Chapter 17: Transit and Pedestrians

A. INTRODUCTION

This chapter evaluates the potential impacts of the proposed actions on transit and pedestrian facilities within the transportation study area. As described in Chapter 1, "Project Description," the proposed actions would result in the development of numerous parcels in Site A and Site B, on the southern portion of the Long Island City waterfront. The envelope of potential development anticipated under the proposed actions is referred to as the reasonable worst-case development scenario (RWCDS).

PRINCIPAL CONCLUSIONS

With the proposed actions, significant adverse transit impacts would result at the S7 and S8 street-level stairways at the Vernon Boulevard-Jackson Avenue No. 7 subway station and on the Q103 and B61 bus routes. The proposed actions would also result in significant adverse pedestrian impacts on the west sidewalk along Vernon Boulevard between 50th and 51st Avenues, the northwest corner of Vