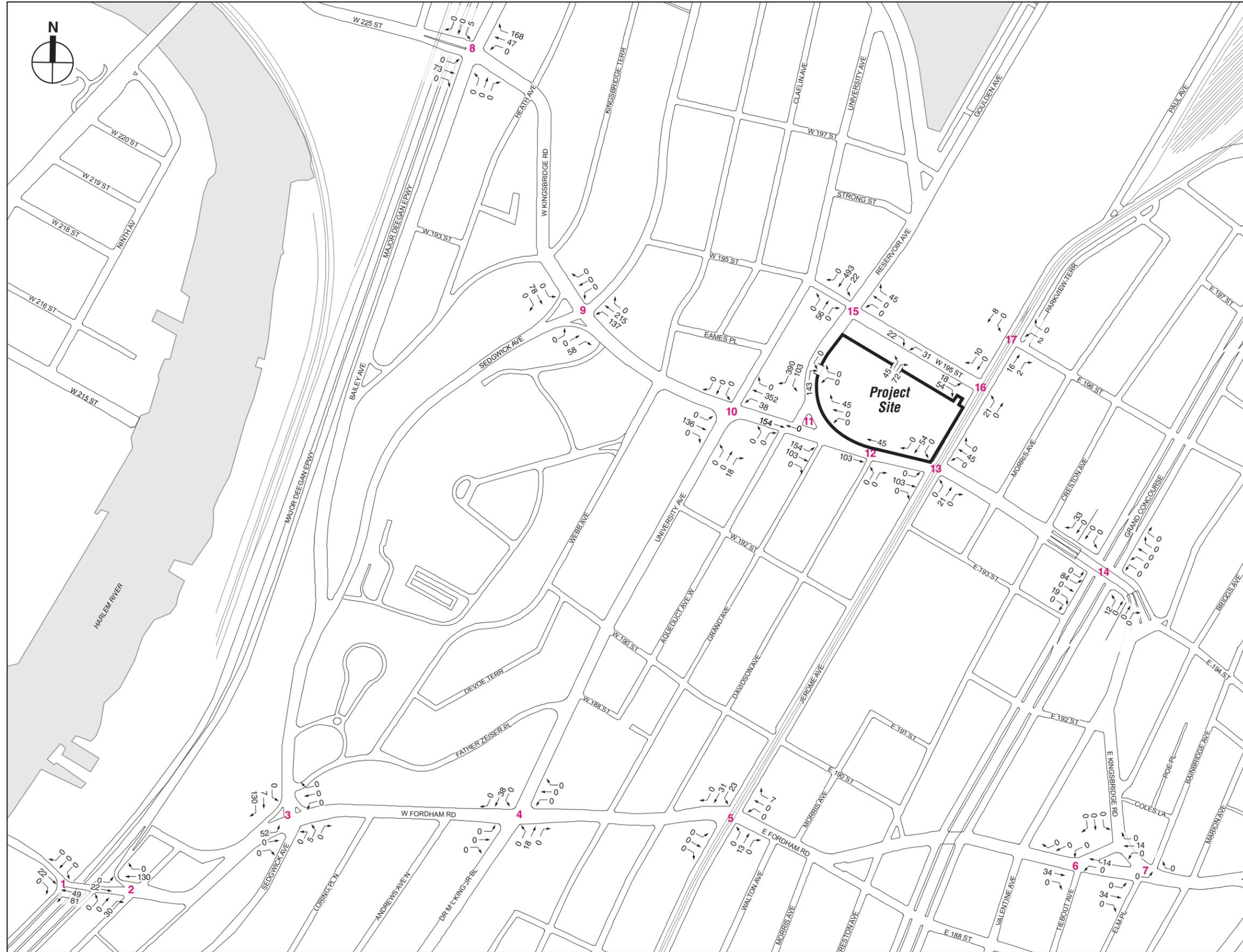
TRAFFIC OPERATIONS

The 2018 Build peak hour traffic volumes are shown in **Figures 8-16 to 8-19** for the weekday midday and PM, and Saturday midday and PM peak hours, respectively. The Build traffic volumes were constructed by layering on top of the No Build volumes the project-generated trips shown in **Figures 8-12 to 8-15**. **Table 8-19** presents an overall comparison of traffic levels of service for the No Build and Build conditions.

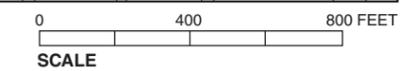
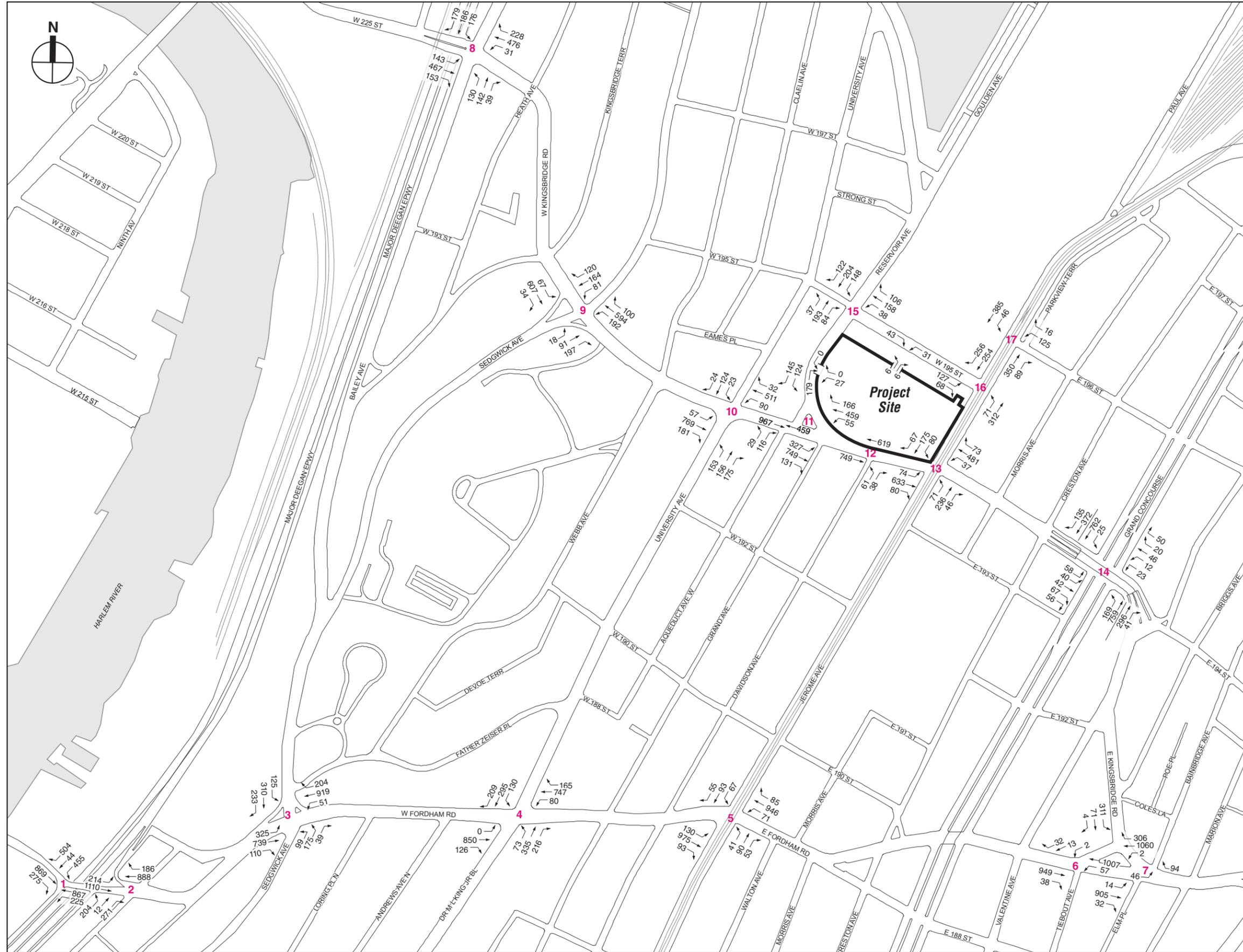
Based on the criteria presented in the *CEQR Technical Manual* and discussed previously in Section E, “Transportation Analysis Methodologies,” significant adverse traffic impacts were identified, and are denoted by a “+” symbol in **Table 8-19**. The following section summarizes the identified significant adverse impacts.



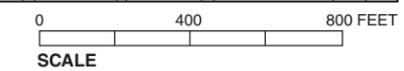
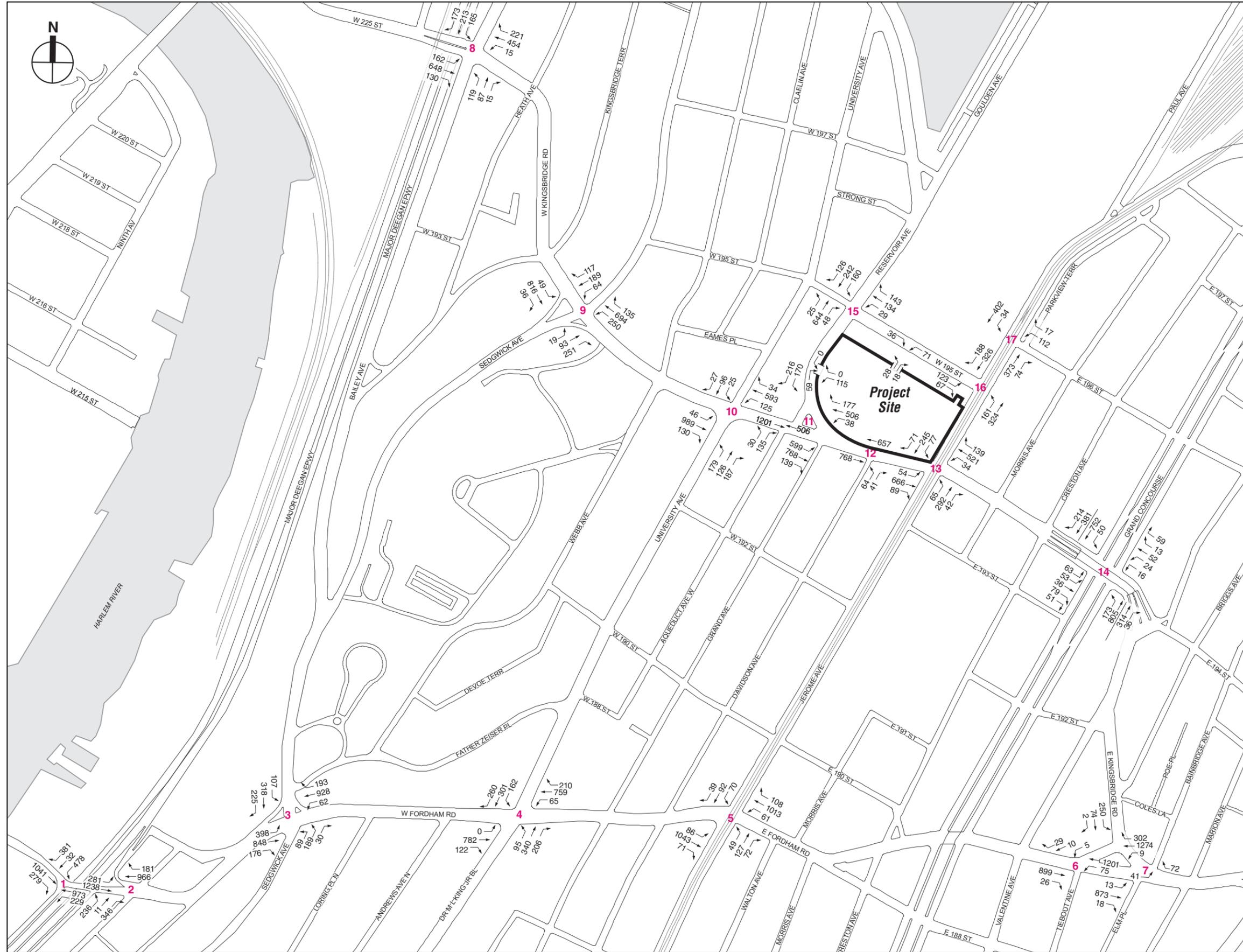
Project Generated Traffic Volumes
Weekday Midday Peak Hour
Figure 8-12



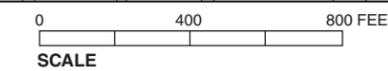
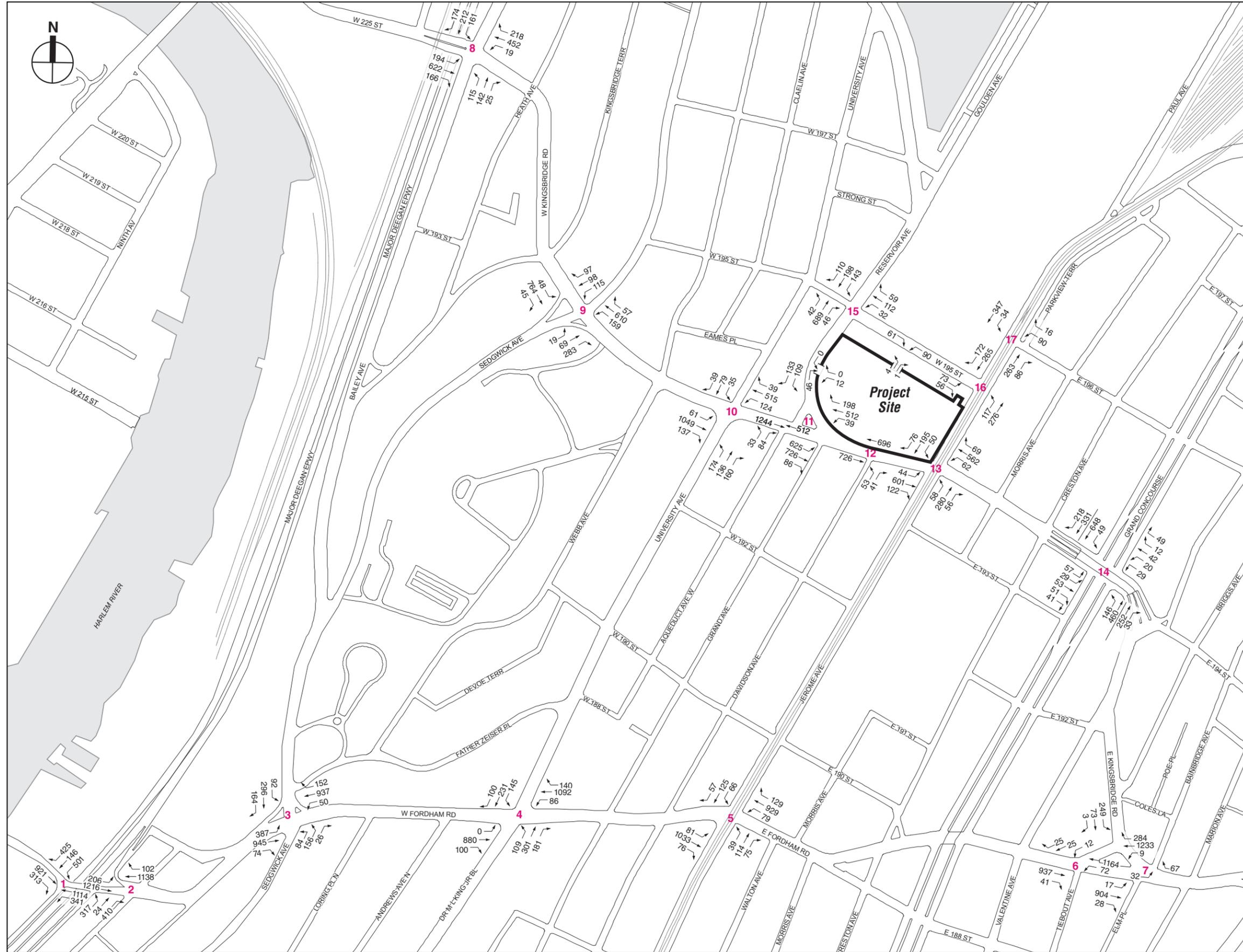
Project Generated Traffic Volumes
Saturday PM Peak Hour
Figure 8-15



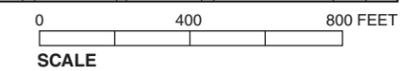
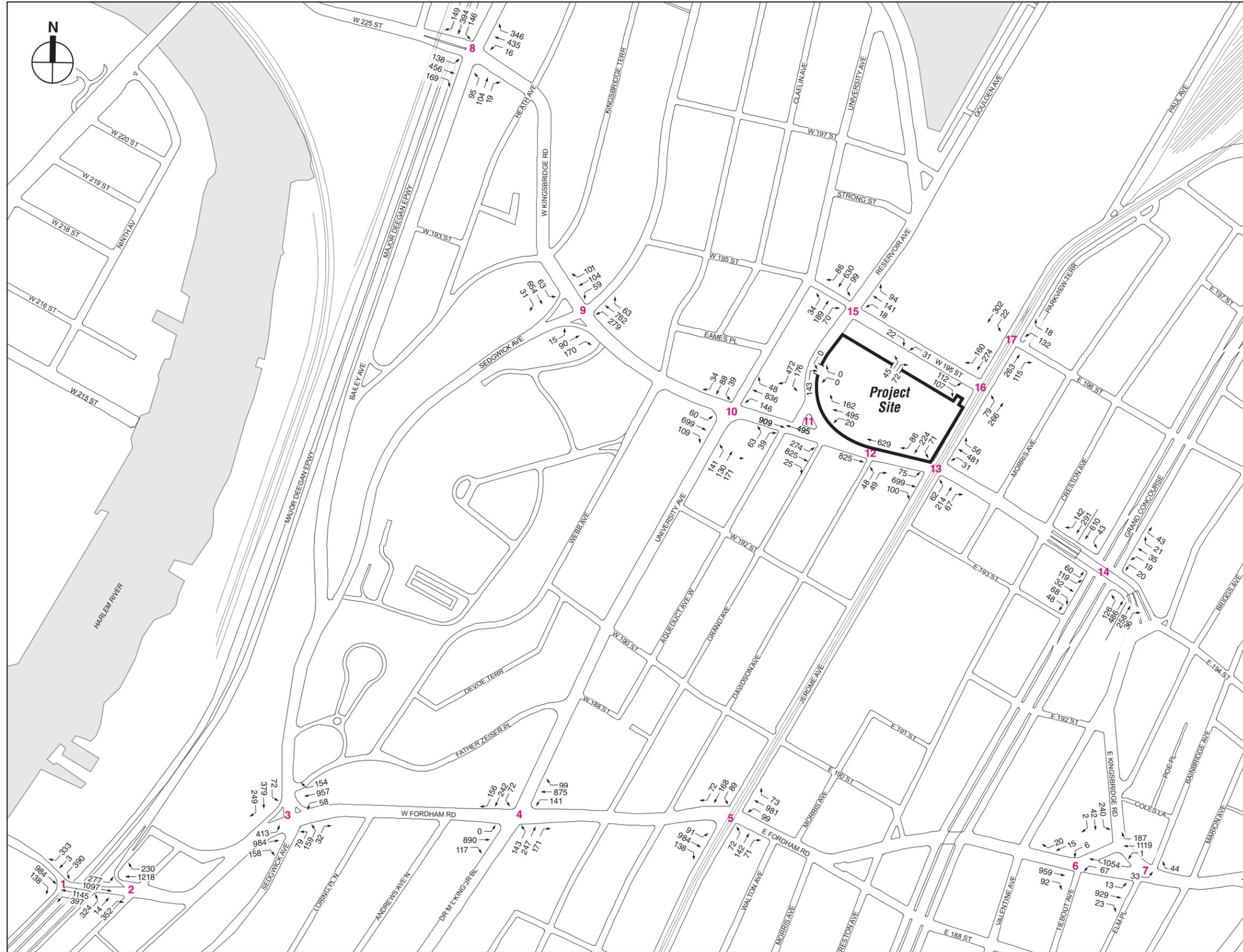
Build Traffic Volumes
 Weekday Midday Peak Hour
 Figure 8-16



Build Traffic Volumes
Weekday PM Peak Hour
Figure 8-17



Build Traffic Volumes
Saturday Midday Peak Hour
Figure 8-18



Build Traffic Volumes
Saturday PM Peak Hour
Figure 8-19

Table 8-19
2018 No Build and Build Conditions Level of Service Analysis

Intersection	Weekday Midday								Weekday PM								Saturday Midday								Saturday PM								
	2018 No Build				2018 Build				2018 No Build				2018 Build				2018 No Build				2018 Build				2018 No Build				2018 Build				
	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	
Signalized Intersections																																	
West Fordham Road & Major Deegan SB Off-Ramp																																	
Eastbound	T	0.59	27.5	C	T	0.62	28.2	C	T	0.76	32.3	C	T	0.79	33.5	C	T	0.71	33.9	C	T	0.76	35.8	D	T	0.78	36.5	D	T	0.80	37.3	D	
	R	0.39	25.2	C	R	0.39	25.2	C	R	0.47	27.3	C	R	0.47	27.3	C	R	0.70	40.9	D	R	0.70	40.9	D	R	0.13	24.0	C	R	0.13	24.0	C	
Westbound	L	0.44	25.4	C	L	0.45	27.3	C	L	0.48	33.9	C	L	0.50	35.9	D	L	0.66	36.3	D	L	0.68	38.7	D	L	0.64	37.3	D	L	0.81	47.3	D+	
	T	0.37	8.5	A	T	0.37	8.5	A	T	0.39	8.6	A	T	0.40	8.7	A	T	0.47	9.4	A	T	0.47	9.5	A	T	0.47	9.5	A	T	0.49	9.7	A	
Southbound	LTR	1.06	96.8	F	LTR	1.06	96.8	F	LTR	1.07	98.8	F	LTR	1.07	98.8	F	LTR	1.09	105.3	F	LTR	1.09	105.3	F	LTR	0.90	61.1	E	LTR	0.90	61.1	E	
	Intersection	40.4	D	Intersection	40.4	D	Intersection	41.3	D	Intersection	41.5	D	Intersection	43.7	D	Intersection	44.2	D	Intersection	44.2	D	Intersection	44.2	D	Intersection	31.3	C	Intersection	31.3	C	Intersection	32.8	C
West Fordham Road & Major Deegan NB On-Ramp																																	
Eastbound	L	0.63	21.1	C	L	0.64	21.5	C	L	0.92	46.8	D	L	0.94	53.3	D+	L	0.78	33.7	C	L	0.78	34.1	C	L	0.96	62.6	E	L	1.06	97.3	F+	
	T	0.48	13.7	B	T	0.50	14.0	B	T	0.56	15.0	B	T	0.58	15.4	B	T	0.56	14.9	B	T	0.59	15.4	B	T	0.48	13.7	B	T	0.49	13.9	B	
Westbound	T	0.45	22.2	C	T	0.45	22.3	C	T	0.45	22.3	C	T	0.47	22.5	C	T	0.53	23.6	C	T	0.53	23.6	C	T	0.52	23.3	C	T	0.58	24.4	C	
Northbound	LT	0.52	38.4	D	LT	0.52	38.4	D	LT	0.65	42.7	D	LT	0.65	42.7	D	LT	0.80	51.7	D	LT	0.80	51.7	D	LT	0.76	48.3	D	LT	0.76	48.3	D	
	R	0.70	46.3	D	R	0.73	48.2	D	R	0.77	50.2	D	R	1.02	90.8	F+	R	0.84	57.1	E	R	1.10	113.5	F+	R	0.82	54.8	D	R	0.89	63.9	E+	
	Intersection	22.6	C	Intersection	22.9	C	Intersection	26.4	C	Intersection	32.9	C	Intersection	32.9	C	Intersection	27.6	C	Intersection	35.6	D	Intersection	35.6	D	Intersection	29.5	C	Intersection	33.7	C	Intersection	33.7	C
West Fordham Road & Sedgwick Avenue																																	
Eastbound	L	1.00	83.6	F	L	1.20	148.1	F+	L	0.98	77.8	E	L	1.44	248.4	F+	L	0.94	67.8	E	L	1.58	307.7	F+	L	1.04	89.7	F	L	1.19	141.2	F+	
	TR	0.54	14.9	B	TR	0.54	15.0	B	TR	0.67	17.7	B	TR	0.67	17.7	B	TR	0.64	19.4	B	TR	0.64	19.4	B	TR	0.76	22.9	C	TR	0.76	22.9	C	
Westbound	LT	0.93	45.8	D	LT	0.93	46.0	D	LT	0.96	52.5	D	LT	0.89	42.3	D	LT	0.89	42.3	D	LT	0.89	42.3	D	LT	0.97	55.3	E	LT	0.97	55.3	E	
	R	0.38	25.0	C	R	0.38	25.0	C	R	0.36	24.5	C	R	0.36	24.5	C	R	0.27	23.5	C	R	0.27	23.5	C	R	0.28	23.6	C	R	0.28	23.6	C	
Northbound	DefL	0.67	55.1	E	DefL	0.68	55.5	E	LTR	0.58	39.1	D	LTR	0.59	39.4	D	DefL	0.40	34.4	C	LTR	0.46	32.5	C	LTR	0.45	32.3	C	LTR	0.46	32.5	C	
	TR	0.57	40.3	D	TR	0.60	41.5	D									TR	0.39	31.8	C													
Southbound	LT	0.68	41.5	D	LT	0.69	41.9	D	LT	0.63	39.8	D	LT	0.64	40.1	D	LT	0.50	32.6	C	LT	0.54	33.7	C	LT	0.58	34.6	C	LT	0.59	34.9	C	
	Intersection	38.5	D	Intersection	46.2	D	Intersection	38.8	D	Intersection	61.1	E	Intersection	33.5	C	Intersection	63.9	E	Intersection	41.8	D	Intersection	41.8	D	Intersection	41.8	D	Intersection	48.8	D	Intersection	48.8	D
West Fordham Road & Dr. MLK Jr Boulevard/University Avenue																																	
Eastbound	T	0.76	37.8	D	T	0.76	37.8	D	T	0.72	36.3	D	T	0.72	36.3	D	TR	0.99	62.3	E	TR	0.99	62.3	E	TR	1.02	71.1	E	TR	1.02	71.1	E	
	R	0.74	56.3	E	R	0.74	56.3	E	R	0.67	47.4	D	R	0.67	47.4	D																	
Westbound	L	0.41	25.8	C	L	0.41	25.8	C	L	0.29	22.4	C	L	0.29	22.4	C	L	0.44	29.0	C	L	0.44	29.0	C	L	0.74	48.5	D	L	0.74	48.5	D	
	T	0.52	21.0	C	T	0.52	21.0	C	T	0.48	20.3	C	T	0.48	20.3	C	TR	0.90	35.6	D	TR	0.90	35.6	D	TR	0.74	26.6	C	TR	0.74	26.6	C	
	R	0.57	27.5	C	R	0.57	27.5	C	R	0.69	33.8	C	R	0.69	33.8	C																	
Northbound	L	0.44	37.2	D	L	0.44	37.5	D	L	0.48	38.4	D	L	0.51	39.9	D	L	0.43	34.9	C	L	0.44	35.1	D	L	0.63	44.1	D	L	0.70	50.2	D+	
	T	0.58	35.8	D	T	0.63	37.3	D	T	0.52	34.1	C	T	0.58	35.7	D	T	0.42	31.8	C	T	0.50	33.6	C	T	0.38	31.0	C	T	0.42	31.7	C	
	R	0.74	48.5	D	R	0.74	48.5	D	R	0.66	43.1	D	R	0.66	43.1	D	R	0.53	36.6	D	R	0.53	36.6	D	R	0.51	35.9	D	R	0.51	35.9	D	
Southbound	L	0.84	71.0	E	L	0.91	88.1	F+	L	0.89	77.1	E	L	0.98	102.0	F+	L	0.69	49.1	D	L	0.78	59.9	E+	L	0.35	32.9	C	L	0.37	33.6	C	
	T	0.53	34.2	C	T	0.53	34.3	C	T	0.47	32.8	C	T	0.50	33.4	C	T	0.40	31.2	C	T	0.40	31.3	C	T	0.37	30.8	C	T	0.44	32.2	C	
	R	0.66	42.2	D	R	0.66	42.2	D	R	0.75	47.4	D	R	0.75	47.4	D	R	0.25	29.0	C	R	0.25	29.0	C	R	0.51	35.7	D	R	0.51	35.7	D	
	Intersection	35.6	D	Intersection	36.5	D	Intersection	35.5	D	Intersection	36.9	D	Intersection	43.3	D	Intersection	43.8	D	Intersection	43.8	D	Intersection	43.8	D	Intersection	44.7	D	Intersection	44.9	D	Intersection	44.9	D
West Fordham Road & Jerome Avenue																																	
Eastbound	LT	0.98	40.9	D	LT	0.99	41.5	D	LT	0.90	26.0	C	LT	0.90	26.0	C	LTR	1.07	71.5	E	LTR	1.07	71.5	E	LTR	1.06	67.3	E	LTR	1.06	67.3	E	
	R	0.17	7.8	A	R	0.17	7.8	A	R	0.14	7.5	A	R	0.14	7.5	A																	
Westbound	LT	0.80	18.3	B	LT	0.80	18.3	B	LT	0.74	15.6	B	LT	0.74	15.6	B	LT	0.87	27.8	C	LT	0.87	27.8	C	LT	0.94	37.3	D	LT	0.94	37.3	D	
	R	0.16	7.7	A	R	0.16	7.7	A	R	0.15	7.5	A	R	0.19	8.0	A	R	0.22	11.6	B	R	0.27	12.3	B	R	0.12	10.4	B	R	0.13	10.5	B	
Northbound	LTR	0.77	61.6	E	LTR	0.81	65.1	F	LTR	0.93	82.8	F	LTR	1.01	102.1	F+	LTR	0.55	40.4	D	LTR	0.61	42.5	D	LTR	0.89	67.8	E	LTR	0.94	76.7	E+	
Southbound	LTR	0.97	95.8	F	LTR	1.01	105.9	F+	LTR	1.05	118.0	F	LTR	1.14	149.4	F+	LTR	0.87	63.3	E	LTR	0.90	68.8	E+	LTR	1.01	93.4	F	LTR	1.29	192.9	F+	
	Intersection	35.8	D	Intersection	37.3	D	Intersection	32.8	C	Intersection	37.6	D	Intersection	50.9	D	Intersection	51.1	D	Intersection	51.1	D	Intersection	51.1	D	Intersection	58.0	E	Intersection	72.5	E	Intersection	72.5	E

Kingsbridge Armory National Ice Center

Table 8-19 (cont'd)
2018 No Build and Build Conditions Level of Service Analysis

Intersection	Weekday Midday								Weekday PM								Saturday Midday								Saturday PM							
	2018 No Build				2018 Build				2018 No Build				2018 Build				2018 No Build				2018 Build				2018 No Build				2018 Build			
	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS
Signalized Intersections (cont'd)																																
East Fordham Road & East Kingsbridge Road/ Tiebout Avenue																																
Eastbound	T	0.55	10.3	B	T	0.55	10.3	B	T	0.51	9.7	A	T	0.51	9.8	A	TR	0.56	10.5	B	TR	0.56	10.5	B	TR	0.61	11.4	B	TR	0.63	11.7	B
	R	0.15	7.4	A	R	0.15	7.4	A	R	0.10	6.8	A	R	0.10	6.8	A																
Westbound	LT	0.69	13.4	B	LT	0.70	13.7	B	LT	0.81	17.5	B	LT	0.83	18.6	B	LT	0.80	17.5	B	LT	0.83	18.7	B	LT	0.76	15.7	B	LT	0.78	16.5	B
Southbound	LTR	0.24	40.3	D	LTR	0.24	40.3	D	LTR	0.23	40.2	D	LTR	0.23	40.2	D	LTR	0.30	41.7	D	LTR	0.30	41.7	D	LTR	0.20	39.5	D	LTR	0.20	39.5	D
	Intersection	12.5	B	Intersection	12.7	B	Intersection	14.7	B	Intersection	15.3	B	Intersection	15.0	B	Intersection	15.7	B	Intersection	15.0	B	Intersection	15.7	B	Intersection	14.1	B	Intersection	14.6	B		
East Fordam Road & East Kingsbridge Road/ Elm Place/ Bainbridge Avenue																																
Eastbound	LT	0.71	15.3	B	LT	0.72	15.6	B	LT	0.70	15.1	B	LT	0.72	15.7	B	LTR	0.76	16.8	B	LTR	0.77	17.4	B	LTR	0.76	16.8	B	LTR	0.79	17.9	B
	R	0.13	7.9	A	R	0.13	7.9	A	R	0.07	7.2	A	R	0.07	7.2	A																
Westbound	LT	0.61	12.3	B	LT	0.62	12.5	B	LT	0.68	13.7	B	LT	0.70	14.2	B	LT	0.64	12.8	B	LT	0.66	13.3	B	LT	0.62	12.4	B	LT	0.63	12.5	B
	R	0.56	14.8	B	R	0.56	14.8	B	R	0.48	13.1	B	R	0.48	13.1	B	R	0.44	12.4	B	R	0.44	12.4	B	R	0.31	10.5	B	R	0.31	10.5	B
Southbound	LTR	0.69	49.8	D	LTR	0.69	49.8	D	LTR	0.58	46.3	D	LTR	0.58	46.3	D	LTR	0.58	46.3	D	LTR	0.58	46.3	D	LTR	0.54	45.1	D	LTR	0.54	45.1	D
	Intersection	18.6	B	Intersection	18.8	B	Intersection	17.6	B	Intersection	17.9	B	Intersection	18.0	B	Intersection	18.3	B	Intersection	18.0	B	Intersection	18.3	B	Intersection	17.5	B	Intersection	17.9	B		
West Kingsbridge Road & Bailey Avenue																																
Eastbound	L	0.63	29.3	C	L	0.63	29.5	C	L	0.61	27.6	C	L	0.63	28.9	C	L	0.72	28.9	C	L	0.72	29.1	C	L	0.49	18.0	B	L	0.71	32.0	C
	TR	0.36	15.7	B	TR	0.37	15.8	B	TR	0.32	15.2	B	TR	0.44	16.8	B	TR	0.35	12.1	B	TR	0.48	13.4	B	TR	0.35	12.0	B	TR	0.39	12.4	B
Westbound	L	0.12	13.9	B	L	0.13	14.0	B	L	0.05	12.8	B	L	0.07	13.2	B	L	0.06	10.0+	B	L	0.09	10.6	B	L	0.06	10.0-	A	L	0.06	10.1	B
	TR	0.55	18.8	B	TR	0.55	18.9	B	TR	0.47	17.5	B	TR	0.49	17.8	B	TR	0.46	13.5	B	TR	0.46	13.5	B	TR	0.44	13.1	B	TR	0.63	16.3	B
Northbound	DefL	0.79	59.7	E	DefL	0.81	62.9	E	DefL	0.77	59.3	E	DefL	0.78	60.6	E	DefL	0.71	45.7	D	DefL	0.73	48.0	D	DefL	0.84	68.9	E	DefL	0.85	71.4	E
	TR	0.40	30.4	C	TR	0.40	30.4	C	TR	0.21	27.0	C	TR	0.21	27.0	C	TR	0.36	23.9	C	TR	0.36	23.9	C	TR	0.29	22.8	C	TR	0.29	22.8	C
Southbound	LTR	0.71	37.8	D	LTR	0.73	38.7	D	LTR	0.76	39.8	D	LTR	0.77	40.2	D	LTR	0.76	32.7	C	LTR	0.78	33.9	C	LTR	0.86	38.4	D	LTR	0.87	39.1	D
	Intersection	26.1	C	Intersection	26.5	C	Intersection	26.4	C	Intersection	26.1	C	Intersection	21.6	C	Intersection	21.5	C	Intersection	21.6	C	Intersection	21.5	C	Intersection	23.8	C	Intersection	24.7	C		
West Kingsbridge Road & Sedgwick Avenue																																
Eastbound	L	0.27	16.1	B	L	0.27	16.2	B	L	0.27	16.9	B	L	0.28	17.3	B	L	0.17	11.6	B	L	0.17	11.6	B	L	0.22	12.3	B	L	0.32	15.2	B
	T	0.38	15.4	B	T	0.39	15.7	B	T	0.38	15.5	B	T	0.53	17.8	B	T	0.32	11.7	B	T	0.47	13.4	B	T	0.34	12.0	B	T	0.39	12.5	B
Westbound	L	0.65	28.8	C	L	0.72	34.1	C	L	0.81	41.3	D	L	1.42	241.5	F+	L	0.47	16.9	B	L	0.70	30.5	C	L	0.49	17.7	B	L	1.08	93.5	F+
	TR	0.50	17.4	B	TR	0.50	17.4	B	TR	0.63	20.1	C	TR	0.64	20.4	C	TR	0.46	13.5	B	TR	0.47	13.5	B	TR	0.46	13.4	B	TR	0.61	15.8	B
Northbound	LT	0.13	26.2	C	LT	0.13	26.2	C	LT	0.13	26.2	C	LT	0.11	20.4	C	LT	0.11	20.4	C	LT	0.11	20.4	C	LT	0.12	20.5	C	LT	0.12	20.5	C
Southbound	LTR	0.92	61.5	E	LTR	0.92	61.5	E	LTR	0.93	62.9	E	LTR	0.93	62.9	E	LTR	0.73	35.9	D	LTR	0.73	35.9	D	LTR	0.61	30.1	C	LTR	0.61	30.1	C
	Intersection	27.1	C	Intersection	27.4	C	Intersection	28.9	C	Intersection	49.1	D	Intersection	17.4	B	Intersection	18.4	B	Intersection	17.4	B	Intersection	18.4	B	Intersection	16.2	B	Intersection	27.1	C		
West Kingsbridge Road & University Avenue																																
Eastbound	LTR	0.85	29.9	C	LTR	0.93	37.6	D	LTR	0.71	22.7	C	LTR	0.97	43.1	D	LTR	0.84	27.8	C	LTR	1.16	103.9	F+	LTR	0.68	20.9	C	LTR	0.94	38.9	D
Westbound	LTR	0.65	21.7	C	LTR	0.70	23.6	C	LTR	0.75	25.3	C	DefL	1.23	184.3	F+	LTR	0.85	30.5	C	DefL	1.70	385.5	F+	LTR	0.75	24.1	C	LTR	1.28	159.3	F+
													TR	0.86	33.4	C																
Northbound	LT	1.00	83.6	F	LT	1.00	83.6	F	LT	0.91	66.0	E	LT	0.91	66.0	E	LT	0.71	31.5	C	LT	0.71	31.5	C	LT	0.65	28.8	C	LT	0.65	28.8	C
	R	0.46	33.3	C	R	0.54	35.7	D	R	0.52	36.0	D	R	0.63	40.9	D	R	0.28	19.9	B	R	0.40	22.1	C	R	0.45	23.6	C	R	0.51	25.0	C
Southbound	LTR	0.45	32.6	C	LTR	0.45	32.6	C	LTR	0.40	31.5	C	LTR	0.40	31.5	C	LTR	0.33	20.4	C	LTR	0.33	20.4	C	LTR	0.41	21.8	C	LTR	0.41	21.8	C
	Intersection	36.5	D	Intersection	40.2	D	Intersection	31.4	C	Intersection	49.4	D	Intersection	28.2	C	Intersection	82.8	F	Intersection	28.2	C	Intersection	82.8	F	Intersection	23.3	C	Intersection	85.3	F		
West Kingsbridge Road & Reservoir Avenue/ Aqueduct Avenue																																
Eastbound	T	0.52	17.7	B	T	0.60	19.1	B	T	0.56	18.3	B	T	0.83	26.6	C	T	0.54	14.5	B	T	0.86	23.8	C	T	0.46	13.4	B	T	0.55	14.7	B
Westbound	T	0.27	14.1	B	T	0.27	14.1	B	T	0.27	14.1	B	T	0.27	14.1	B	T	0.26	11.2	B	T	0.26	11.2	B	T	0.26	11.2	B	T	0.26	11.2	B
Northbound	LR	0.39	31.2	C	LR	0.39	31.2	C	LR	0.38	30.8	C	LR	0.38	30.9	C	LR	0.30	23.1	C	LR	0.30	23.2	C	LR	0.26	22.5	C	LR	0.26	22.6	C
Southbound	L	0.19	27.2	C	L	0.21	27.5	C	L	0.25	28.1	C	L	0.32	29.2	C	L	0.19	21.3	C	L	0.19	21.4	C	L	0.14	20.7	C	L	0.33	23.1	C
	R	0.32	29.8	C	R	0.37	31.0	C	R	0.35	30.3	C	R	0.57	35.9	D	R	0.30	23.2	C	R	0.33	23.8	C	R	0.22	22.0	C	R	1.33	191.1	F+
	Intersection	19.5	B	Intersection	20.3	C	Intersection	20.0+	C	Intersection	25.3	C	Intersection	15.3	B	Intersection	20.8	C	Intersection	15.3	B	Intersection	20.8	C	Intersection	14.3	B	Intersection	58.1	E		

Table 8-19 (cont'd)
2018 No Build and Build Conditions Level of Service Analysis

Intersection	Weekday Midday								Weekday PM								Saturday Midday								Saturday PM							
	2018 No Build				2018 Build				2018 No Build				2018 Build				2018 No Build				2018 Build				2018 No Build				2018 Build			
	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS
Signalized Intersections (cont'd)																																
West Kingsbridge Road & Davidson Avenue																																
Eastbound	T	0.49	17.2	B	T	0.50	17.3	B	T	0.50	17.4	B	T	0.53	17.8	B	T	0.43	13.0	B	T	0.43	13.0	B	T	0.45	13.2	B	T	0.52	14.1	B
Westbound	T	0.41	15.9	B	T	0.45	16.5	B	T	0.35	15.2	B	T	0.41	16.0	B	T	0.37	12.4	B	T	0.46	13.4	B	T	0.38	12.5	B	T	0.41	12.8	B
Northbound	LR	0.30	29.6	C	LR	0.31	29.7	C	LR	0.28	29.1	C	LR	0.29	29.4	C	LR	0.28	23.1	C	LR	0.29	23.4	C	LR	0.29	23.3	C	LR	0.30	23.6	C
	Intersection 17.6 B				Intersection 17.8 B				Intersection 17.4 B				Intersection 17.9 B				Intersection 13.5 B				Intersection 13.9 B				Intersection 13.7 B				Intersection 14.2 B			
West Kingsbridge Road & Jerome Avenue																																
Eastbound	LTR	0.86	38.6	D	LTR	0.90	42.9	D	LTR	0.83	35.4	D	LTR	0.91	42.8	D	LTR	0.76	25.2	C	LTR	0.80	26.9	C	LTR	0.72	23.9	C	LTR	0.82	28.3	C
Westbound	LTR	0.64	27.4	C	LTR	0.70	29.4	C	LTR	0.66	27.8	C	LTR	0.78	32.6	C	LTR	0.72	24.8	C	LTR	0.88	34.3	C	LTR	0.51	19.0	B	LTR	0.57	20.1	C
Northbound	LTR	0.40	23.4	C	LTR	0.42	23.6	C	LTR	0.34	22.3	C	LTR	0.38	23.0	C	LTR	0.35	17.9	B	LTR	0.40	18.6	B	LTR	0.37	18.2	B	LTR	0.39	18.6	B
Southbound	LTR	0.42	23.9	C	LTR	0.43	24.1	C	LTR	0.47	24.9	C	LTR	0.49	25.3	C	LTR	0.40	18.8	B	LTR	0.41	19.0	B	LTR	0.42	19.1	B	LTR	0.48	20.1	C
	Intersection 30.4 C				Intersection 32.6 C				Intersection 29.2 C				Intersection 33.4 C				Intersection 22.9 C				Intersection 26.7 C				Intersection 20.7 C				Intersection 23.0 C			
East Kingsbridge Road & Grand Concourse (Main Line)																																
Eastbound	LTR	0.56	35.6	D	LTR	0.58	36.2	D	DefL	0.47	36.2	C	DefL	0.55	39.1	D	LTR	0.35	25.8	C	LTR	0.36	25.9	C	DefL	0.29	25.9	C	DefL	0.55	33.1	C
									TR	0.43	33.2	C	TR	0.50	34.9	C									TR	0.26	24.6	C	TR	0.30	25.4	C
Westbound	LTR	0.29	29.5	C	LTR	0.29	29.5	C	LTR	0.29	29.3	C	LTR	0.30	29.4	C	LTR	0.20	23.5	C	LTR	0.20	23.5	C	LTR	0.18	23.1	C	LTR	0.18	23.1	C
Northbound	L	0.72	37.7	D	L	0.88	59.4	E+	L	0.78	42.5	D	L	0.84	50.6	D+	L	0.49	26.5	C	L	0.62	32.5	C	L	0.48	26.1	C	L	0.53	27.9	C
	T	0.49	17.1	B	T	0.49	17.1	B	T	0.51	17.4	B	T	0.51	17.4	B	T	0.31	18.2	B	T	0.31	18.2	B	T	0.32	18.3	B	T	0.32	18.3	B
Southbound	L	0.12	13.5	B	L	0.12	13.5	B	L	0.28	17.4	B	L	0.28	17.4	B	L	0.16	17.5	B	L	0.16	17.5	B	L	0.15	17.2	B	L	0.15	17.2	B
	T	0.49	17.0	B	T	0.49	17.0	B	T	0.49	17.1	B	T	0.49	17.1	B	T	0.42	19.9	B	T	0.42	19.9	B	T	0.44	20.0+	C	T	0.44	20.0+	C
	Intersection 21.7 C				Intersection 23.8 C				Intersection 22.1 C				Intersection 23.4 C				Intersection 21.0 C				Intersection 21.7 C				Intersection 20.8 C				Intersection 22.1 C			
East Kingsbridge Road & Grand Concourse (Service Road)																																
Eastbound	LTR	0.56	35.6	D	LTR	0.58	36.2	D	DefL	0.47	36.2	C	DefL	0.55	39.1	D	LTR	0.35	25.8	C	LTR	0.36	25.9	C	DefL	0.29	25.9	C	DefL	0.55	33.1	C
									TR	0.43	33.2	C	TR	0.50	34.9	C									TR	0.26	24.6	C	TR	0.30	25.4	C
Westbound	LTR	0.29	29.5	C	LTR	0.29	29.5	C	LTR	0.29	29.3	C	LTR	0.30	29.4	C	LTR	0.20	23.5	C	LTR	0.20	23.5	C	LTR	0.18	23.1	C	LTR	0.18	23.1	C
Northbound	TR	0.43	17.0	B	TR	0.43	17.0	B	TR	0.43	16.8	B	TR	0.43	16.8	B	TR	0.38	19.9	B	TR	0.38	19.9	B	TR	0.17	16.6	B	TR	0.40	20.2	C
Southbound	TR	0.66	22.6	C	TR	0.71	24.5	C	TR	0.72	24.9	C	TR	0.87	34.5	C	TR	0.65	26.4	C	TR	0.83	36.6	D	TR	0.61	25.1	C	TR	0.67	27.2	C
	Intersection 24.8 C				Intersection 25.7 C				Intersection 25.3 C				Intersection 30.1 C				Intersection 24.2 C				Intersection 28.9 C				Intersection 22.7 C				Intersection 25.7 C			
West 195th Street & Reservoir Avenue																																
Westbound	LTR	0.83	44.7	D	LTR	0.85	47.3	D	LTR	0.75	37.6	D	LTR	0.86	46.6	D+	LTR	0.46	26.2	C	LTR	0.47	26.5	C	LTR	0.49	26.8	C	LTR	0.62	30.6	C
Northbound	LTR	0.33	12.3	B	LTR	0.33	12.4	B	LTR	0.26	11.6	B	LTR	0.62	16.4	B	LTR	0.20	11.0	B	LTR	0.61	16.0	B	LTR	0.20	11.0	B	LTR	0.31	12.2	B
Southbound	LTR	0.48	14.5	B	LTR	0.57	16.2	B	LTR	0.48	14.3	B	DefL	0.88	56.8	D	LTR	0.35	12.5	B	DefL	0.85	52.4	D	LTR	0.29	11.9	B	LTR	0.75	20.1	C
									TR	0.54	16.3	B												TR	0.46	14.7	B					
	Intersection 22.5 C				Intersection 23.8 C				Intersection 20.0+ C				Intersection 26.3 C				Intersection 15.4 B				Intersection 20.8 C				Intersection 15.8 B				Intersection 20.4 C			
West 195th Street & Jerome Avenue																																
Eastbound	L	0.25	30.8	C	L	0.26	30.9	C	L	0.19	29.9	C	L	0.21	30.1	C	L	0.12	20.6	C	L	0.12	20.6	C	L	0.16	21.0	C	L	0.19	21.3	C
	R	0.23	31.0	C	R	0.25	31.6	C	R	0.15	29.4	C	R	0.17	29.9	C	R	0.12	20.7	C	R	0.13	20.8	C	R	0.12	20.7	C	R	0.26	22.4	C
Northbound	LT	0.29	12.6	B	LT	0.32	13.0	B	LT	0.36	13.6	B	DefL	0.48	18.7	B	LT	0.26	11.3	B	LT	0.38	12.7	B	LT	0.25	11.2	B	LT	0.29	11.6	B
									T	0.37	13.9	B																				
Southbound	TR	0.51	15.8	B	TR	0.54	16.4	B	TR	0.35	13.3	B	TR	0.37	13.6	B	TR	0.32	11.9	B	TR	0.36	12.2	B	TR	0.28	11.5	B	TR	0.30	11.6	B
	Intersection 17.6 B				Intersection 18.1 B				Intersection 16.1 B				Intersection 17.1 B				Intersection 13.0 B				Intersection 13.6 B				Intersection 13.0 B				Intersection 14.0 B			
West 196th Street & Jerome Avenue																																
Westbound	LR	0.38	31.1	C	LR	0.39	31.4	C	LR	0.31	29.4	C	LR	0.31	29.5	C	LR	0.27	22.8	C	LR	0.28	23.0	C	LR	0.36	24.2	C	LR	0.37	24.3	C
Northbound	TR	0.30	14.5	B	TR	0.30	14.5	B	TR	0.28	14.3	B	TR	0.28	14.3	B	TR	0.24	11.1	B	TR	0.24	11.1	B	TR	0.26	11.3	B	TR	0.28	11.4	B
Southbound	LT	0.36	15.3	B	LT	0.36	15.4	B	LT	0.30	14.6	B	LT	0.31	14.7	B	LT	0.26	11.3	B	LT	0.28	11.5	B	LT	0.25	11.2	B	LT	0.25	11.2	B
	Intersection 17.3 B				Intersection 17.4 B				Intersection 16.5 B				Intersection 16.6 B				Intersection 12.8 B				Intersection 12.9 B				Intersection 13.5 B				Intersection 13.6 B			

Kingsbridge Armory National Ice Center

**Table 8-19 (cont'd)
2018 No Build and Build Conditions Level of Service Analysis**

Intersection	Weekday Midday								Weekday PM								Saturday Midday								Saturday PM							
	2018 No Build				2018 Build				2018 No Build				2018 Build				2018 No Build				2018 Build				2018 No Build				2018 Build			
	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS
Unsignalized Intersections																																
West Kingsbridge Road & Reservoir Avenue/ Grand Avenue																																
Eastbound	LT	1.04	124.5	F	LT	1.86	451.8	F+	LT	0.78	50.0	E	LT	3.05	968.2	F+	LT	0.33	14.5	B	LT	1.76	375.7	F+	LT	0.39	23.4	C	LT	1.14	141.9	F+
Westbound	LT	0.26	25.1	D	LT	0.28	26.3	D	LT	0.20	25.5	D	LT	0.25	32.3	D+	LT	0.21	28.8	D	LT	0.25	33.4	D	LT	0.06	16.7	C	LT	0.09	22.1	C
Notes:																																
EB = Eastbound; WB = Westbound; NB = Northbound; SB = Southbound; INT = Intersection.																																
L = Left-Turn; T = Through; R = Right-Turn.																																
V/C = Volume to Capacity; SPV = Seconds per Vehicle; LOS = Level of Service.																																
* + * Denotes Significant Impact																																

West Fordham Road and Major Deegan Expressway (I-87) Southbound Ramp

- The westbound left-turn movement would deteriorate within LOS D (from 37.3 spv of delay to 47.3 spv of delay) during the Saturday PM peak hour.

West Fordham Road and Major Deegan Expressway (I-87) Northbound Ramp

- The eastbound left-turn movement would deteriorate within LOS D (from 46.8 spv of delay to 53.3 spv of delay) and from LOS E (62.6 spv of delay) to LOS F (97.3 spv of delay) during the weekday PM and Saturday PM peak hours, respectively.
- The northbound right-turn movement would deteriorate from LOS D (50.2 spv of delay) to LOS F (90.8 spv of delay), from LOS E (57.1 spv of delay) to LOS F (113.5 spv of delay), and from LOS D (54.8 spv of delay) to LOS E (63.9 spv of delay) during the weekday PM, Saturday midday, and Saturday PM peak hours, respectively.

Sedgwick Avenue and West Fordham Road

- The eastbound left-turn movement would deteriorate within LOS F (from 83.6 spv of delay to 148.1 spv of delay), from LOS E (77.8 spv of delay) to LOS F (248.4 spv of delay), from LOS E (67.8 spv of delay) to LOS F (307.7 spv of delay), and within LOS F (from 89.7 spv of delay to 141.2 spv of delay) during the weekday midday, weekday PM, Saturday midday, and Saturday PM peak hours, respectively.

Dr. MLK Jr. Boulevard/University Avenue and West Fordham Road

- The northbound left-turn movement would deteriorate within LOS D (from 44.1 spv of delay to 50.2 spv of delay) during the Saturday PM peak hour.
- The southbound left-turn movement would deteriorate from LOS E (71.0 spv of delay) to LOS F (88.1 spv of delay), from LOS E (77.1 spv of delay) to LOS F (102.0 spv of delay), and from LOS D (49.1 spv of delay) to LOS E (59.9 spv of delay) during the weekday midday, weekday PM, and Saturday midday peak hours, respectively.

Jerome Avenue and West Fordham Road

- The northbound approach would deteriorate within LOS F (from 82.8 spv of delay to 102.1 spv of delay) and within LOS E (from 67.8 spv of delay to 76.7 spv of delay) during the weekday PM and Saturday PM peak hours, respectively.
- The southbound approach would deteriorate within LOS F (from 95.8 spv of delay to 105.9 spv of delay), within LOS F (from 118.0 spv of delay to 149.4 spv of delay), within LOS E (from 63.3 spv of delay to 68.8 spv of delay), and within LOS F (from 93.4 spv of delay to 192.9 spv of delay) during the weekday midday, weekday PM, Saturday midday, and Saturday PM peak hours, respectively.

Sedgwick Avenue and West Kingsbridge Road

- The westbound left-turn movement would deteriorate from LOS D (41.3 spv of delay) to LOS F (241.5 spv of delay) and from LOS B (17.7 spv of delay) to LOS F (93.5 spv of delay) during the weekday PM and Saturday PM peak hours, respectively.

University Avenue and West Kingsbridge Road

- The eastbound approach would deteriorate from LOS C (27.8 spv of delay) to LOS F (103.9 spv of delay) during the Saturday midday peak hour.

Kingsbridge Armory National Ice Center

- The westbound left-turn movement would deteriorate from LOS C (25.3 spv of delay) to LOS F (184.3 spv of delay) and from LOS C (30.5 spv of delay) to LOS F (385.5 spv of delay) during the weekday PM and Saturday midday peak hours, respectively.
- The westbound approach would deteriorate from LOS C (24.1 spv of delay) to LOS F (159.3 spv of delay) during the Saturday PM peak hour.

Reservoir Avenue/Aqueduct Avenue and West Kingsbridge Road

- The southbound right-turn movement would deteriorate from LOS C (22.0 spv of delay) to LOS F (191.1 spv of delay) during the Saturday PM peak hour.

Grand Concourse Mainline and East Kingsbridge Road

- The northbound left-turn movement would deteriorate from LOS D (37.7 spv of delay) to LOS E (59.4 spv of delay) and within LOS D (from 42.5 spv of delay to 50.6 spv of delay) during the weekday midday and weekday PM peak hours, respectively.

West 195th Street and Reservoir Avenue

- The westbound approach would deteriorate within LOS D (from 37.6 spv of delay to 46.6 spv of delay) during the weekday PM peak hour.
- The southbound left-turn movement would deteriorate from LOS B (14.3 spv of delay) to LOS D (56.8 spv of delay) and from LOS B (12.5 spv of delay) to LOS D (53.4 spv of delay) during the weekday PM and Saturday midday peak hours, respectively.

Grand Avenue and West Kingsbridge Road/Reservoir Avenue

- The eastbound approach would deteriorate from LOS F (124.5.0 spv of delay) to LOS F (451.8 spv of delay), from LOS E (50.0 spv of delay) to LOS F (968.2 spv of delay), from LOS B (14.5 spv of delay) to LOS F (375.7 spv of delay), and from LOS C (23.4 spv of delay) to LOS F (141.9 spv of delay) during the weekday midday, weekday PM, Saturday midday, and Saturday PM peak hours, respectively.
- The westbound approach would deteriorate within LOS D (from 25.5 spv of delay to 32.3 spv of delay) during the weekday PM peak hour.

Potential measures that can be implemented to mitigate these significant adverse traffic impacts are discussed in Chapter 14, "Mitigation."

G. TRANSIT

Mass transit serving the proposed project is provided by NYCT and includes the No.4 subway line at the Kingsbridge Road Station on Jerome Avenue; the B/D subway lines at the Kingsbridge Road Station on Grand Concourse; and the Bx1, Bx2, Bx3, Bx9, Bx22, Bx28, and Bx32 local bus routes. An analysis of transit station operations and subway line-haul conditions during the weekday PM peak period and Saturday PM period is presented in the preceding section. During other time periods, background transit ridership and station utilization, as well as project trip generation, are comparatively lower. Hence, potential transit station impacts were evaluated only for the weekday PM and Saturday PM peak periods.

TRANSIT STUDY AREAS

SUBWAY SERVICE

Below is the summary of subway lines (see **Figure 8-2**) that would most likely serve the project site.

- The No. 4 line (Lexington Avenue Express) operates between New Lots Avenue, Brooklyn and Woodlawn, The Bronx. The No. 4 line runs express primarily along Lexington Avenue in Manhattan.
- The B line (Sixth Avenue Express) operates between Brighton Beach, Brooklyn and 145th Street, Manhattan on weekdays only, and extends to Bedford Park Boulevard, The Bronx during rush hours.
- The D line (Sixth Avenue Express) operates between Coney Island-Stillwell Avenue, Brooklyn and 205th Street, The Bronx.

BUS SERVICE

Based on the travel demand estimates and the availability and service frequencies of the bus routes in the study area (see **Figure 8-2**), it was determined that no individual bus route would experience 50 or more peak hour bus trips in one direction—the CEQR recommended threshold for undertaking a quantified bus analysis. Consequently, the proposed project would not result in any significant adverse bus impacts and a quantitative bus line-haul analysis is not warranted. **Table 8-20** provides a summary of the NYCT local bus routes that provide regular service to the study area and their weekday PM and Saturday PM frequencies of operation. The Bx3, Bx22, and Bx32 routes use standard buses with a guideline capacity of 54 to 55 passengers per bus while Bx2 and Bx9 routes use articulated buses with a guideline capacity of 85 passengers per bus. The Bx1 and Bx28 routes use a mix of standard buses and articulated buses. There are also express bus routes making stops along Grand Concourse (Bx4) and Sedgwick Avenue (BxM3) near the Proposed Project site.

**Table 8-20
NYCT Local Bus Routes Serving The Study Area**

Bus Route	Start Point	End Point	Routing in Study Area	Frequency of Bus Service (Headway in Minutes)	
				Weekday PM (6-7 PM)	Saturday PM (6-7 PM)
Bx1/Bx2 (SB/NB)	Riverdale/ Kingsbridge	Mott Haven	Grand Concourse	(10-15)/(10)	(12)/(12)
Bx3 (SB/NB)	Riverdale, Bronx	Washington Heights, Manhattan	Kingsbridge Rd	(5-8)/(5-7)	(6-8)/(6-7)
Bx9 (EB/WB)	Riverdale	West Farms Square	Kingsbridge Rd/Jerome Ave	(4-8)/(4-8)	(4-9)/(8-9)
Bx22 (EB/WB)	Castle Hill	Pelham Parkway or Fordham	Kingsbridge Road	(7-8)/(7-9)	Weekday Service Only within the study area
Bx28 (SB/NB)	Co-op City	Fordham	Jerome Ave	(15-17)/(15-18)	(17)/(17)
Bx32 (SB/NB)	Bronx VA Medical Center	Mott Haven	Kingsbridge Rd/Jerome Ave	(15)/(15)	(15)/(15)

Source: MTA NYCT Bus Time Tables (2012/2013)

2013 EXISTING CONDITIONS-SUBWAY STATION OPERATIONS

As shown in **Figure 8-2**, there are two subway stations located within close proximity to the proposed project site. The stations and station elements identified for analysis are listed below:

KINGSBRIDGE ROAD SUBWAY STATION (NO. 4 LINE)

Kingsbridge Road Station (No. 4 line) is an elevated station located at the intersection of Kingsbridge Road and Jerome Avenue. The following elements are identified for the subway station analysis:

- Control area (R290) with five two-way turnstiles;
- Street-level stairways on the west sidewalk along Jerome Avenue (S1 and S3); and
- Platform-level stairways serving Manhattan-bound (P1/P3 and P5/P7) and Woodlawn-bound (P2/P4 and P6/P8).

KINGSBRIDGE ROAD STATION (B/D LINES)

Kingsbridge Road Station (B/D lines) is located beneath Grand Concourse between East 193rd Street and East 196th Street. The following elements are identified for the subway station analysis:

- Control area (N220) with five two-way turnstiles and two High Exit only Turnstiles (HXT);
- Street-level stairway on the northwest corner of Grand Concourse and Kingsbridge Road (S7); and
- Platform-level stairways serving Manhattan-bound (M6/M7, M10/M11, and M14/M15) and Bronx-bound (M8/M9, M12/M13, and M16/M17).

Typically, subway station elements would be evaluated for the AM and PM commuter peak hours. However, to address worst-case conditions, the weekday PM and Weekend PM conditions were analyzed. Field surveys were conducted on Thursday, May 2, 2013 and Saturday, May 4, 2013 during the hours of 5:00 to 8:00 PM. The data collected on these days provided the baseline volumes for the analysis of the above subway station elements. As shown in **Tables 8-21** and **8-22**, all analyzed stairways and control areas currently operate at acceptable levels (LOS C or better) during the weekday PM and Saturday PM peak periods.

Table 8-21
2013 Existing Conditions Subway Stairway Analysis

Stairway	Width (ft.)	Effective Width (ft.)	15-Minute Pedestrian Volumes		Surging Factor	Friction Factor	V/C Ratio	LOS
			Exit	Entry				
Weekday PM Peak 15 Minutes								
Kingsbridge Road Station (No.4 line)								
Street-Level								
			Down	Up				
S1 (NW Corner of Jerome Avenue and West Kingsbridge Rd)	5.0	4.0	59	44	0.80	0.90	0.22	A
S3 (West sidewalk on Jerome Avenue)	5.0	4.0	85	47	0.80	0.90	0.28	A
Platform Level – Woodlawn Bound								
P2/P4	5.0	4.0	149	6	0.75	1.00	0.34	A
P6/P8	5.0	4.0	178	16	0.75	0.90	0.47	B
Platform Level- Manhattan Bound								
P1/P3	5.0	4.0	4	124	0.75	1.00	0.22	A
P5/P7	5.0	4.0	32	81	0.75	0.90	0.23	A
Kingsbridge Road Station (B/D line)¹								
Street-Level								
			Up	Down				
S7 (NW corner of Grand Concourse and West Kingsbridge Rd)	6.1	5.1	26	33	0.90	0.90	0.09	A
Weekday PM Peak 15 Minutes (cont'd)								
Kingsbridge Road Station (B/D line)¹ (cont'd)								
Platform Level- Bronx Bound								
			Down	Up				
M8/M9	5.7	4.7	53	2	0.75	1.00	0.10	A
M12/M13	5.8	4.8	53	6	0.75	0.90	0.12	A
M16/M17	5.8	4.8	55	0	0.75	1.00	0.10	A
Platform Level- Manhattan Bound								
M6/M7	6.1	5.1	2	24	0.75	0.90	0.04	A
M10/M11	6.2	5.2	2	37	0.75	0.90	0.06	A
M14/M15	5.9	4.9	1	0	0.75	1.00	0.00	A
Saturday PM Peak 15 Minutes								
Kingsbridge Road Station (No.4 line)								
Street-Level								
			Down	Up				
S1 (NW Corner of Jerome Avenue and West Kingsbridge Rd)	5.0	4.0	63	75	0.80	0.90	0.28	A
S3 (West sidewalk on Jerome Avenue)	5.0	4.0	24	21	0.80	0.90	0.09	A
Platform Level – Woodlawn Bound								
P2/P4	5.0	4.0	52	6	0.75	0.90	0.14	A
P6/P8	5.0	4.0	93	18	0.75	0.90	0.26	A
Platform Level- Manhattan Bound								
P1/P3	5.0	4.0	5	69	0.75	0.90	0.14	A
P5/P7	5.0	4.0	13	39	0.75	0.90	0.10	A

Table 8-21(cont'd)

2013 Existing Conditions Subway Stairway Analysis

Stairway	Width (ft.)	Effective Width (ft.)	15-Minute Pedestrian Volumes		Surging Factor	Friction Factor	V/C Ratio	LOS
			Exit	Entry				
Saturday PM Peak 15 Minutes (cont'd)								
<i>Kingsbridge Road Station (B/D line)¹</i>								
Street-Level								
			Up	Down				
S7 (NW corner of Grand Concourse and West Kingsbridge Rd)	6.1	5.1	14	9	0.90	0.90	0.04	A
Platform Level- Bronx Bound								
			Down	Up				
M8/M9	5.7	4.7	27	1	0.75	1.00	0.05	A
M12/M13	5.8	4.8	27	1	0.75	1.00	0.05	A
M16/M17	5.8	4.8	28	0	0.75	1.00	0.05	A
Platform Level- Manhattan Bound								
M6/M7	6.1	5.1	1	15	0.75	0.90	0.02	A
M10/M11	6.2	5.2	1	23	0.75	1.00	0.03	A
M14/M15	5.9	4.9	1	0	0.75	1.00	0.00	A
Notes: Capacities were calculated based on rates presented in the 2012 <i>CEQR Technical Manual</i> . $V/C = [V_{in} / (150 * W_e * S_f * F_f)] + [V_{x} / (150 * W_e * S_f * F_f)]$ Where V _{in} = Peak 15-minute entering passenger volume V _x = Peak 15-minute exiting passenger volume W _e = Effective width of stairs S _f = Surging factor (if applicable) F _f = Friction factor (if applicable) ¹ B line operates only on Weekdays.								

Table 8-22

2013 Existing Conditions Subway Fare Array Control Area Analysis

Station Fare Array Elements	Quantity	Fare Array Capacity for 15 Minutes		15 minute Ped Volumes		Surging Factor	Friction Factor	V/C Ratio	LOS
		Entry	Exit	Entry	Exit				
Weekday PM Peak 15 Minutes									
Kingsbridge Road Station (No.4 line)- R290									
Two-way Turnstiles	5	420	645	225	325	0.80	0.90	0.26	A
Kingsbridge Road Station (B/D line) ¹ - N220									
Two-way Turnstiles	5	420	645	69	153	0.80	0.90	0.10	A
High-Exit only – Turnstile (HXT)	2	0	555	0	14	0.80	1.00	0.02	A
Saturday PM Peak 15 Minutes									
Kingsbridge Road Station (No.4 line)- R290									
Two-way Turnstiles	5	420	645	115	161	0.80	0.90	0.13	A
Kingsbridge Road Station (B/D line) ¹ - N220									
Two-way Turnstiles	5	420	645	29	73	0.80	0.90	0.05	A
High-Exit only – Turnstile (HXT)	2	0	555	0	14	0.80	1.00	0.02	A
Notes:									
Capacities were calculated based on rates presented in the 2012 <i>CEQR Technical Manual</i> .									
V/C = [Vin/ Cin* Ff] + [Vx/ Cx* Sf*Ff]									
Where									
Vin = Peak 15-minute entering passenger volume									
Cin = Total 15-minute capacity of all turnstiles for entering passengers									
Vx = Peak 15-minute exiting passenger									
Cx = Total 15-minute capacity of all turnstile for exiting passengers									
Sf = Surging factor (if applicable)									
Ff = Friction factor (if applicable)									
¹ B line operates only on Weekdays.									

2013 EXISTING CONDITIONS-SUBWAY LINE-HAUL CONDITION

To determine peak conditions for the weekday PM subway line-haul, the 2011 weekday PM subway line-haul data for the No. 4, B, and D lines at the peak load points were obtained from NYCT. A 0.25-percent annual growth rate was applied from 2011 to 2013 to generate the existing 2013 peak load point volumes for analysis. For the Saturday PM line-haul condition, 2008 line-haul data for the northbound and southbound D and No.4 lines were obtained from NYCT. Based on the NYCT’s recommendation, a 13 percent growth rate was applied to the 2008 data to establish 2013 existing line-haul ridership numbers.

As shown below in **Table 8-23**, all lines analyzed are operating within the guideline capacity during the weekday PM peak hour. During the Saturday PM peak hour, all lines are operating above their weekend guideline capacities with the exception of the southbound D line. However, compared to the maximum peak-period loading guideline capacity, all lines are operating within the guideline capacity during the Saturday PM peak hour.

Table 8-23

2013 Existing Conditions: Peak Hour Subway Line Haul

	Station	Trains/Hour ¹	Passengers /Hr	Load		Available Capacity
				Guideline Capacity	V/C Ratio	
Weekday PM Peak Period						
B - Northbound	59th St-Columbus Circle	6	4,146	6,720	0.62	2,574
D - Northbound	59th St-Columbus Circle	9	6,794	12,600	0.54	5,806
No.4 - Northbound	Lexington Avenue/59th Street	13	13,630	14,300	0.95	670
Saturday PM Peak Period (Compared to Maximum Off-Peak Loading Guideline Capacity)						
D - Northbound	47-50th Streets	6	4,525	4,224	1.07	-301
D - Southbound	125th Street	6	3,246	4,224	0.77	978
No.4 - Northbound	Lexington Ave/59th Street	8	5,872	3,840	1.53	-2,032
No.4 - Southbound	86th Street	8	5,231	3,840	1.36	-1,391
Saturday PM Peak Period (Compared to Maximum Peak-Period Loading Guideline Capacity)						
D - Northbound	47-50th Streets	6	4,525	8,400	0.54	3,875
D - Southbound	125th Street	6	3,246	8,400	0.39	5,154
No.4 - Northbound	Lexington Ave/59th Street	8	5,872	8,800	0.67	2,928
No.4 - Southbound	86th Street	8	5,231	8,800	0.59	3,569
Note:						
¹ Trains/hour numbers are rounded to whole numbers.						
Sources: New York City Transit						

2018 NO BUILD CONDITION

Estimates of peak hour transit volumes in the 2018 No Build condition were developed by applying the *CEQR Technical Manual* recommended annual background growth rates. An annual compounded background growth rate of 0.25 percent was applied to the transit volumes from 2013 to 2018. In addition, trips associated with one No Build project, a day-care center located at 2085 Goulden Avenue, were incorporated into the future No Build transit volumes. Based on the location of the No Build project site and the station utilization rates for the two nearby subway stations, it was estimated that 60 percent of the patrons would use Kingsbridge Road Station (No. 4 line) on Jerome Avenue and the remaining 40 percent would use Kingsbridge Road Station (B/D lines) on Grand Concourse. Since the day-care center would mostly serve the local population and the site is located a few stops from the northern terminus of the subway lines, 85 percent of the project generated trips were assumed to be coming from south of the site and 15 percent from north of the site. The following distribution was applied for the analysis elements at the two analysis stations:

- Kingsbridge Road Station (B/D lines)**

Since the 2085 Goulden Avenue project is located north of 196th Street, it was assumed that patrons using the B/D lines would use the entrance at 196th Street. No trips from this project were added to the analysis elements at the intersection of Kingsbridge Road and Grand Concourse.
- Kingsbridge Road Station (No.4 line)**

No Build project generated trips were assigned to the S3 street-level stairway which is closer to the project site. 85 percent of the patrons coming to the project site were assigned to the Woodlawn-bound trains and 15 percent were assigned to the Manhattan-bound trains.

No Build peak period volume projections were allocated to the transit analysis elements described above. As shown in **Tables 8-24** and **8-25**, all station stairways and control area elements would continue to operate at acceptable levels (LOS C or better).

Table 8-24
2018 No Build Conditions Subway Stairway Analysis

Stairway	Width (ft.)	Effective Width (ft.)	15-Minute Pedestrian Volumes		Surging Factor	Friction Factor	V/C Ratio	LOS
			Exit	Entry				
Weekday PM Peak 15 Minutes								
Kingsbridge Road Station (No.4 line)								
Street-Level								
			Down	Up				
S1 (NW Corner of Jerome Avenue and West Kingsbridge Rd)	5.0	4.0	60	45	0.80	0.90	0.22	A
S3 (West sidewalk on Jerome Avenue)	5.0	4.0	92	55	0.80	0.90	0.31	A
Platform Level – Woodlawn Bound								
P2/P4	5.0	4.0	153	6	0.75	1.00	0.35	A
P6/P8	5.0	4.0	183	17	0.75	0.90	0.48	B
Platform Level- Manhattan Bound								
P1/P3	5.0	4.0	4	130	0.75	1.00	0.23	A
P5/P7	5.0	4.0	33	84	0.75	0.90	0.24	A
Kingsbridge Road Station (B/D line)¹								
Street-Level								
			Up	Down				
S7 (NW corner of Grand Concourse and West Kingsbridge Rd)	6.1	5.1	26	33	0.90	0.90	0.09	A
Platform Level- Bronx Bound								
			Down	Up				
M8/M9	5.7	4.7	54	2	0.75	1.00	0.10	A
M12/M13	5.8	4.8	54	6	0.75	0.90	0.12	A
M16/M17	5.8	4.8	56	0	0.75	1.00	0.10	A
Platform Level- Manhattan Bound								
M6/M7	6.1	5.1	2	24	0.75	0.90	0.04	A
M10/M11	6.2	5.2	2	37	0.75	0.90	0.06	A
M14/M15	5.9	4.9	1	0	0.75	1.00	0.00	A
Saturday PM Peak 15 Minutes								
Kingsbridge Road Station (No.4 line)								
Street-Level								
			Down	Up				
S1 (NW Corner of Jerome Avenue and West Kingsbridge Rd)	5.0	4.0	64	76	0.80	0.90	0.29	A
S3 (West sidewalk on Jerome Avenue)	5.0	4.0	25	22	0.80	0.90	0.10	A
Platform Level – Woodlawn Bound								
P2/P4	5.0	4.0	53	6	0.75	0.90	0.14	A
P6/P8	5.0	4.0	95	18	0.75	0.90	0.27	A
Platform Level- Manhattan Bound								
P1/P3	5.0	4.0	5	71	0.75	0.90	0.14	A
P5/P7	5.0	4.0	13	39	0.75	0.90	0.10	A

Table 8-24 (cont'd)
2018 No Build Conditions Subway Stairway Analysis

Stairway	Width (ft.)	Effective Width (ft.)	15-Minute Pedestrian Volumes		Surging Factor	Friction Factor	V/C Ratio	LOS
			Exit	Entry				
Saturday PM Peak 15 Minutes (cont'd)								
Kingsbridge Road Station (B/D line)¹								
Street-Level								
			Up	Down				
S7 (NW corner of Grand Concourse and West Kingsbridge Rd)	6.1	5.1	14	9	0.90	0.90	0.04	A
Platform Level- Bronx Bound								
			Down	Up				
M8/M9	5.7	4.7	27	1	0.75	1.00	0.05	A
M12/M13	5.8	4.8	27	1	0.75	1.00	0.05	A
M16/M17	5.8	4.8	28	0	0.75	1.00	0.05	A
Platform Level- Manhattan Bound								
M6/M7	6.1	5.1	1	15	0.75	0.90	0.02	A
M10/M11	6.2	5.2	1	23	0.75	1.00	0.03	A
M14/M15	5.9	4.9	1	0	0.75	1.00	0.00	A
Notes: Capacities were calculated based on rates presented in the 2012 <i>CEQR Technical Manual</i> . $V/C = [V_{in} / (150 * W_e * S_f * F_f)] + [V_{x} / (150 * W_e * S_f * F_f)]$ Where V _{in} = Peak 15-minute entering passenger volume V _x = Peak 15-minute exiting passenger volume W _e = Effective width of stairs S _f = Surging factor (if applicable) F _f = Friction factor (if applicable) ¹ B line operates only on Weekdays.								

Table 8-25

2018 No Build Conditions Subway Fare Array Control Area Analysis

Station Fare Array Elements	Quantity	Fare Array Capacity for 15 Minutes		15 minute Ped Volumes		Surging Factor	Friction Factor	V/C Ratio	LOS
		Entry	Exit	Entry	Exit				
Weekday PM Peak 15 Minutes									
Kingsbridge Road Station (No.4 line)- R290									
Two-way Turnstiles	5	420	645	225	325	0.80	0.90	0.26	A
Kingsbridge Road Station (B/D line) ¹ - N220									
Two-way Turnstiles	5	420	645	69	153	0.80	0.90	0.10	A
High-Exit only – Turnstile (HXT)	2	0	555	0	14	0.80	1.00	0.02	A
Saturday PM Peak 15 Minutes									
Kingsbridge Road Station (No.4 line)- R290									
Two-way Turnstiles	5	420	645	115	161	0.80	0.90	0.13	A
Kingsbridge Road Station (B/D line) ¹ - N220									
Two-way Turnstiles	5	420	645	29	73	0.80	0.90	0.05	A
High-Exit only – Turnstile (HXT)	2	0	555	0	14	0.80	1.00	0.02	A
Notes:									
Capacities were calculated based on rates presented in the 2012 <i>CEQR Technical Manual</i> .									
$V/C = [V_{in}/ C_{in} * F_f] + [V_x/ C_x * S_f * F_f]$									
Where									
V _{in} = Peak 15-minute entering passenger volume									
C _{in} = Total 15-minute capacity of all turnstiles for entering passengers									
V _x = Peak 15-minute exiting passenger									
C _x = Total 15-minute capacity of all turnstile for exiting passengers									
S _f = Surging factor (if applicable)									
F _f = Friction factor (if applicable)									
¹ B line operates only on Weekdays.									

2018 NO BUILD CONDITIONS-SUBWAY LINE-HAUL CONDITION

Estimates of peak hour line-haul ridership volumes in the No Build condition were developed by applying the CEQR-recommended 0.25 percent annual background growth rate from 2013 to 2018 onto existing ridership volumes. Although one No Build project was identified within the study area, the facility would be used primarily by local residents and no project generated subway riders were assumed to pass through the peak load points. In addition, the scheduled completion of the Second Avenue Subway in 2016 (Phase 1) would reduce passenger volumes on the No. 4 line. Therefore, based on the estimation provided by NYCT, No Build line-haul analysis accounted for the 12.4 percent passenger volume reduction on the No. 4 line at the peak load points.

As shown below in **Table 8-26**, all lines would continue to operate within the guideline capacity during the weekday PM peak hour. During the Saturday PM peak hour, the southbound D line would continue to operate within the weekend guideline capacity while the northbound D line, northbound and southbound No. 4 lines would continue to exceed the weekend guideline capacity. However, all lines would continue to operate within the maximum peak-period loading guideline capacity during the Saturday PM peak hour.

Table 8-26

2018 No Build Conditions: Peak Hour Subway Line Haul

	Station	Trains/ Hour ¹	Passeng ers/Hr	Load		Available Capacity
				Guideline Capacity	V/C Ratio	
Weekday PM Peak Period						
B - Northbound	59th St-Columbus Circle	6	4,198	6,720	0.62	2,522
D - Northbound	59th St-Columbus Circle	9	6,880	12,600	0.55	5,720
No.4 - Northbound	Lexington Avenue/59th Street	13	12,091	14,300	0.85	2,209
Saturday PM Peak Period (Compared to Maximum Off-Peak Loading Guideline Capacity)						
D - Northbound	47-50th Streets	6	4,582	4,224	1.08	-358
D - Southbound	125th Street	6	3,287	4,224	0.78	937
No.4 - Northbound	Lexington Ave/59th Street	8	5,209	3,840	1.36	-1,367
No.4 - Southbound	86th Street	8	4,640	3,840	1.21	-800
Saturday PM Peak Period (Compared to Maximum Peak-Period Loading Guideline Capacity)						
D - Northbound	47-50th Streets	6	4,582	8,400	0.55	3,818
D - Southbound	125th Street	6	3,287	8,400	0.39	5,113
No.4 - Northbound	Lexington Ave/59th Street	8	5,209	8,800	0.59	3,591
No.4 - Southbound	86th Street	8	4,640	8,800	0.53	4,160
Note:						
¹ Trains/hour numbers are rounded to whole numbers.						
Sources: New York City Transit						

2018 BUILD CONDITION

The 2,499 (2313 in and 186 out) weekday PM peak hour and 2,940 (752 in and 2186 out) Saturday PM peak hour project-generated subway trips were distributed to two subway stations. Of these, 23 weekday PM trips (5 in and 18 out) and 39 Saturday PM trips (19 in and 20 out) were associated with the community facility. All project generated subway trips were added to the projected 2018 No Build volumes to generate the 2018 Build volumes for analysis.

Based on NYCT’s model information and also on post-event Metrocard data at the Yankee Stadium station which is also served by the same subway lines (i.e., No.4, B, and D lines), NYCT has recommended the distribution of the subway trips among three subway lines during the Weekday PM and Saturday PM peak periods as follows:

- Weekday PM distribution: 60 percent via No. 4 train and 40 percent via B/D trains; and
- Saturday distribution: 55 percent via No. 4 train and 45 percent via D train.

In order to estimate the peak 15 minute project generated transit trips, the following temporal distribution (see **Table 8-27**) was used for the pre-game arrival and post-game departure groups.

It was conservatively assumed that all patrons who are traveling via subway to attend events at the proposed project would be originating from south of the site and ride the Woodlawn-bound No. 4 and Bronx-bound B/D lines. For the trips generated by the proposed community facility use, 85 percent were assumed to travel on the northbound and 15 percent on the southbound No.4 and B/D trains. It was also estimated that of those patrons who ride the B/D lines, 35 percent of exiting and 15 percent entering the station at Grand Concourse would use the passageway located at the fare array area.

Table 8-27

Temporal Distributions of Pre-game Arrival and Post-game Departure¹

PM Peak Hour	Pre-Game Arrival (7 PM Start)	Post-Game Departure (6PM Finish)
6:00- 6:15 PM³	10%	50%²
6:15- 6:30 PM	15%	30%
6:30- 6:45 PM	35%	20%
6:45- 7:00 PM⁴	40%	0%

Notes:

¹ As this would be a unique facility, the actual temporal distributions will be studied post-occupancy as part of the Traffic Monitoring Plan discussed in Chapter 14, "Mitigation."

² 50% departure rate within 15 minutes after the game is based on the NYCT's recommendation. NYCT has gathered the data from the post-event at the Barclays Center and MSG which showed 65% of attendees departing within 20 minutes after the game.

³ 6:00- 6:15 PM is the peak 15 minute period for the Saturday PM peak hour where the departing groups (game ending at 6PM) and arriving groups (game starting at 7PM) overlap.

⁴ 6:45 – 7:00 PM is the peak 15 minute period for the weekday PM peak hour.

As shown in **Tables 8-28** and **8-29**, all analyzed stairways and control areas would operate at acceptable levels (LOS C or better) during all analysis peak periods, except for the Woodlawn bound platform stairways (P6/P8) at Kingsbridge Road Station (No.4) during the weekday PM peak period, which would operate at LOS D with a v/c ratio of 1.13 and the street-level stair (S1) during the Saturday PM peak period, which would operate at LOS D with a v/c ratio of 1.01. The WIT for the P6/P8 platform level stairways during the weekday PM peak period was calculated to be 6.13 inches, which is less than the *CEQR Technical Manual* WIT impact threshold of 7.0 inches (for stairway v/c ratios between 1.10 and 1.19 in the Build condition; see **Table 8-12**). The WIT for the S1 street-level stairway during the Saturday peak period was calculated to be 0.36 inches, which is less than WIT impact threshold of 8 inches (for stairway v/c ratio between 1.00 and 1.09). Therefore, the proposed project would not result in any significant adverse subway station impacts.

Table 8-28

2018 Build Conditions Subway Stairway Analysis

Stairway	Width (ft.)	Effective Width (ft.)	15-Minute Pedestrian Volumes		Surging Factor	Friction Factor	V/C Ratio	LOS
			Exit	Entry				
Weekday PM Peak 15 Minutes								
Kingsbridge Road Station (No.4 line)								
Street-Level								
			Down	Up				
S1 (NW Corner of Jerome Avenue and West Kingsbridge Rd)	5.0	4.0	392	45	0.80	0.90	0.99	C
S3 (West sidewalk on Jerome Avenue)	5.0	4.0	315	59	0.80	0.90	0.84	C
Platform Level – Woodlawn Bound								
P2/P4	5.0	4.0	397	6	0.75	1.00	0.89	C
P6/P8	5.0	4.0	494	18	0.75	1.00	1.13	D
Platform Level- Manhattan Bound								
P1/P3	5.0	4.0	4	132	0.75	1.00	0.23	A
P5/P7	5.0	4.0	33	85	0.75	0.90	0.24	A

Table 8-28 (cont'd)

2018 Build Conditions Subway Stairway Analysis

Stairway	Width (ft.)	Effective Width (ft.)	15-Minute Pedestrian Volumes		Surging Factor	Friction Factor	V/C Ratio	LOS
			Exit	Entry				
Weekday PM Peak 15 Minutes (cont'd)								
<i>Kingsbridge Road Station (B/D line)¹</i>								
Street-Level								
			Up	Down				
S7 (NW corner of Grand Concourse and West Kingsbridge Rd)	6.1	5.1	267	35	0.90	0.90	0.48	B
Platform Level- Bronx Bound								
			Down	Up				
M8/M9	5.7	4.7	176	2	0.75	1.00	0.34	A
M12/M13	5.8	4.8	176	6	0.75	1.00	0.33	A
M16/M17	5.8	4.8	182	0	0.75	1.00	0.34	A
Platform Level- Manhattan Bound								
M6/M7	6.1	5.1	2	25	0.75	0.90	0.04	A
M10/M11	6.2	5.2	2	38	0.75	0.90	0.06	A
M14/M15	5.9	4.9	1	0	0.75	1.00	0.00	A
Saturday PM Peak 15 Minutes								
<i>Kingsbridge Road Station (No.4 line)</i>								
Street-Level								
			Down	Up				
S1 (NW Corner of Jerome Avenue and West Kingsbridge Rd)	5.0	4.0	88	434	0.80	0.90	1.01	D
S3 (West sidewalk on Jerome Avenue)	5.0	4.0	45	264	0.80	0.90	0.59	B
Platform Level – Woodlawn Bound								
P2/P4	5.0	4.0	68	6	0.75	0.90	0.18	A
P6/P8	5.0	4.0	124	19	0.75	0.90	0.34	A
Platform Level- Manhattan Bound								
P1/P3	5.0	4.0	5	371	0.75	1.00	0.63	B
P5/P7	5.0	4.0	13	338	0.75	1.00	0.59	B
<i>Kingsbridge Road Station (B/D line)¹</i>								
Street-Level								
			Up	Down				
S7 (NW corner of Grand Concourse and West Kingsbridge Rd)	6.1	5.1	37	426	0.90	0.90	0.68	B
Platform Level- Bronx Bound								
			Down	Up				
M8/M9	5.7	4.7	39	1	0.75	1.00	0.08	A
M12/M13	5.8	4.8	39	1	0.75	1.00	0.07	A
M16/M17	5.8	4.8	39	0	0.75	1.00	0.07	A
Platform Level- Manhattan Bound								
M6/M7	6.1	5.1	1	179	0.75	1.00	0.24	A
M10/M11	6.2	5.2	1	186	0.75	1.00	0.24	A
M14/M15	5.9	4.9	1	163	0.75	1.00	0.22	A
Notes:								
Capacities were calculated based on rates presented in the 2012 CEQR Technical Manual.								
V/C = [Vin / (150 * We * Sf * Ff)] + [Vx / (150 * We * Sf * Ff)]								
Where								
Vin = Peak 15-minute entering passenger volume								
Vx = Peak 15-minute exiting passenger volume								
We = Effective width of stairs								
Sf = Surging factor (if applicable)								
Ff = Friction factor (if applicable)								
¹ B line operates only on Weekdays.								

Table 8-29
2018 Build Conditions Subway Fare Array Control Area Analysis

Station Fare Array Elements	Quantity	Fare Array Capacity for 15 Minutes		15 minute Ped Volumes		Surging Factor	Friction Factor	V/C Ratio	LOS
		Entry	Exit	Entry	Exit				
Weekday PM Peak 15 Minutes									
Kingsbridge Road Station (No.4 line)- R290									
Two-way Turnstiles	5	420	645	239	890	0.80	0.90	0.51	B
Kingsbridge Road Station (B/D line) ¹ - N220									
Two-way Turnstiles	5	420	645	72	495	0.80	0.90	0.25	A
High-Exit only – Turnstile (HXT)	2	0	555	0	44	0.80	1.00	0.05	A
Saturday PM Peak 15 Minutes									
Kingsbridge Road Station (No.4 line)- R290									
Two-way Turnstiles	5	420	645	717	208	0.80	0.90	0.47	B
Kingsbridge Road Station (B/D line) ¹ - N220									
Two-way Turnstiles	5	420	645	519	106	0.80	0.90	0.32	A
High-Exit only – Turnstile (HXT)	2	0	555	0	17	0.80	1.00	0.02	A
Notes:									
Capacities were calculated based on rates presented in the 2012 <i>CEQR Technical Manual</i> .									
V/C = [Vin/ Cin* Ff] + [Vx/ Cx* Sf*Ff]									
Where									
Vin = Peak 15-minute entering passenger volume									
Cin = Total 15-minute capacity of all turnstiles for entering passengers									
Vx = Peak 15-minute exiting passenger									
Cx = Total 15-minute capacity of all turnstile for exiting passengers									
Sf = Surging factor (if applicable)									
Ff = Friction factor (if applicable)									
¹ B line operates only on Weekdays.									

2018 BUILD CONDITIONS-SUBWAY LINE-HAUL CONDITION

Based on the discussion with NYCT, it was assumed that 80 percent of subway riders would be assigned to the peak load points for all lines analyzed for the weekday PM peak hour. For the Saturday PM peak hour, 80 percent of subway riders were assigned to each line’s peak load points identified, with the exception of the southbound D line which has its peak load point at 125th Street. Since this peak load point is located further north, closer to the proposed project site, 90 percent of the subway riders to the southbound D line were assigned to the peak load point.

As shown below in **Table 8-30**, all lines would continue to operate within the guideline capacity during the weekday PM peak hour. During the Saturday PM peak hour, the southbound D line would continue to operate within the weekend guideline capacity while the northbound D line, the northbound and southbound No.4 lines would continue to operate above the weekend guideline capacity. However, all lines would continue to operate within the maximum peak-period loading guideline capacity during the Saturday PM peak hour. Therefore, the proposed project would not result in any significant adverse subway line-haul impacts.

Table 8-30

2018 Build Conditions: Peak Hour Subway Line Haul

	Peak Load Point	Trains/Hour ¹	Passengers/ Hr	Load		Available Capacity
				Guideline Capacity	V/C Ratio	
Weekday PM Peak Hour						
B - Northbound	59th St-Columbus Circle	6	4,493	6,720	0.67	2,227
D- Northbound	59th St-Columbus Circle	9	7,323	12,600	0.58	5,277
No.4 - Northbound	Lexington Avenue/59th Street	13	13,199	14,300	0.92	1,101
Saturday PM Peak Hour (Compared to Maximum Off-Peak Loading Guideline Capacity)						
D - Northbound	47-50th Streets	6	4,846	4,224	1.15	-622
D - Southbound	125th Street	6	4,165	4,224	0.99	59
No.4 - Northbound	Lexington Ave/59th Street	8	5,531	3,840	1.44	-1,691
No.4 - Southbound	86th Street	8	5,594	3,840	1.46	-1,754
Saturday PM Peak Hour (Compared to Maximum Peak-Period Loading Guideline Capacity)						
D - Northbound	47-50th Streets	6	4,846	8,400	0.58	3,554
D - Southbound	125th Street	6	4,165	8,400	0.50	4,235
No.4 - Northbound	Lexington Ave/59th Street	8	5,531	8,800	0.63	3,269
No.4 - Southbound	86th Street	8	5,594	8,800	0.64	3,206
Notes:						
¹ Trains/hour numbers are rounded to whole numbers.						
+ Denotes a significant adverse subway line-haul impact.						
Sources: New York City Transit						

H. PEDESTRIANS

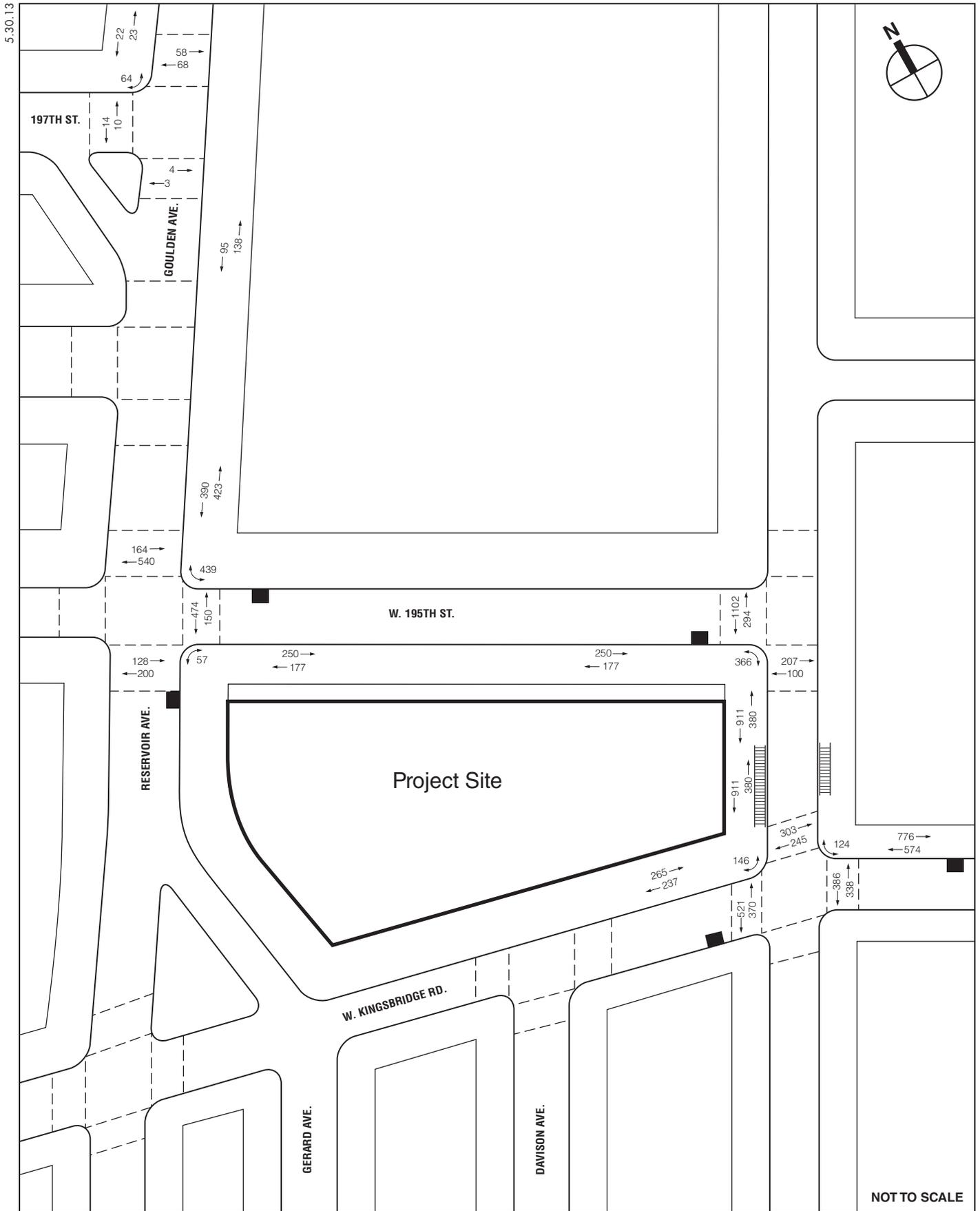
2013 EXISTING CONDITIONS

Existing pedestrian levels are based on field surveys conducted in May 2012 and April and May 2013. As per the *CEQR Technical Manual*, crosswalk counts at all study area intersections were collected for one additional weekday and one additional weekend day during the representative peak periods to validate the pedestrian count data.

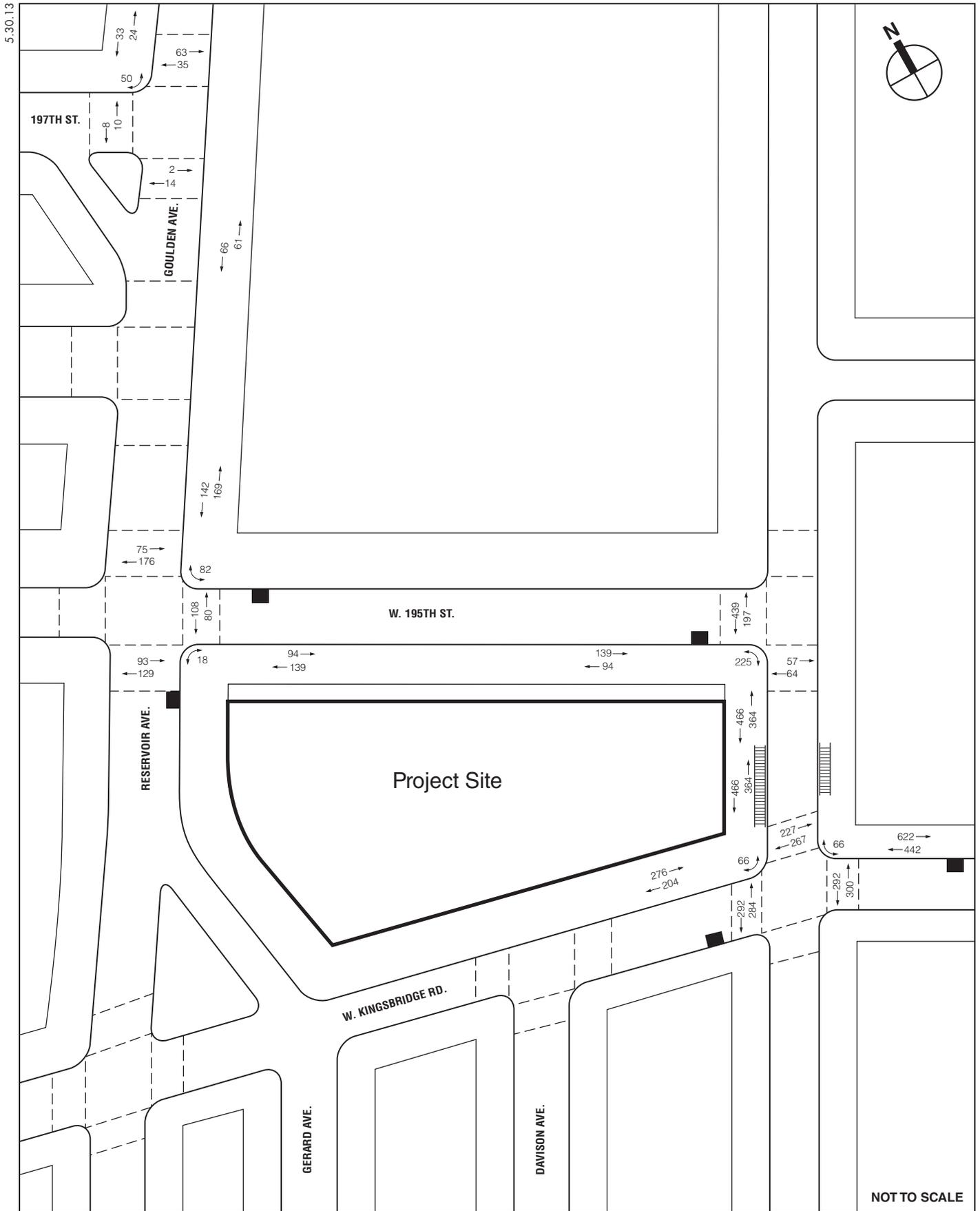
To determine peak conditions for pedestrian facilities, weekday counts were conducted during the 12:00 PM to 7:00 PM time periods and Saturday counts were conducted during the 11:00 AM to 8:00 PM time period. Peak hours were determined by comparing rolling hourly averages and the highest 15-minute volumes within the selected peak hours were selected for analysis.

STREET-LEVEL PEDESTRIAN OPERATIONS

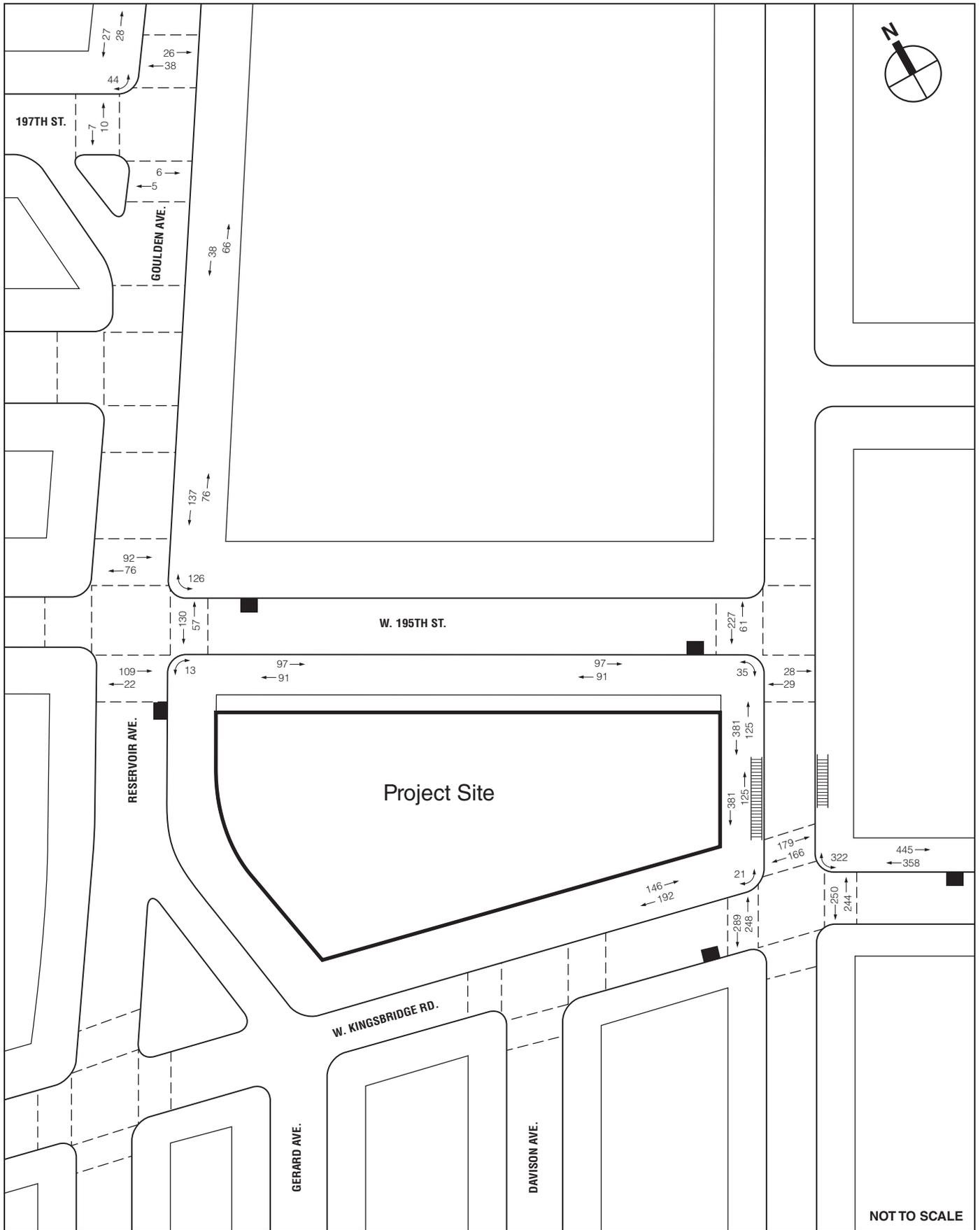
The study area sidewalks, corner reservoirs, and crosswalks were assessed for the weekday midday, weekday PM, Saturday midday, and Saturday PM peak periods. The existing peak hour pedestrian volumes are shown in **Figures 8-20 to 8-23**. As shown in **Tables 8-31 through 8-33**, all sidewalk, corner reservoir, and crosswalk analysis locations operate at acceptable levels (maximum of 6.0 PMF platoon flows for sidewalks; minimum of 24.0 SFP for corners and crosswalks).



Existing Pedestrian Volumes
 Weekday MD Peak Hour
 Figure 8-20



Existing Pedestrian Volumes
 Weekday PM Peak Hour
 Figure 8-21



— Project Site ■ Bus Stop

Existing Pedestrian Volumes
 Saturday MD Peak Hour
 Figure 8-22

Table 8-31

2013 Existing Conditions: Pedestrian LOS Analysis for Sidewalks

Location	Sidewalk	Effective Width (feet)	1-Hour Two-Way Volume	Platoon	
				PMF	LOS
Weekday Midday Peak Period					
Goulden Avenue and West 197th Street	East (south of W.197th St)	8.0	233	0.61	B
	West (north of W.197th St)	3.0	45	0.31	A
Reservoir Avenue and West 195th Street	East (north of W.195th St)	11.0	813	1.35	B
	South (east of Reservoir Ave)	7.0	427	1.27	B
Jerome Avenue and West 195th Street	South (west of Jerome Ave)	7.0	427	1.27	B
	West (south of W.195th St)	12.0	1291	2.08	B
Jerome Avenue and West Kingsbridge Road	North (east of Jerome Ave)	15.0	1350	1.80	B
	North (west of Jerome Ave)	10.0	502	0.93	B
	West (north of W. Kingsbridge Rd)	11.0	1291	2.27	B
Weekday PM Peak Period					
Goulden Avenue and West 197th Street	East (south of W.197th St)	8.0	127	0.33	A
	West (north of W.197th St)	3.0	57	0.40	A
Reservoir Avenue and West 195th Street	East (north of W.195th St)	11.0	311	0.59	B
	South (east of Reservoir Ave)	7.0	233	0.64	B
Jerome Avenue and West 195th Street	South (west of Jerome Ave)	7.0	233	0.64	B
	West (south of W.195th St)	12.0	830	1.36	B
Jerome Avenue and West Kingsbridge Road	North (east of Jerome Ave)	15.0	1064	1.33	B
	North (west of Jerome Ave)	10.0	480	1.00	B
	West (north of W. Kingsbridge Rd)	11.0	830	1.48	B
Saturday Midday Peak Period					
Goulden Avenue and West 197th Street	East (south of W.197th St)	8.0	104	0.27	A
	West (north of W.197th St)	3.0	55	0.38	A
Reservoir Avenue and West 195th Street	East (north of W.195th St)	11.0	213	0.40	A
	South (east of Reservoir Ave)	7.0	188	0.54	B
Jerome Avenue and West 195th Street	South (west of Jerome Ave)	7.0	188	0.54	B
	West (south of W.195th St)	12.0	506	0.79	B
Jerome Avenue and West Kingsbridge Road	North (east of Jerome Ave)	15.0	803	1.01	B
	North (west of Jerome Ave)	10.0	338	0.63	B
	West (north of W. Kingsbridge Rd)	11.0	506	0.87	B
Saturday PM Peak Period					
Goulden Avenue and West 197th Street	East (south of W.197th St)	8.0	20	0.05	A
	West (north of W.197th St)	3.0	57	0.38	A
Reservoir Avenue and West 195th Street	East (north of W.195th St)	11.0	69	0.13	A
	South (east of Reservoir Ave)	7.0	192	0.56	B
Jerome Avenue and West 195th Street	South (west of Jerome Ave)	7.0	165	0.49	A
	West (south of W.195th St)	12.0	207	0.36	A
Jerome Avenue and West Kingsbridge Road	North (east of Jerome Ave)	15.0	836	1.16	B
	North (west of Jerome Ave)	10.0	578	1.03	B
	West (north of W. Kingsbridge Rd)	11.0	207	0.39	A

Note: PMF = pedestrians per minute per foot.

Table 8-32

2013 Existing Conditions: Pedestrian LOS Analysis for Corners

Location	Corner	Weekday Midday		Weekday PM		Saturday Midday		Saturday PM	
		SFP	LOS	SFP	LOS	SFP	LOS	SFP	LOS
Goulden Avenue and West 197th Street	Northwest	1072.8	A	1382.3	A	1846.7	A	4008.3	A
Reservoir Avenue and West 195th Street	Northeast	118.5	A	438.0	A	483.0	A	971.4	A
	Southeast	223.8	A	580.4	A	735.4	A	1124.9	A
Jerome Avenue and West 195th Street	Southwest	143.9	A	319.6	A	733.6	A	949.5	A
Jerome Avenue and West Kingsbridge Road	Northeast	184.5	A	220.6	A	225.2	A	251.0	A
	Northwest	148.2	A	203.2	A	264.4	A	353.0	A

Notes: SFP = square feet per pedestrian.

Table 8-33

2013 Existing Conditions: Pedestrian LOS Analysis for Crosswalks

Location	Cross walk	Street Width (feet)	Cross walk Width (feet)	Conditions with Conflicting Vehicles											
				Weekday Midday			Weekday PM			Saturday Midday			Saturday PM		
				2-way Volume	SFP	LOS	2-way Volume	SFP	LOS	2-way Volume	SFP	LOS	2-way Volume	SFP	LOS
Goulden Avenue and West 197th Street	North	44.0	12.0	126	115.2	A	98	135.5	A	64	249.6	A	5	2909.3	A
	South	47.0	13.0	7	2852.3	A	16	1235.0	A	11	1800.4	A	3	6659.4	A
	West	32.0	12.0	24	2099.1	A	18	2656.1	A	17	2944.0	A	8	6420.2	A
Reservoir Avenue and West 195th Street	North	60.0	13.0	704	29.8	C	251	87.9	A	168	138.9	A	134	175.4	A
	East	60.0	16.0	624	82.1	A	188	287.0	A	187	300.2	A	69	794.6	A
	South	60.0	13.0	328	70.6	A	222	123.6	A	131	194.8	A	148	178.3	A
Jerome Avenue and West 195th Street	South	69.5	15.0	307	73.7	A	121	192.4	A	57	422.7	A	60	360.6	A
	West	60.0	18.0	1396	46.4	B	636	109.6	A	288	180.3	A	83	633.3	A
Jerome Avenue and West Kingsbridge Road	North	60.0	13.0	548	57.3	B	494	62.2	A	345	81.7	A	378	90.1	A
	East	60.0	17.0	724	53.6	B	592	64.2	A	494	63.1	A	624	47.5	B
	West	60.0	16.0	891	39.4	C	576	56.8	B	537	51.1	B	346	83.5	A

Notes: SFP = square feet per pedestrian.

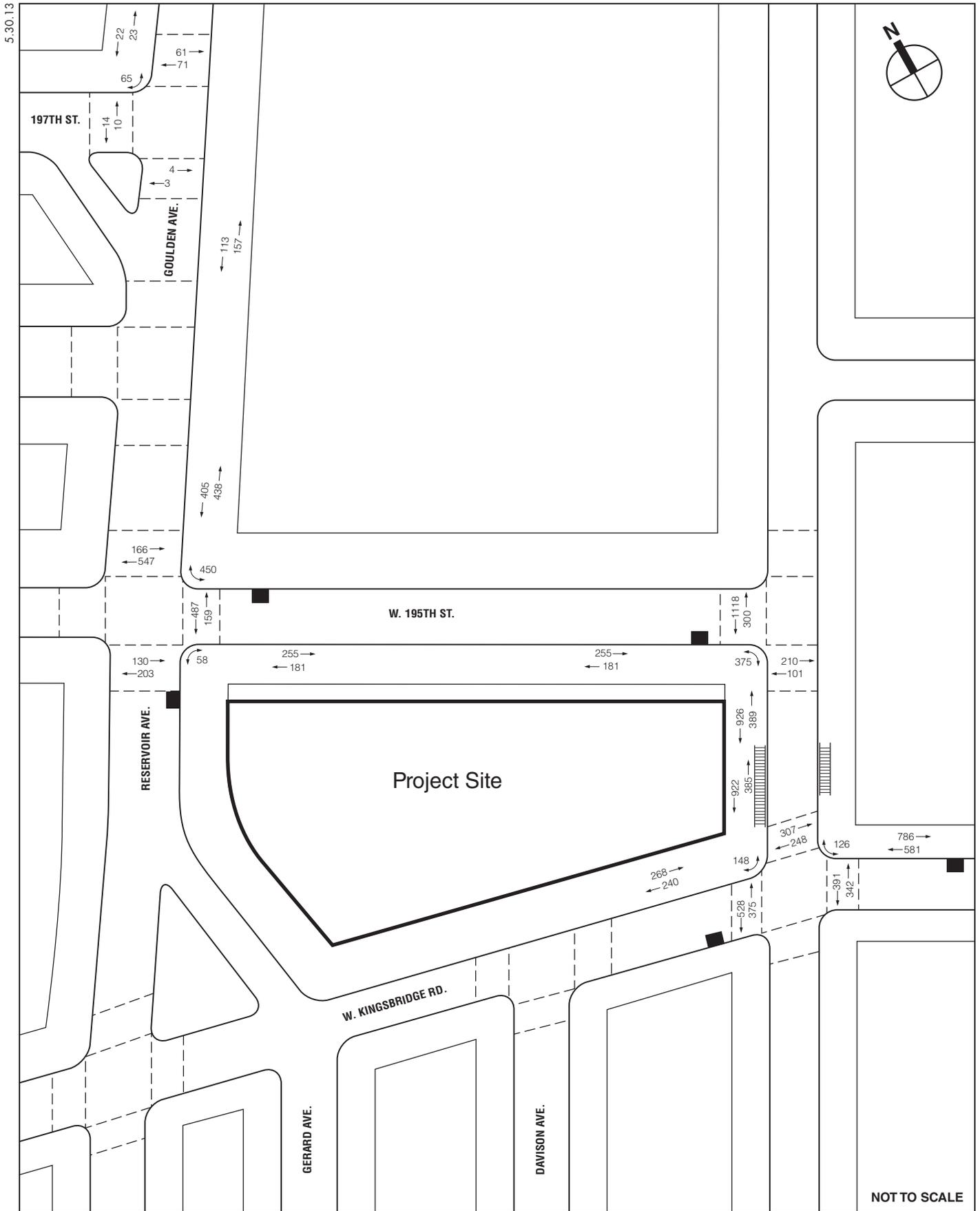
2018 NO BUILD CONDITION

PEDESTRIAN VOLUME PROJECTIONS

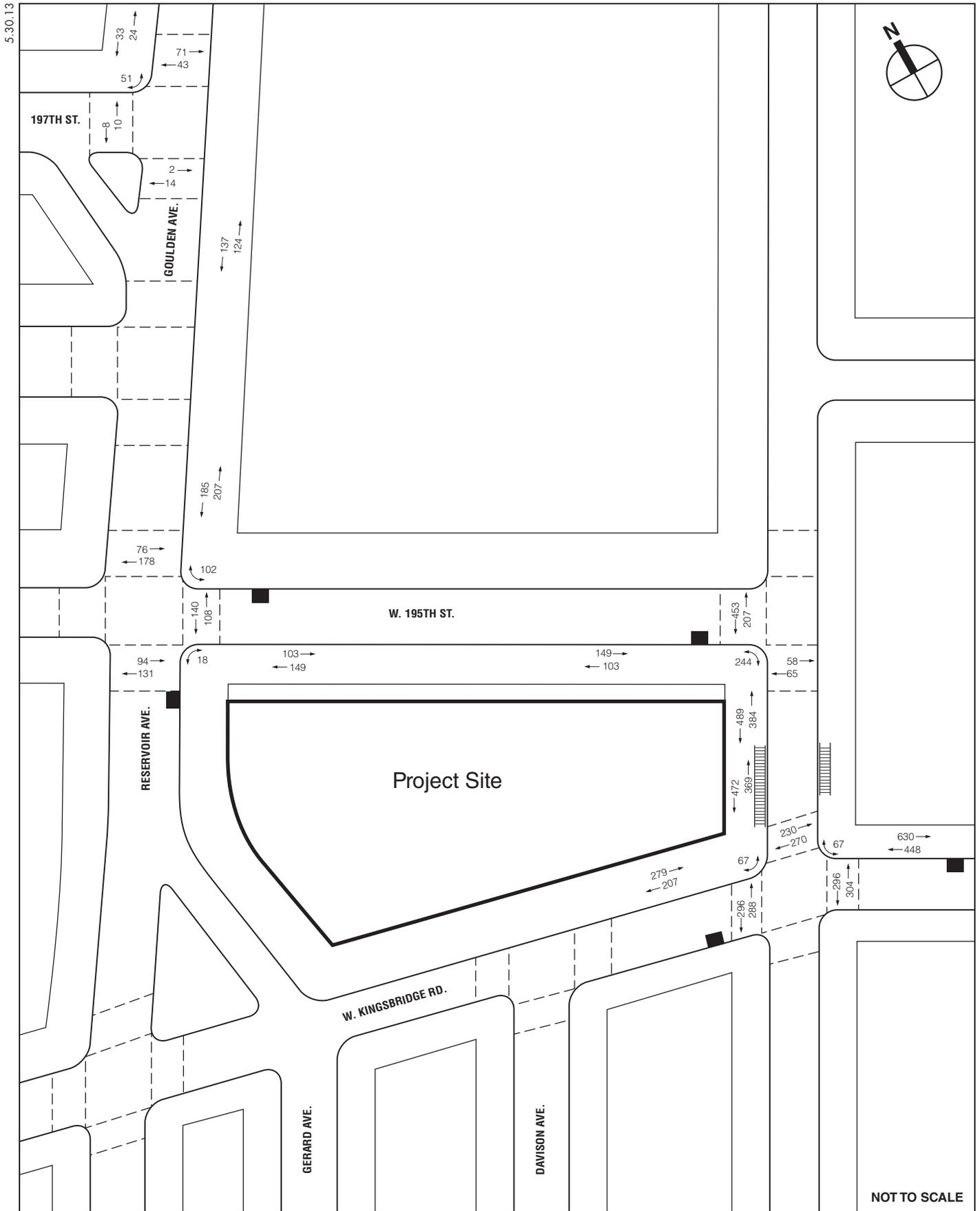
Estimates of peak hour transit and pedestrian volumes in the No Build condition were developed by applying the CEQR-recommended 0.25 percent annual background growth rate for five years (year 2013 to year 2018) onto existing pedestrian volumes and by adding the estimated pedestrian volumes generated by one No Build project near the study area that would be completed independent of the proposed project.

STREET-LEVEL PEDESTRIAN OPERATIONS

The 2018 No Build peak hour pedestrian volumes are shown in **Figures 8-24 to 8-27**. As shown in **Tables 8-34 through 8-36**, all sidewalk, corner reservoir, and crosswalk analysis locations would continue to operate at acceptable levels (maximum of 6 PMF platoon flows for sidewalks; minimum of 24 SFP for corners and crosswalks).

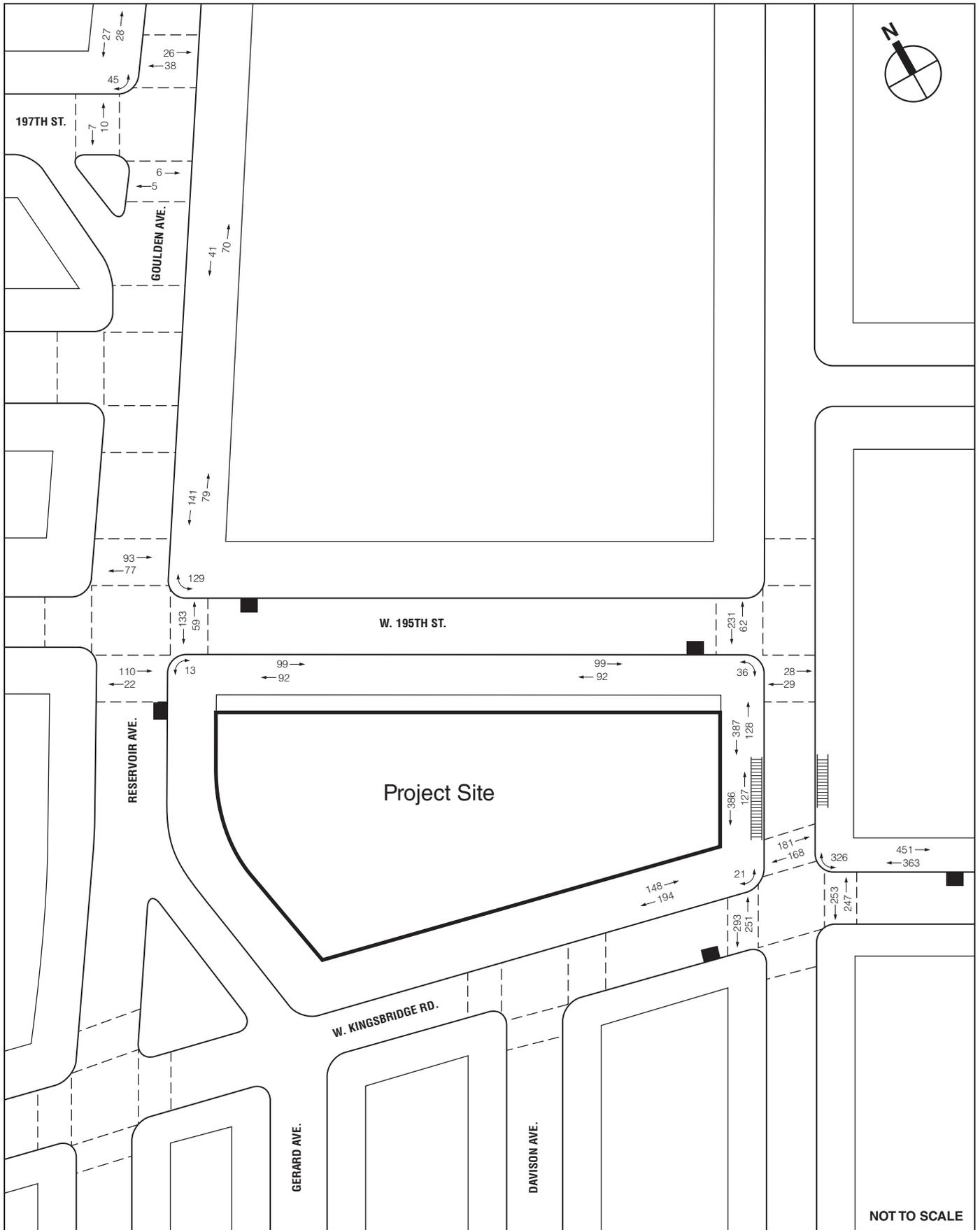


No Build Pedestrian Volumes
 Weekday MD Peak Hour
 Figure 8-24



No Build Pedestrian Volumes
 Weekday PM Peak Hour
 Figure 8-25

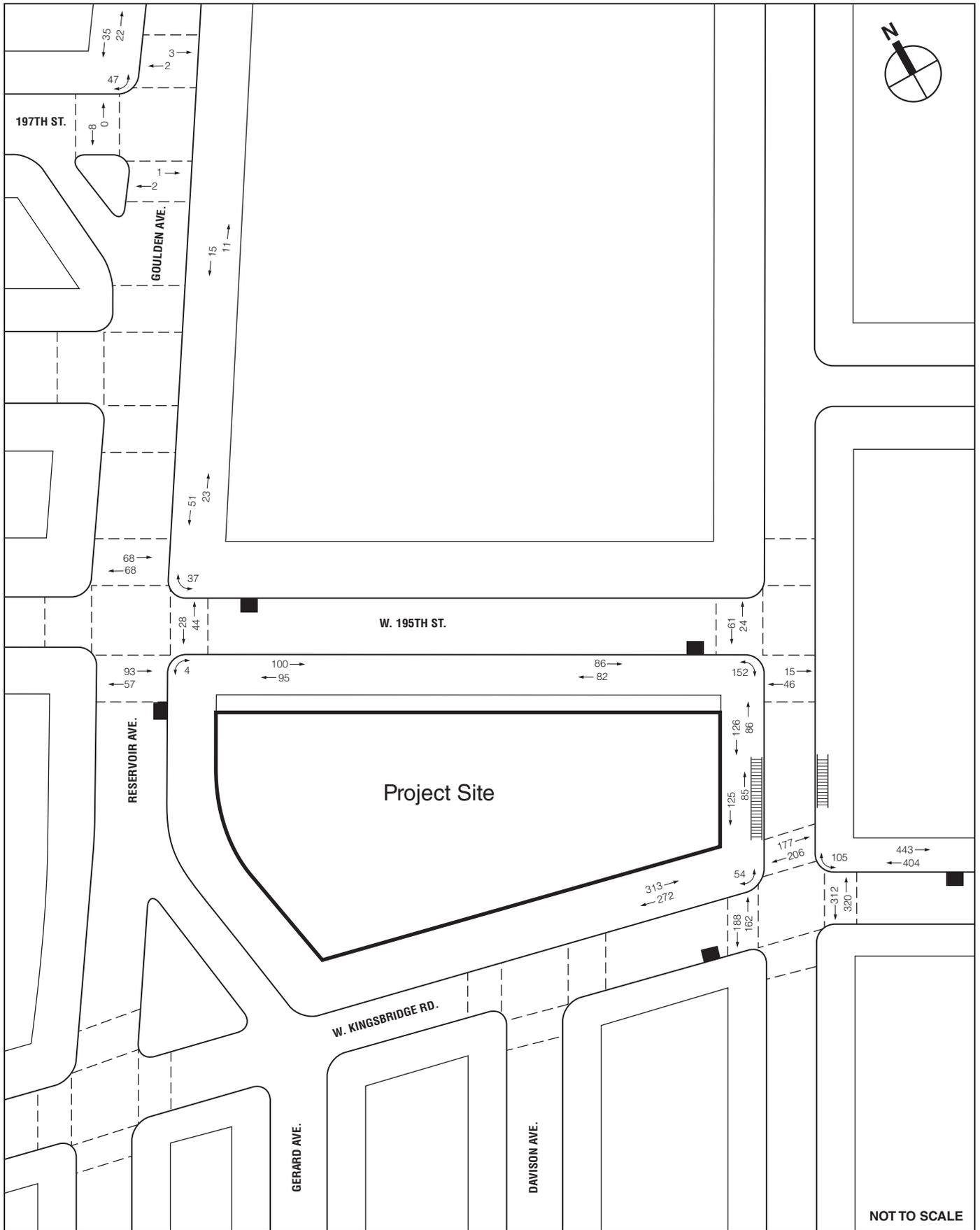
5.30.13



— Project Site ■ Bus Stop

No Build Pedestrian Volumes
Saturday MD Peak Hour
Figure 8-26

5.30.13



— Project Site ■ Bus Stop

NOT TO SCALE

No Build Pedestrian Volumes
 Saturday PM Peak Hour
 Figure 8-27

Table 8-34
2018 No Build Conditions: Pedestrian LOS Analysis for Sidewalks

Location	Sidewalk	Effective Width (feet)	1-Hour Two-Way Volume	Platoon	
				PMF	LOS
Weekday Midday Peak Period					
Goulden Avenue and West 197th Street	East (south of W.197th St)	8.0	270	0.70	B
	West (north of W.197th St)	3.0	45	0.31	A
Reservoir Avenue and West 195th Street	East (north of W.195th St)	11.0	843	1.40	B
	South (east of Reservoir Ave)	7.0	436	1.30	B
Jerome Avenue and West 195th Street	South (west of Jerome Ave)	7.0	436	1.30	B
	West (south of W.195th St)	12.0	1315	2.12	B
Jerome Avenue and West Kingsbridge Road	North (east of Jerome Ave)	15.0	1367	1.83	B
	North (west of Jerome Ave)	10.0	508	0.94	B
	West (north of W. Kingsbridge Rd)	11.0	1307	2.29	B
Weekday PM Peak Period					
Goulden Avenue and West 197th Street	East (south of W.197th St)	8.0	261	0.68	B
	West (north of W.197th St)	3.0	57	0.40	A
Reservoir Avenue and West 195th Street	East (north of W.195th St)	11.0	392	0.74	B
	South (east of Reservoir Ave)	7.0	252	0.69	B
Jerome Avenue and West 195th Street	South (west of Jerome Ave)	7.0	252	0.69	B
	West (south of W.195th St)	12.0	873	1.43	B
Jerome Avenue and West Kingsbridge Road	North (east of Jerome Ave)	15.0	1078	1.35	B
	North (west of Jerome Ave)	10.0	486	1.01	B
	West (north of W. Kingsbridge Rd)	11.0	841	1.50	B
Saturday Midday Peak Period					
Goulden Avenue and West 197th Street	East (south of W.197th St)	8.0	111	0.29	A
	West (north of W.197th St)	3.0	55	0.38	A
Reservoir Avenue and West 195th Street	East (north of W.195th St)	11.0	220	0.42	A
	South (east of Reservoir Ave)	7.0	191	0.55	B
Jerome Avenue and West 195th Street	South (west of Jerome Ave)	7.0	191	0.55	B
	West (south of W.195th St)	12.0	515	0.81	B
Jerome Avenue and West Kingsbridge Road	North (east of Jerome Ave)	15.0	814	1.03	B
	North (west of Jerome Ave)	10.0	342	0.63	B
	West (north of W. Kingsbridge Rd)	11.0	513	0.88	B
Saturday PM Peak Period					
Goulden Avenue and West 197th Street	East (south of W.197th St)	8.0	26	0.07	A
	West (north of W.197th St)	3.0	57	0.38	A
Reservoir Avenue and West 195th Street	East (north of W.195th St)	11.0	74	0.14	A
	South (east of Reservoir Ave)	7.0	195	0.57	B
Jerome Avenue and West 195th Street	South (west of Jerome Ave)	7.0	168	0.50	A
	West (south of W.195th St)	12.0	212	0.37	A
Jerome Avenue and West Kingsbridge Road	North (east of Jerome Ave)	15.0	847	1.18	B
	North (west of Jerome Ave)	10.0	585	1.05	B
	West (north of W. Kingsbridge Rd)	11.0	210	0.40	A

Note: PMF = pedestrians per minute per foot.

Table 8-35

2018 No Build Conditions: Pedestrian LOS Analysis for Corners

Location	Corner	Weekday Midday		Weekday PM		Saturday Midday		Saturday PM	
		SFP	LOS	SFP	LOS	SFP	LOS	SFP	LOS
Goulden Avenue and West 197th Street	Northwest	1038.4	A	1252.3	A	1832.1	A	3941.9	A
Reservoir Avenue and W.195th Street	Northeast	115.5	A	376.8	A	473.0	A	947.4	A
	Southeast	217.5	A	499.9	A	722.0	A	1099.0	A
Jerome Avenue and West 195th Street	Southwest	141.4	A	305.6	A	721.9	A	930.3	A
Jerome Avenue and West Kingsbridge Road	Northeast	182.0	A	217.5	A	222.4	A	247.7	A
	Northwest	146.0	A	200.4	A	261.0	A	348.4	A

Notes: SFP = square feet per pedestrian.

Table 8-36

2018 No Build Conditions: Pedestrian LOS Analysis for Crosswalks

Location	Cross walk	Street Width (feet)	Cross walk Width (feet)	Conditions with Conflicting Vehicles											
				Weekday Midday			Weekday PM			Saturday Midday			Saturday PM		
				2-way Volume	SFP	LOS	2-way Volume	SFP	LOS	2-way Volume	SFP	LOS	2-way Volume	SFP	LOS
Goulden Avenue and West197th Street	North	44.0	12.0	132	109.5	A	114	115.8	A	64	249.2	A	5	2899.5	A
	South	47.0	13.0	7	2852.3	A	16	1235.0	A	11	1800.4	A	3	6659.4	A
	West	32.0	12.0	24	2097.8	A	18	2656.1	A	17	2942.2	A	8	6416.3	A
Reservoir Avenue and West195th Street	North	60.0	13.0	713	29.3	C	254	86.4	A	170	137.1	A	136	172.8	A
	East	60.0	16.0	646	79.0	A	248	215.9	A	192	292.0	A	72	760.6	A
	South	60.0	13.0	333	69.5	A	225	122.0	A	132	193.3	A	150	175.9	A
Jerome Avenue and West195th Street	South	69.5	15.0	311	72.6	A	123	188.8	A	57	422.3	A	61	354.3	A
	West	60.0	18.0	1418	45.5	B	660	105.1	A	293	177.0	A	85	617.4	A
Jerome Avenue and West Kingsbridge Road	North	60.0	13.0	555	56.5	B	500	61.3	A	349	80.6	A	383	88.7	A
	East	60.0	17.0	733	52.9	B	600	63.3	A	500	62.2	A	632	46.8	B
	West	60.0	16.0	903	38.8	C	584	55.9	B	544	50.3	B	350	82.4	A

Notes: SFP = square feet per pedestrian.

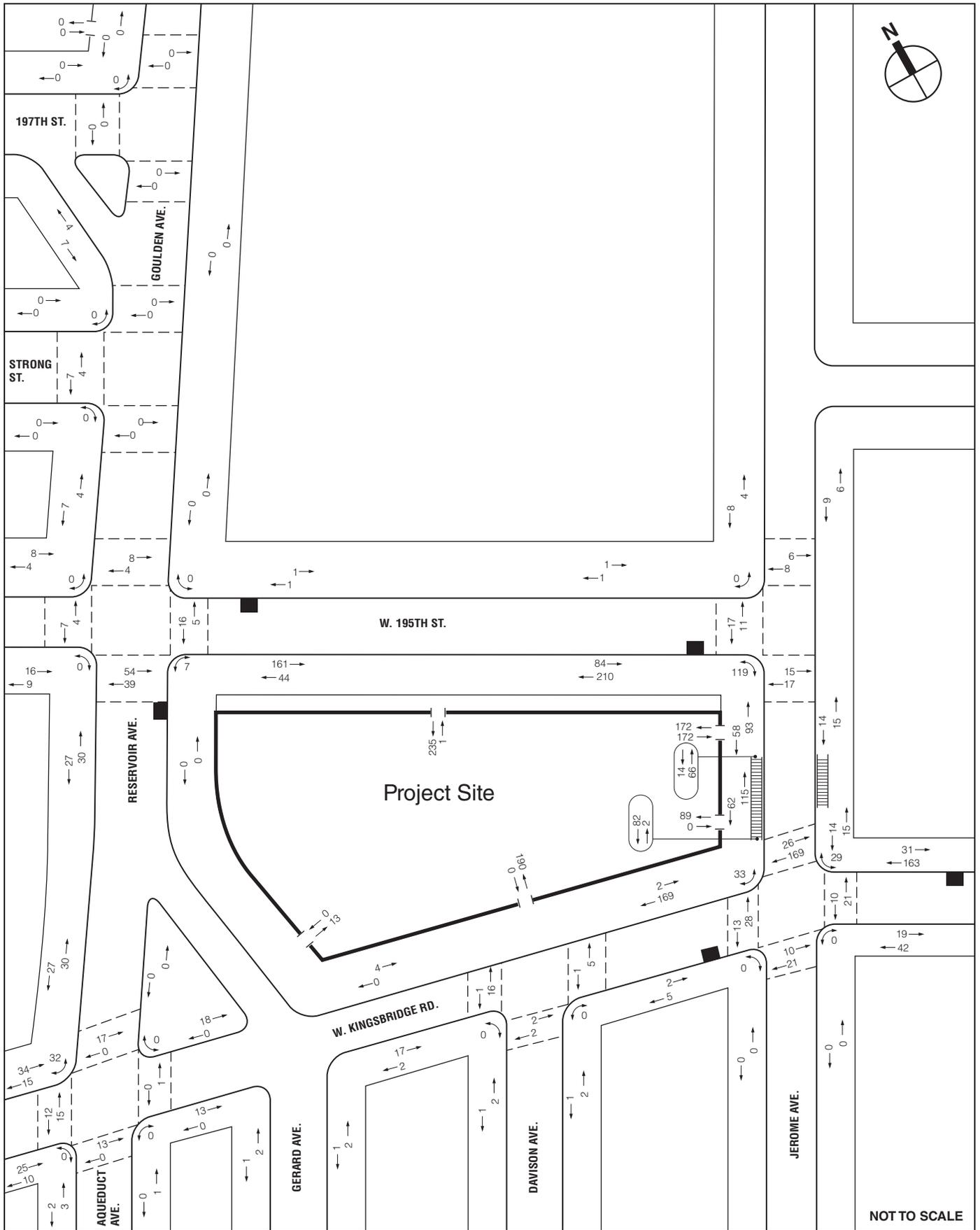
2018 BUILD CONDITION

The future with the proposed project would result in increased pedestrian volumes within the study area. This section describes the projected travel patterns of the site-related trips and assesses their potential impacts on nearby pedestrian facilities for the 2018 analysis years. Where significant adverse impacts are identified, measures to mitigate the impacts are described in Chapter 14, “Mitigation.”

TRIP DISTRIBUTION AND ASSIGNMENT

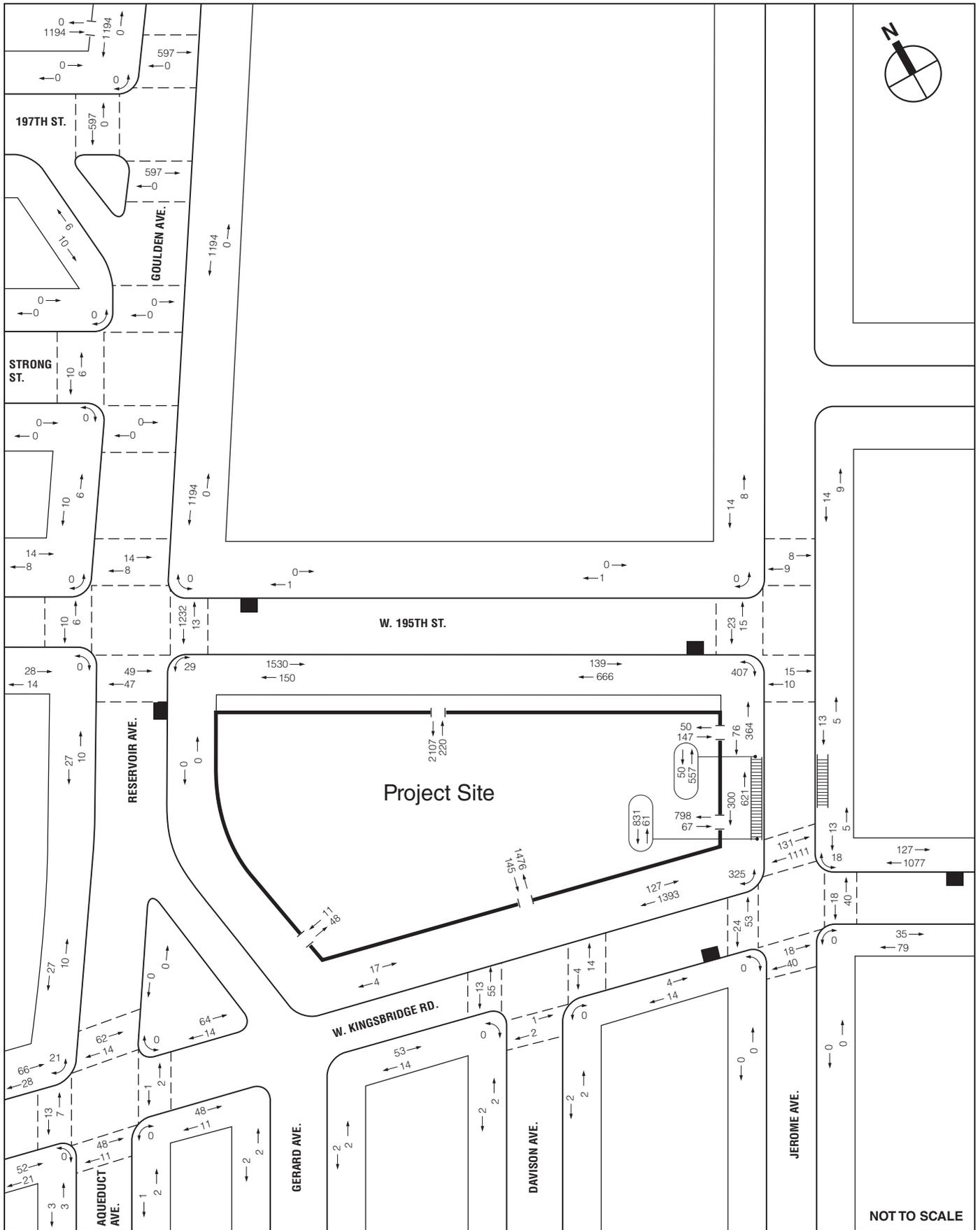
Pedestrian volumes for the Build condition were estimated by overlaying peak hour volumes derived from the trip generation estimates presented in the “Traffic and Parking” section, onto the No Build analysis networks. These volumes were then assigned to the pedestrian analysis locations based on the following assumptions. The total project generated peak hour pedestrian volumes are shown in **Figures 8-28 to 8-31**.

- Automobile trips associated with the proposed project are expected to terminate at the on-site parking garage and no pedestrian trips associated with this population would pass through pedestrian analysis elements. It was assumed that for the weekday PM, Saturday



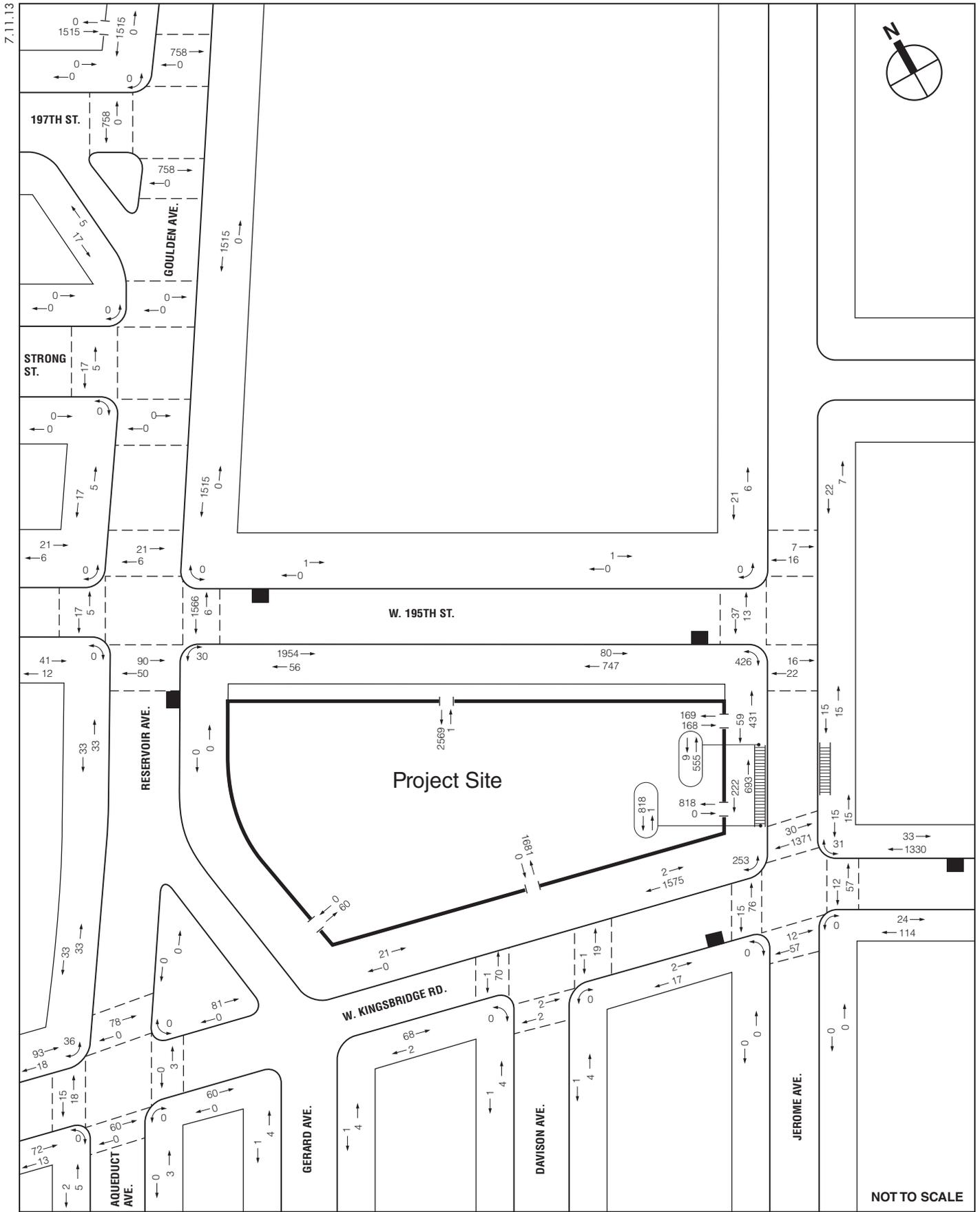
Project Site
 Bus Stop

Project Generated Pedestrian Volumes
 Weekday MD Peak Hour
 Figure 8-28

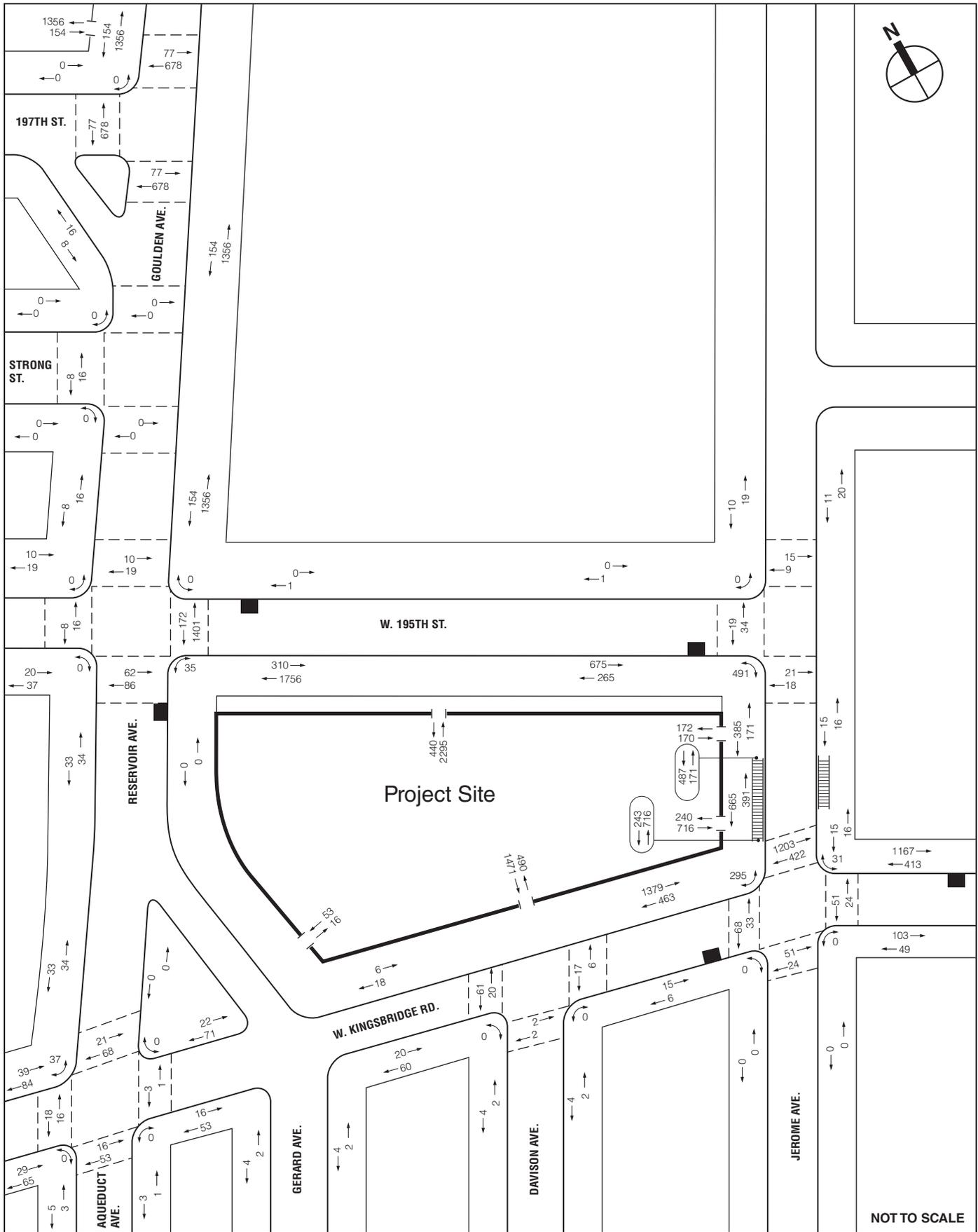


Project Site
 Bus Stop

Project Generated Pedestrian Trips
 Weekday PM Peak Hour (6-7 PM)
 Figure 8-29



Project Generated Pedestrian Trips
 Saturday MD Peak Hour (2-3 PM)
 Figure 8-30



Project Site
 Bus Stop

Project Generated Pedestrian Trips
 Saturday PM Peak Hour (6-7 PM)
Figure 8-31

NOT TO SCALE

midday, and Saturday PM peak period where on-site parking may not be able to accommodate all auto trips, the Lehman College parking lot located north of Goulden Avenue and W.197th Street intersection also would be utilized. For those auto trips terminating at the Lehman College parking lot, pedestrians would walk from the parking lot to the project site.

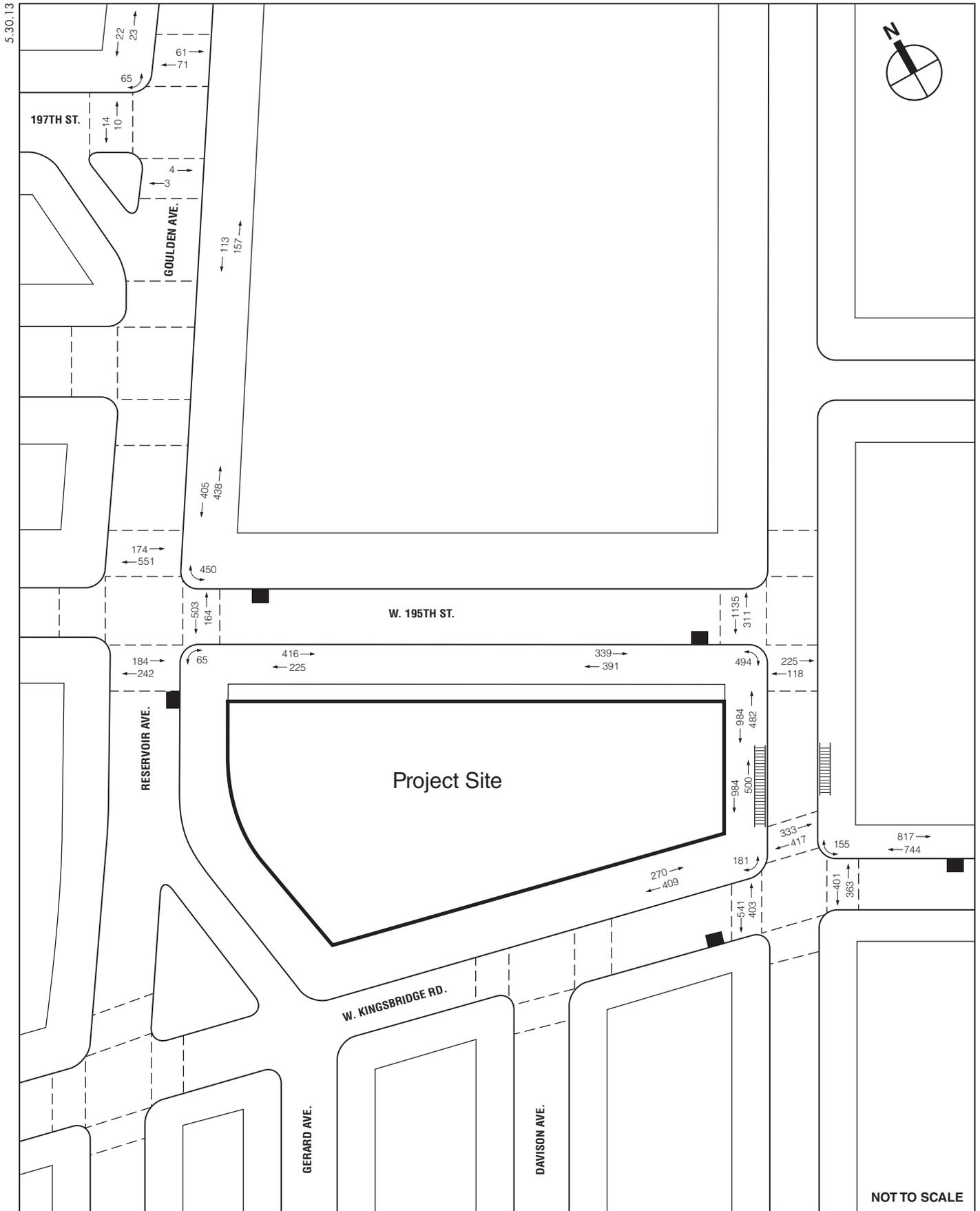
- Bus trips were assigned to the study area bus routes. Bus riders would get on and off at the nearest bus stops and walk to and from the project site.
- Subway trips were assigned to the two nearby subway stations: Kingsbridge Road Station (No.4 line) and Kingsbridge Road Station (B/D lines). Based on NYCT's recommendation, 60 percent of weekday trips were assigned to No. 4 line and 40 percent to the B/D lines while 55 percent of Saturday trips were assigned to the No. 4 line and 45 percent to D line. Subway riders who take the No. 4 line would access the elevated station via two street-level stairs on the west sidewalk based on the proximity to the proposed project's entrances/exits. It was conservatively assumed that 100 percent of subway riders who take B/D lines would use the subway entrance at the Grand Concourse and Kingsbridge Road intersection and walk along the Kingsbridge Road to arrive at the project site.
- Walk-only trips were distributed to the surrounding street network based on the current neighborhood and prevailing patterns.

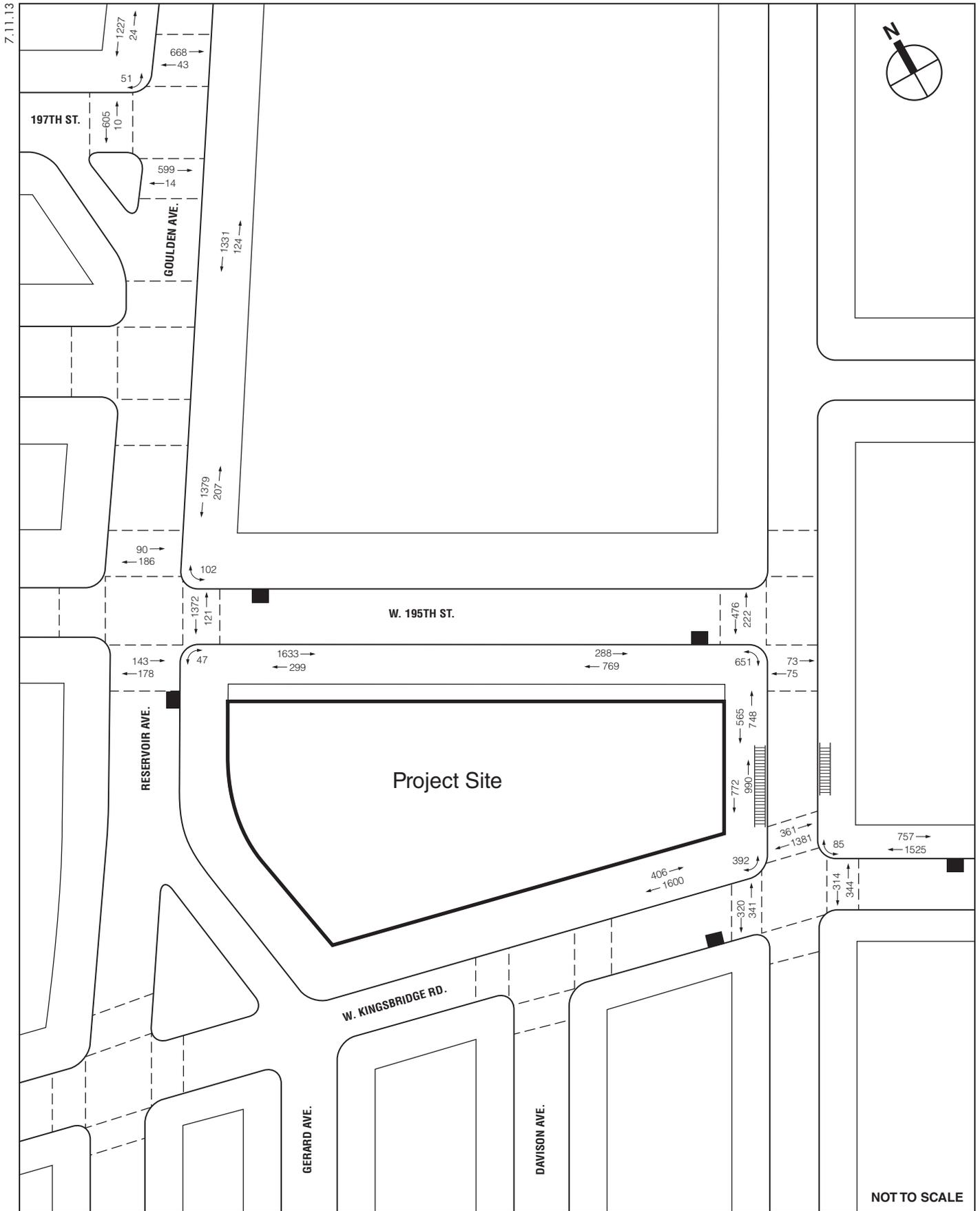
STREET-LEVEL PEDESTRIAN OPERATIONS

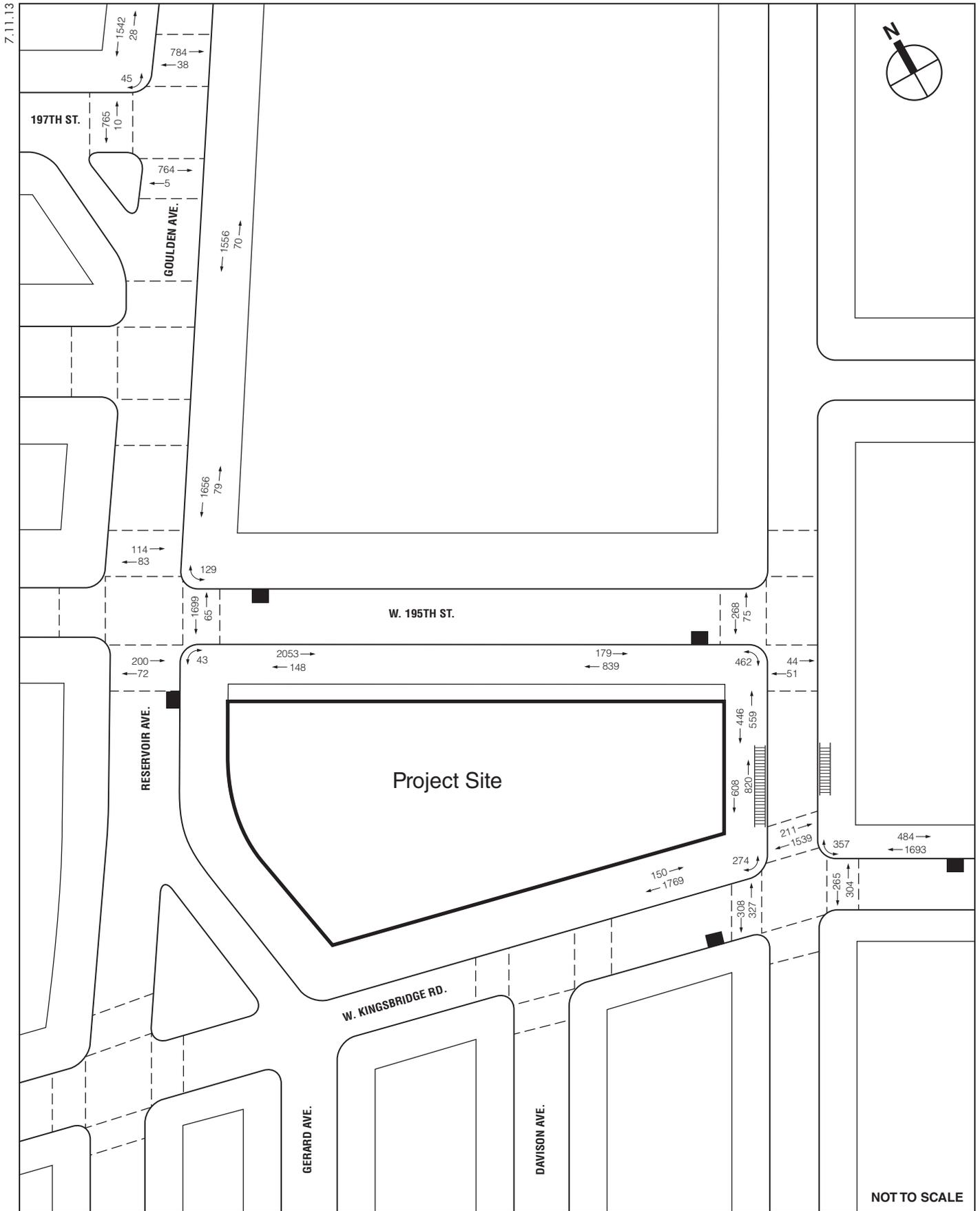
The study area sidewalks, corner reservoirs, and crosswalks were assessed for the weekday midday, weekday PM, Saturday midday and Saturday PM by superimposing project-generated trips onto the No Action pedestrian analysis networks. The 2018 Build peak hour pedestrian volumes are shown in **Figures 8-32 to 8-35**. As shown in **Tables 8-37 through 8-39**, all sidewalks and corner reservoirs would continue to operate at acceptable levels (maximum of 6.0 PMF platoon flows for sidewalks; minimum of 24 SFP for corners and crosswalks), except for the following analysis locations listed below, where significant adverse pedestrian impacts have been identified. Measures that can be implemented to mitigate the significant adverse pedestrian impacts are discussed in Chapter 14, "Mitigation."

Goulden Avenue and West 197th Street

- The west sidewalk north of W.197th Street would deteriorate to LOS D (11.03 PMF), LOS E (13.84 PMF), and LOS E (15.83 PMF) during the Weekday PM, Saturday midday, and Saturday PM peak periods, respectively.
- The north crosswalk would deteriorate to LOS E (11.9 SFP), LOS E (11.6 SFP), LOS E (9.4 SFP) during the Weekday PM, Saturday midday, and Saturday PM peak periods, respectively.
- The south crosswalk would deteriorate to LOS D (20.4 SFP), LOS D (15.6 SFP), LOS E (13.4 SFP) during the Weekday PM, Saturday midday, and Saturday PM peak periods, respectively.







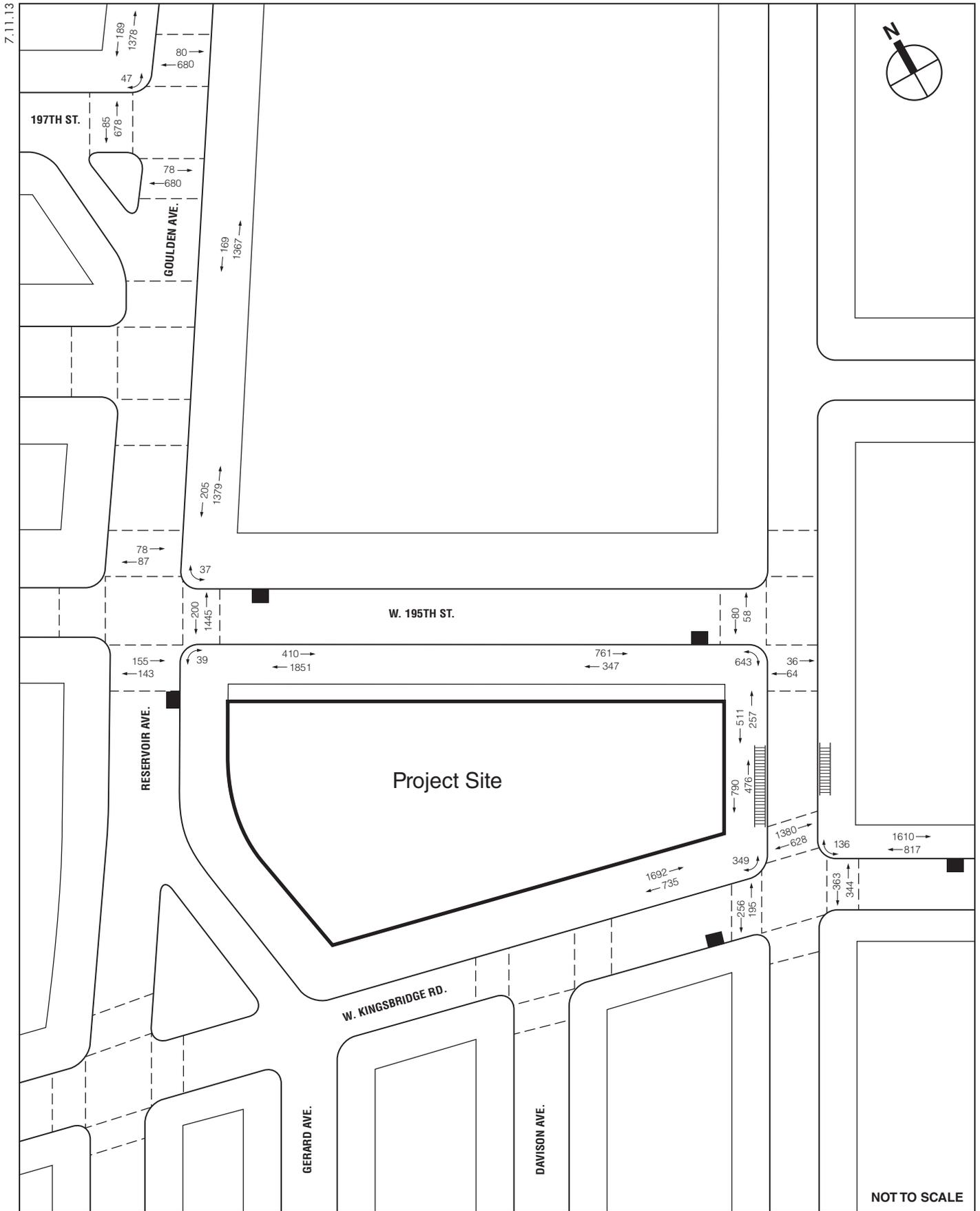


Table 8-37

2018 Build Conditions: Pedestrian LOS Analysis for Sidewalks

Location	Sidewalk	Effective Width (feet)	1-Hour Two-Way Volume	Platoon	
				PMF	LOS
Weekday Midday Peak Period					
Goulden Avenue and West 197th Street	East (south of W.197th St)	8.0	270	0.70	B
	West (north of W.197th St)	3.0	45	0.31	A
Reservoir Avenue and West 195th Street	East (north of W.195th St)	11.0	843	1.40	B
	South (east of Reservoir Ave)	7.0	641	2.01	B
Jerome Avenue and West 195th Street	South (west of Jerome Ave)	7.0	730	2.29	B
	West (south of W.195th St)	12.0	1466	2.40	B
Jerome Avenue and West Kingsbridge Road	North (east of Jerome Ave)	15.0	1561	2.14	B
	North (west of Jerome Ave)	10.0	679	1.24	B
	West (north of W. Kingsbridge Rd)	11.0	1484	2.68	B
Weekday PM Peak Period					
Goulden Avenue and West 197th Street	East (south of W.197th St)	8.0	1455	4.66	C
	West (north of W.197th St)	3.0	1251	11.03	E+
Reservoir Avenue and West 195th Street	East (north of W.195th St)	11.0	1586	3.64	C
	South (east of Reservoir Ave)	7.0	1932	6.67	D+
Jerome Avenue and West 195th Street	South (west of Jerome Ave)	7.0	1057	3.23	C
	West (south of W.195th St)	12.0	1313	2.31	B
Jerome Avenue and West Kingsbridge Road	North (east of Jerome Ave)	15.0	2282	3.29	C
	North (west of Jerome Ave)	10.0	2006	2.88	B
	West (north of W. Kingsbridge Rd)	11.0	1762	3.51	C
Saturday Midday Peak Period					
Goulden Avenue and West 197th Street	East (south of W.197th St)	8.0	1626	5.38	C
	West (north of W.197th St)	3.0	1570	13.84	E+
Reservoir Avenue and West 195th Street	East (north of W.195th St)	11.0	1735	4.11	C
	South (east of Reservoir Ave)	7.0	2201	8.06	D+
Jerome Avenue and West 195th Street	South (west of Jerome Ave)	7.0	1018	3.56	C
	West (south of W.195th St)	12.0	1005	1.81	B
Jerome Avenue and West Kingsbridge Road	North (east of Jerome Ave)	15.0	2177	3.41	C
	North (west of Jerome Ave)	10.0	1919	3.55	C
	West (north of W. Kingsbridge Rd)	11.0	1428	3.05	C
Saturday PM Peak Period					
Goulden Avenue and West 197th Street	East (south of W.197th St)	8.0	1536	5.82	C
	West (north of W.197th St)	3.0	1567	15.83	E+
Reservoir Avenue and West 195th Street	East (north of W.195th St)	11.0	1584	4.36	C
	South (east of Reservoir Ave)	7.0	2261	9.28	D+
Jerome Avenue and West 195th Street	South (west of Jerome Ave)	7.0	1108	4.00	C
	West (south of W.195th St)	12.0	768	1.55	B
Jerome Avenue and West Kingsbridge Road	North (east of Jerome Ave)	15.0	2427	3.97	C
	North (west of Jerome Ave)	10.0	2427	7.35	D+
	West (north of W. Kingsbridge Rd)	11.0	1266	2.91	B

Note: PMF = pedestrians per minute per foot.
 "+" denotes a significant adverse pedestrian impact.

Table 8-38
2018 Build Conditions: Pedestrian LOS Analysis for Corners

Location	Corner	Weekday Midday		Weekday PM		Saturday Midday		Saturday PM	
		SFP	LOS	SFP	LOS	SFP	LOS	SFP	LOS
Goulden Ave. and W.197th St.	Northwest	1038.4	A	113.6	A	90.2	A	101.0	A
Reservoir Ave. and W.195th St	Northeast	113.2	A	89.7	A	77.0	A	89.9	A
	Southeast	192.4	A	105.6	A	92.4	A	70.4	A
Jerome Ave and W.195th St.	Southwest	128.4	A	189.9	A	272.7	A	268.0	A
Jerome Ave. and W. Kingsbridge Rd.	Northeast	144.8	A	76.2	A	67.4	A	76.1	A
	Northwest	119.9	A	74.8	A	74.5	A	57.4	B

Notes: SFP = square feet per pedestrian.

Table 8-39
2018 Build Conditions: Pedestrian LOS Analysis for Crosswalks

Location	Cross walk	Street Width (feet)	Cross walk Width (feet)	Conditions with Conflicting Vehicles											
				Weekday Midday			Weekday PM			Saturday Midday			Saturday PM		
				2-way Volume	SFP	LOS	2-way Volume	SFP	LOS	2-way Volume	SFP	LOS	2-way Volume	SFP	LOS
Goulden Avenue and West 197th Street	North	44.0	12.0	132	109.5	A	711	11.9	E+	822	11.6	E+	760	9.4	E+
	South	47.0	13.0	7	2852.3	A	613	20.4	D+	769	15.6	D+	758	13.4	E+
	West	32.0	12.0	24	2097.8	A	615	52.2	B	775	41.7	B	763	36.8	C
Reservoir Avenue and West 195th Street	North	60.0	13.0	725	28.7	C	276	77.0	A	197	114.9	A	165	134.0	A
	East	60.0	16.0	667	74.9	A	1493	23.7	D+	1764	18.9	D+	1645	17.5	D+
	South	60.0	13.0	426	53.3	B	321	83.1	A	272	86.9	A	298	82.6	A
Jerome Avenue and West 195th Street.	South	69.5	15.0	343	64.8	A	148	157.5	A	95	249.4	A	100	200.5	A
	West	60.0	18.0	1446	43.9	B	698	94.8	A	343	141.7	A	138	342.1	A
Jerome Avenue and West Kingsbridge Road	North	60.0	13.0	750	38.4	C	1742	12.3	E+	1750	10.2	E+	2008	9.0	E+
	East	60.0	17.0	764	50.2	B	658	56.9	B	569	52.6	B	707	40.3	B
	West	60.0	16.0	944	36.8	C	661	48.6	B	635	41.5	B	451	59.7	B

Notes: SFP = square feet per pedestrian.
“+” denotes a significant adverse pedestrian impact.

Reservoir Avenue and West 195th Street

- The south sidewalk east of Reservoir Avenue would deteriorate to LOS D (6.67 PMF), LOS D (8.06 PMF), and LOS D (9.28 PMF) during the Weekday PM, Saturday midday, and Saturday PM peak periods, respectively.
- The east crosswalk would deteriorate to LOS D (23.7 SFP), LOS D (18.9 SFP), and LOS D (17.5 SFP) during the Weekday PM, Saturday midday and Saturday PM peak periods, respectively.

Jerome Avenue and West Kingsbridge Road

- The north sidewalk west of Jerome Avenue would deteriorate to LOS D (7.35 PMF) during the Saturday PM peak period.
- The north crosswalk would deteriorate to LOS E (12.3 SFP), LOS E (10.2 SFP), LOS E (9.0 SFP) during the weekday PM, Saturday midday, and Saturday PM peak periods, respectively.

I. VEHICULAR AND PEDESTRIAN SAFETY

METHODOLOGY

An evaluation of vehicular and pedestrian safety is necessary for locations within the traffic and pedestrian study areas that have been identified as high accident locations, where 48 or more total reportable and non-reportable crashes or five or more vehicular-pedestrian/bicyclist injury crashes occurred in any consecutive 12 months of the most recent 3-year period for which data are available. For these locations, accident trends are identified to determine whether projected vehicular and pedestrian traffic would further impact safety at these locations. The determination of potential significant safety impacts depends on the type of area where the project site is located, traffic volumes, accident types and severity, and other contributing factors. Where appropriate, measures to improve traffic and pedestrian safety are identified and coordinated with NYCDOT.

ACCIDENT DATA

Crash data for the study area intersections were obtained from NYSDOT for the time period between May 31, 2009 and May 31, 2012. The data obtained quantify the total number of reportable accidents (involving fatality, injury, or more than \$1,000 in property damage), fatalities, and injuries during the study period, as well as a yearly breakdown of vehicular crashes with pedestrians and bicycles at each location.

During the May 31, 2009 and May 31, 2012 three-year period, a total of 348 reportable and non-reportable accidents, one fatality, 293 injuries, and 99 pedestrian/bicyclist-related accidents occurred at the study area intersections. A rolling total of accident data identifies 5 study area intersections as high accident locations in the 2009 to 2012 period. These intersections are West Kingsbridge Road and Jerome Avenue, West Kingsbridge Road and University Avenue, West Fordham Road and University Avenue, West Fordham Road and Jerome Avenue, and East Fordham Road and East Kingsbridge Road/Elm Place/Bainbridge Avenue. **Table 8-40** depicts total accident characteristics by intersection during the study period, as well as a breakdown of pedestrian and bicycle accidents by year and location.

Table 8-41 shows a detailed description of each pedestrian/bicyclist-related accident at the 5 high accident locations listed above during the three year period.

**Table 8-40
Accident Summary**

Intersection		Study Period						Accidents by Year								
North-South Roadway	East-West Roadway	All Accidents by Year				Total Fatalities	Total Injuries	Pedestrian				Bicycle				
		2009	2010	2011	2012			2009	2010	2011	2012	2009	2010	2011	2012	
Sedgwick Avenue	West Kingsbridge Rd	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0
Webb Avenue	West Kingsbridge Road	5	7	5	1	0	15	0	2	1	0	0	0	0	0	0
University Avenue	West Kingsbridge Road	11	10	11	6	0	33	3	3	2	2	0	1	1	0	0
Reservoir Avenue/Aqueduct Avenue	West Kingsbridge Road	1	6	3	0	0	8	0	2	2	0	0	0	0	0	0
Reservoir Avenue /Grand Avenue	West Kingsbridge Road	3	5	4	2	0	10	3	0	0	1	0	0	0	1	0
Reservoir Avenue	West 195th Street	1	5	4	2	0	11		2	1	0	0	0	0	0	0
Jerome Avenue	West 195th Street	2	1	6	1	0	11	1	2	1	0	0	0	0	0	0
Davidson Avenue	West Kingsbridge Road	0	5	5	2	0	7	0	0	2	0	0	0	0	0	0
Jerome Avenue	West Kingsbridge Road	4	15	14	0	0	17	0	3	4	0	0	0	0	1	0
Morris Avenue	East Kingsbridge Road	2	6	2	1	0	11	1	2	0	0	0	0	0	0	0
Creston Avenue	East Kingsbridge Road	1	3	7	0	0	11	0	1	2	0	0	0	0	1	0
Grand Concourse	East Kingsbridge Road	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Major Deegan Expressway Northbound Ramp	West Fordham Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Major Deegan Expressway Southbound Ramp	West Fordham Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dr. Martin L King Jr. Boulevard / University Ave	West Fordham Road	18	29	15	6	0	62	5	7	4	3	0	1	0	0	0
Jerome Avenue	West Fordham Road	7	17	27	9	0	54	3	7	8	2	0	0	0	0	0
Tiebout Avenue	East Fordham Road	3	0	2	0	0	1	1	0	0	0	0	0	0	0	0
East Kingsbridge Road/Elm Place/Bainbridge	East Fordham Road	6	19	12	6	1	41	2	2	3	0	1	1	1	1	0

Source: NYSDOT May 31, 2009 and May 31, 2012 accident data.
Note: Bold intersection is high accident location.

**Table 8-41
Vehicle and Pedestrian Accident Details**

Intersection	Year	Date	Time	Accident Class		Action of Vehicle	Action of Pedestrian	Cause of Accident				
				Injured	Killed			Left / Right Turns	Pedestrian Error/ Confusion	Driver Inattention	Other	
University Avenue & W. Kingsbridge Road	2009	7/3	22:00 PM	X		Going straight – South	Playing in roadway		X			
		12/13	16:45 PM	X		Making left turn – Unknown dir.	Unknown	X				
		12/31	17:10 PM	X		Going straight – West	Crossing				Unknown	
	2010	1/17	15:20 PM	X		Making right turn – South	Making right turn – South	X		X	Failure to yield RoW	
		4/29	15:50 PM	X		Going straight – South	Crossing against signal		X		Physical disability	
		5/19	9:30 AM	X		Making right turn – South	Crossing with signal	X		X	Failure to yield RoW	
		10/18	23:00 PM	X		Going straight – South	Crossing against signal		X			
	2011	2/7	20:13 PM	X		Going straight – West	Crossing with signal			X	Unsafe speed	
		5/3	14:05 PM	X		Unknown – East	Along highway with traffic				Following too closely	
		8/22	12:50 PM	X		Going straight – North	Crossing		X			
	2012	9/6	21:45 PM	X		Going straight – West	Other actions in roadway		X			
		5/17	21:40 PM	X		Unknown	Other actions in roadway				Unknown	
	Jerome Avenue & W. Kingsbridge Road	2010	5/27	1:00 AM	X		Unknown	Crossing				Unknown
			2/3	17:36 PM	X		Going straight – North	Crossing		X		
9/25			19:50 PM	X		Making left turn – South	Crossing against signal	X	X			
2011		10/13	14:00 PM	X		Going straight – South	Crossing		X			
		3/23	20:00 PM	X		Making left turn – Southeast	Crossing with signal	X				
		5/11	10:20 AM	X		Backing – East	Crossing with signal				Unknown	
		10/14	16:15 PM	x		Going straight – East	Going straight – North		X			
2011	10/27	7:00 AM	X		Making left turn – East	Crossing with signal	X					
	11/7	6:15 AM	X		Making right turn – Southwest	Crossing with signal	X	X				

Table 8-41 (cont'd)
Vehicle and Pedestrian Accident Details

Intersection	Year	Date	Time	Accident Class		Action of Vehicle	Action of Pedestrian	Cause of Accident			
				Injured	Killed			Left / Right Turns	Pedestrian Error/ Confusion	Driver Inattention	Other
Dr. Martin L King Jr. Boulevard / University Ave & W. Fordham Road	2009	7/12	23:40 PM	X		Going straight – North	Crossing				Unsafe speed
		9/1	10:49 AM	X		Making left turn – Northwest	Crossing with signal	X			
		9/14	8:00 AM	X		Going straight – East	Unknown				Unknown
		9/19	9:20 AM	X		Making left turn – East	Crossing with signal	X			
		10/21	10:40 AM	X		Going straight – West	Crossing				Unknown
	2010	2/14	18:20 PM	X		Going straight – West	Crossing against signal		X		
		3/21	12:00 PM	X		Making left turn – Southeast	Crossing with signal	X			Failure to yield RoW
		5/23	6:30 AM	X		Going straight – North	Crossing				Alcohol involvement
		5/31	10:59 AM	X		Making right turn – West	Crossing with signal	X			Turning improper
		7/25	1:15 AM	X		Going straight – North	Unknown				Unknown
		10/14	18:25 PM	X		Making left turn – South	Crossing with signal	X			Pavement slippery
		11/25	5:00 AM	X		Making right turn – West	Crossing with signal	X			
		11/29	17:30 PM	X		Going straight – West	Crossing with signal				Failure to yield RoW
	2011	3/27	23:00 PM	X		Going straight – West	Crossing				Unknown
		9/21	14:00 PM	X		Unknown – West	Crossing against signal		X		
		10/29	21:00 PM	X		Going straight – Unknown	Crossing with signal				Failure to yield RoW
		11/27	21:30 PM	X		Making left turn – Southwest	Crossing with signal	X		X	
	2012	2/16	18:00 PM	X		Going straight – West	Crossing against signal		X	X	
		3/7	20:41 PM	X		Making left turn – South	Unknown				Failure to yield RoW
		3/28	23:10 PM	X		Making left turn – West	Crossing with signal	X			

Table 8-41 (cont'd)
Vehicle and Pedestrian Accident Details

Intersection	Year	Date	Time	Accident Class		Action of Vehicle	Action of Pedestrian	Cause of Accident			
				Injured	Killed			Left / Right Turns	Pedestrian Error/ Confusion	Driver Inattention	Other
Jerome Avenue & W. Fordham Road	2009	8/1	11:15 AM	X		Going straight – North	Unknown				Unknown
		9/25	7:42 AM	X		Going straight – South	Crossing against signal		X		
		11/23	19:01 PM	X		Making left turn – South	Crossing with signal	X			
	2010	1/18	13:20 PM	X		Going straight – North	Crossing with signal				View obstructed / limited
		1/23	15:58 PM	X		Going straight – South	Crossing against signal		X		
		1/28	10:20 AM	X		Going straight – South	Crossing			X	Failure to yield RoW
		2/3	9:45 AM	X		Going straight – North	Crossing against signal		X		
		5/20	16:25 PM	X		Going straight – West	Crossing against signal		X		Unknown
		7/3	9:25 AM	X		Making right turn – Southeast	Unknown	X		X	Failure to yield RoW
		10/23	9:00 AM	X		Making right turn on red – East	Crossing with signal	X			
	2011	3/20	12:15 PM	X		Going straight – South	Crossing against signal		X		
		5/21	14:30 PM	X		Going straight – South	Unknown				Unknown
		5/31	18:16 PM	X		Going straight – South	Crossing		X		
		6/15	11:40 AM	X		Going straight – East	Unknown				Unknown
		10/1	14:20 PM	X		Going straight – South	Crossing against signal		X		
		10/13	17:05 PM	X		Making left turn – West	Crossing against signal	X	X		Failure to yield RoW
		11/8	19:40 PM	X		Going straight – North	Crossing with signal				View obstructed / limited
		12/21	23:20 PM	X		Making left turn – Northwest	Crossing with signal	X	X	X	Failure to yield RoW
	2012	1/2	15:56 PM	X		Going straight – South	Crossing				Unknown
		5/1	19:00 PM	X		Unknown	Crossing against signal		X		
E. Kingsbridge Road / Elm Place / Bainbridge Avenue	2009	10/5	18:57 PM	X		Making right turn – West	Crossing with signal	X		X	
		10/19	15:00 PM	X		Backing – Unknown	Unknown				Unknown
		10/20	15:00 PM	X		Starting from parking – North	Crossing				Unknown
	2010	4/14	23:33 PM	X		Going straight – East	Going straight – West		X		
		5/8	15:19 PM	x		Making right turn – East	Unknown	X			
		8/27	19:15 PM	X		Going straight – East	Crossing				Unknown
	2011	2/24	16:17 PM	X		Making left turn – South	Crossing against signal	X		X	
		4/6	9:00 AM	X		Going straight – South	Unknown				Unknown
		6/17	23:20 PM	X		Making right turn – South	Crossing	X			Unsafe speed, Failure to yield RoW
12/24		16:50 PM	X		Going straight – West	Crossing with signal			X		

UNIVERSITY AVENUE AND W. KINGSBRIDGE ROAD

Based on the review of the accident history at the intersection of University Avenue and W. Kingsbridge Road, no prevailing trends with regard to geometric deficiencies were identified as the primary causes of recorded accidents. With respect to geometric deficiencies that could potentially cause safety hazards, the intersection of University Avenue and W. Kingsbridge Road is signalized and provides four school crosswalks. In addition, pedestrian warning signs are posted on the north and south approaches to the intersection. In terms of project-generated activity, this intersection could experience approximately 84, 167, 196 and 217 incremental peak-hour project-generated pedestrian trips at the crosswalks during the weekday midday, weekday PM, Saturday midday and Saturday PM peak hours, respectively, during the peak event conditions. Nonetheless, additional safety measures, such as the restriping of the western crosswalk, which is rather faded, and the installation of countdown timers can be implemented to improve pedestrian safety at this intersection.

JEROME AVENUE AND WEST KINGSBRIDGE ROAD

Based on the review of the accident history at the intersection of Jerome Avenue and West Kingsbridge Road, no prevailing trends with regard to geometric deficiencies were identified as the primary causes of recorded accidents. With respect to geometric deficiencies that could potentially cause safety hazards, the intersection of Jerome Avenue and West Kingsbridge Road is signalized and provides two school crosswalks and two regular crosswalks. In addition, pedestrian safety signs are installed at the eastbound approach. Based on the detailed description, half of the pedestrian-related accidents were related to vehicles making left or right turning movements and the other half to pedestrian error or confusion. In terms of project-generated activity, this intersection could experience approximately 298, 1,435, 1,630 and 1,876 incremental peak-hour project-generated pedestrian trips at the crosswalks during the weekday midday, weekday PM, Saturday midday and Saturday PM peak hours, respectively, during the peak event conditions. Given this high level of pedestrian crossing activity, a Traffic Management Plan (TMP) would be needed during peak events to control the flow of pedestrians and to regulate the traffic at this intersection. The TMP would install personnel at key locations for directing the flow of pedestrians into the crosswalks to ensure safe crossing maneuvers. Nonetheless, additional safety measures, such as the installation of countdown timers on all approaches, and restriping the faded east and west crosswalks spanning West Kingsbridge Road can be implemented to improve pedestrian safety at this intersection.

UNIVERSITY AVENUE AND W. FORDHAM ROAD

Based on the review of the accident history at the intersection of University Avenue and W. Fordham Road, no prevailing trends with regard to geometric deficiencies were identified as the primary causes of recorded accidents. With respect to geometric deficiencies that could potentially cause safety hazards, the intersection of University Avenue and W. Fordham Road is signalized and currently lacks any crosswalk striping. In addition, pedestrian warning signs are posted on all four approaches to the intersection. In terms of project-generated activity, this intersection would not experience incremental peak-hour project-generated pedestrian trips at any of the crosswalks during each of the four analysis peak hours in the Build conditions. In terms of project-generated activity, given the considerable distance from the project site, this intersection is not expected to experience incremental peak-hour project-generated pedestrian trips at the crosswalks during the four analysis periods. Nonetheless, additional safety measures, such as the restriping of the all crosswalks, and the installation of countdown timers can be implemented to improve pedestrian safety at this intersection.

JEROME AVENUE AND W. FORDHAM ROAD

Based on the review of the accident history at the intersection of Jerome Avenue and W. Fordham Road, no prevailing trends with regard to geometric deficiencies were identified as the primary causes of recorded accidents. With respect to geometric deficiencies that could potentially cause safety hazards, the intersection of Jerome Avenue and W. Fordham Road is signalized and provides two school crosswalks; the east and west crosswalks currently lack any striping. There is a stop sign regulated slip for eastbound traffic making a right onto Jerome Avenue. In addition, pedestrian warning signs are posted on all four approaches and countdown timers exist on all but the southern crosswalk. In terms of project-generated activity, given the considerable distance from the project site, this intersection is not expected to experience incremental peak-hour project-generated pedestrian trips at the crosswalks during the four analysis periods. Nonetheless, additional safety measures, such as the restriping of the east and west crosswalks, and the installation of a countdown timer on the southern crosswalk can be implemented to improve pedestrian safety at this intersection.

E. KINGSBRIDGE/ELM/BAINBRIDGE AND E. FORDHAM ROAD

Based on the review of the accident history at the intersection of E. Kingsbridge/Elm/Bainbridge and E. Fordham Road, no prevailing trends with regard to geometric deficiencies were identified as the primary causes of recorded accidents. With respect to geometric deficiencies that could potentially cause safety hazards, the intersection of E. Kingsbridge/Elm/Bainbridge and E. Fordham Road is signalized and provides two school crosswalks and two regular crosswalks. The eastern leg of E. Fordham Road is not a legal crossing and as such, has no crosswalk. In addition, pedestrian warning signs are posted on all three approaches to the intersection. In terms of project-generated activity, given the considerable distance from the project site, this intersection is not expected to experience incremental peak-hour project-generated pedestrian trips at the crosswalks during the four analysis periods. Nonetheless, additional safety measures, such as the restriping of the west crosswalk, which is severely faded and the installation of countdown timers on all crosswalks can be implemented to improve pedestrian safety at this intersection.

J. PARKING

PARKING

The proposed project would provide approximately 457 public parking spaces in the Armory's cellar levels. These spaces would allow parking for private autos only and would prohibit the parking of school buses as well as charter buses (during the peak event conditions). These spaces would serve the parking demand generated by the typical daily activities during the weekdays and weekend, and the additional demand generated during the peak event conditions. In addition, these spaces would accommodate the demand generated by the employees and the community facility users on a daily basis.

Parking demand and accumulation estimates for the proposed project for both the weekday and Saturday conditions were prepared for the peak event conditions as presented in **Tables 8-42** and **8-43**. Based on these estimates, the maximum project-generated demand of 1,055 spaces would be reached during 8-9 PM on a weekday. On Saturday, the maximum project-generated demand of 1,018 spaces would be reached during the 2-3 PM hour.

As presented in **Tables 8-40** and **8-41**, parking demand generated by the proposed project under the peak event conditions would be fully accommodated approximately 75 percent of the time during the

weekday and 63 percent of the time during Saturday by the proposed on-site public parking spaces. However, during the hours of 4-10 PM on weekday and 2-10 PM on a Saturday, there would be a parking shortfall when the peak event is underway. Based on an arrangement between the applicant and Lehman College, it is anticipated that this parking shortfall would be accommodated by the available spaces at the Lehman College parking lot located in the close vicinity of the project site near the intersection of Goulden Avenue and West 197th Street.¹ The Lehman College parking lot provides a total of approximately 982 parking spaces, and would be used to provide parking for charter buses as well as the overflow parking demand from the proposed project under peak event conditions. In total, up to approximately 600 autos and 25 Charter Buses could be parked at the Lehman College parking lot under the weekday peak event conditions, and up to approximately 565 autos and 25 Charter Buses could be parked at the Lehman College parking lot under the Saturday peak event conditions.

In addition, during the peak event conditions, the southern curbside along eastbound West 195th Street is anticipated to be used for bus-layover and for parking media vehicles covering the events. In such case, approximately 15 on-street reserved parking spaces for National Guard vehicles would be displaced which would be accommodated in the proposed KNIC's on-site parking garage. Since the garage would be operating at a full capacity during the peak event conditions, this would result in a reassignment of an additional 15 vehicles to the Lehman College parking lot during the weekday and Saturday midday, and Saturday PM peak hours. The reassignment of these 15 additional vehicles has been accounted for in the 2018 Build condition analysis presented above under "Section F: Traffic."

In terms of regular parking demand without the peak-event conditions, the proposed public parking spaces would fully accommodate the demand generated by the by the typical daily activities during the weekday conditions. As for the Saturday without the peak-event conditions, the proposed public parking spaces would fully accommodate the demand during all times with the exception of the 8-9 PM hour when there could be a parking shortfall of approximately 32 spaces. Similar to the event conditions, it is anticipated that this parking shortfall would be also accommodated at the Lehman College parking lot.

Since the excess demand could be accommodated within a reasonable walking distance of the project site at the Lehman College parking lot, the proposed project would not result in a parking shortfall in the study area.

¹ Lehman College has confirmed that it will work with KNIC Partners, LLC to provide parking spaces to accommodate overflow cars and buses.

Kingsbridge Armory National Ice Center

Table 8-42
Weekday Parking Demand (Peak Event Conditions)

Hour	KNIC Employees				Community Facility				KNIC Autos (Typical Daily Activities)				KNIC Autos (Peak Event Only)				KNIC School Bus (Lehman College)				KNIC Charter Bus (Peak Event - Lehman College)				Total			
	In	Out	Total	Demand	In	Out	Total	Parking Demand	In	Out	Total	Parking Demand	In	Out	Total	Parking Demand	In	Out	Total	Parking Demand	In	Out	Total	Parking Demand	In	Out	Total	Parking Demand
12 AM - 01 AM	0	0	0	0	0	0	0	0	0	0	0	236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	236
01 AM - 02 AM	0	0	0	0	0	0	0	0	0	236	236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	236	236	0
02 AM - 03 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03 AM - 04 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04 AM - 05 AM	10	1	11	9	0	0	0	0	123	0	123	123	0	0	0	0	5	0	5	5	0	0	0	0	138	1	139	137
05 AM - 06 AM	3	0	3	12	0	0	0	0	0	0	0	123	0	0	0	0	0	0	5	5	0	0	0	0	3	0	3	140
06 AM - 07 AM	1	0	1	13	0	0	0	0	123	0	123	246	0	0	0	0	5	0	5	10	0	0	0	0	129	0	129	269
07 AM - 08 AM	1	0	1	14	0	0	0	0	0	123	123	123	0	0	0	0	0	5	5	5	5	0	0	0	1	128	129	142
08 AM - 09 AM	0	0	0	14	9	1	10	8	123	0	123	246	0	0	0	0	14	0	14	19	0	0	0	0	146	1	147	287
09 AM - 10 AM	0	0	0	14	7	3	10	12	0	123	123	123	0	0	0	0	0	5	5	14	0	0	0	0	7	131	138	163
10 AM - 11 AM	0	0	0	14	6	4	10	14	123	0	123	246	0	0	0	0	14	0	14	28	0	0	0	0	143	4	147	302
11 AM - 12 PM	0	0	0	14	4	5	9	13	0	123	123	123	0	0	0	0	0	14	14	14	0	0	0	0	4	142	146	164
12 PM - 01 PM	17	26	43	5	8	7	15	14	123	0	123	246	0	0	0	0	14	0	14	28	0	0	0	0	162	33	195	293
01 PM - 02 PM	2	0	2	7	5	5	10	14	0	123	123	123	0	0	0	0	0	14	14	14	0	0	0	0	7	142	149	158
02 PM - 03 PM	2	0	2	9	3	3	6	14	217	0	217	340	0	0	0	0	5	0	5	19	0	0	0	0	227	3	230	382
03 PM - 04 PM	2	0	2	11	6	6	12	14	0	123	123	217	0	0	0	0	0	14	14	5	0	0	0	0	8	143	151	247
04 PM - 05 PM	1	0	1	12	6	6	12	14	217	0	217	434	0	0	0	0	5	0	5	10	0	0	0	0	229	6	235	470
05 PM - 06 PM	1	12	13	1	3	7	10	10	164	217	381	381	27	0	27	27	0	5	5	5	1	0	1	1	196	241	437	425
06 PM - 07 PM	0	1	1	0	6	8	14	8	81	136	217	326	491	0	491	518	0	5	5	0	23	0	23	24	601	150	751	876
07 PM - 08 PM	0	0	0	0	4	4	8	8	164	245	409	245	27	0	27	545	0	0	0	0	1	0	1	25	196	249	445	823
08 PM - 09 PM	0	0	0	0	2	6	8	4	236	0	236	481	0	0	0	545	0	0	0	0	0	0	25	238	6	244	1,055	
09 PM - 10 PM	0	0	0	0	0	4	4	0	0	245	245	236	0	54	54	491	0	0	0	0	0	2	2	23	0	305	305	750
10 PM - 11 PM	0	0	0	0	0	0	0	0	236	0	236	472	0	491	491	0	0	0	0	0	0	23	23	0	236	514	750	472
11 PM - 12 AM	0	0	0	0	0	0	0	0	0	236	236	236	0	0	0	0	0	0	0	0	0	0	0	0	0	236	236	236

**Table 8-43
Saturday Parking Demand (Peak Event Conditions)**

Hour	KNIC Employees				Community Facility				KNIC Autos (Typical Daily Activities)				KNIC Autos (Peak Event Only)				KNIC School Bus (Lehman College)				KNIC Charter Bus (Peak Event - Lehman College)				Total				
	In	Out	Total	Demand	In	Out	Total	Parking Demand	In	Out	Total	Parking Demand	In	Out	Total	Parking Demand	In	Out	Total	Parking Demand	In	Out	Total	Parking Demand	In	Out	Total	Parking Demand	
12 AM - 01 AM	0	0	0	0	0	0	0	0	0	182	182	0	0	0	0	0	0	0	0	0	0	0	0	0	0	182	182	0	
01 AM - 02 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
02 AM - 03 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
03 AM - 04 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04 AM - 05 AM	11	1	12	10	0	0	0	0	123	0	123	123	0	0	0	0	5	0	5	5	0	0	0	0	139	1	140	138	
05 AM - 06 AM	2	0	2	12	0	0	0	0	0	0	0	123	0	0	0	0	0	0	0	5	0	0	0	0	2	0	2	140	
06 AM - 07 AM	1	0	1	13	0	0	0	0	123	0	123	246	0	0	0	0	5	0	5	10	0	0	0	0	129	0	129	269	
07 AM - 08 AM	0	0	0	13	0	0	0	0	0	123	123	123	0	0	0	0	0	5	5	5	5	0	0	0	0	0	128	128	141
08 AM - 09 AM	0	0	0	13	0	0	0	0	245	0	245	368	0	0	0	0	0	0	0	5	0	0	0	0	245	0	245	386	
09 AM - 10 AM	0	0	0	13	5	1	6	4	0	123	123	245	0	0	0	0	0	5	5	0	0	0	0	0	5	129	134	262	
10 AM - 11 AM	0	0	0	13	5	1	6	8	245	164	409	326	0	0	0	0	0	0	0	0	0	0	0	0	250	165	415	347	
11 AM - 12 PM	3	5	8	11	3	3	6	8	164	245	409	245	0	0	0	0	0	0	0	0	0	0	0	0	170	253	423	264	
12 PM - 01 PM	3	6	9	8	9	9	18	8	80	0	80	325	0	0	0	0	0	0	0	0	0	0	0	0	92	15	107	341	
01 PM - 02 PM	9	6	15	11	9	9	18	8	164	245	409	244	28	0	28	28	0	0	0	0	1	0	1	1	211	260	471	292	
02 PM - 03 PM	1	3	4	9	6	6	12	8	212	0	212	456	491	0	491	519	2	0	2	2	23	0	23	24	735	9	744	1,018	
03 PM - 04 PM	1	3	4	7	6	6	12	8	0	245	245	211	27	0	27	546	0	0	0	2	1	0	1	25	35	254	289	799	
04 PM - 05 PM	2	5	7	4	3	3	6	8	213	109	322	315	0	0	0	546	2	0	2	4	0	0	0	25	220	117	337	902	
05 PM - 06 PM	1	2	3	3	3	3	6	8	121	103	224	333	8	54	62	500	0	2	2	2	0	2	2	23	133	166	299	869	
06 PM - 07 PM	6	9	15	0	9	9	18	8	81	131	212	283	147	437	584	210	0	2	2	0	7	20	27	10	250	608	858	511	
07 PM - 08 PM	0	0	0	0	1	4	5	5	203	36	239	450	8	55	63	163	0	0	0	0	0	3	3	7	212	98	310	625	
08 PM - 09 PM	0	0	0	0	2	4	6	3	264	202	466	512	0	0	0	163	0	0	0	0	0	0	0	7	266	206	472	685	
09 PM - 10 PM	0	0	0	0	1	4	5	0	0	193	193	319	0	16	16	147	0	0	0	0	0	0	0	7	1	213	214	473	
10 PM - 11 PM	0	0	0	0	0	0	0	0	127	137	264	309	0	147	147	0	0	0	0	0	0	7	7	0	127	291	418	309	
11 PM - 12 AM	0	0	0	0	0	0	0	0	0	127	127	182	0	0	0	0	0	0	0	0	0	0	0	0	0	127	127	182	0

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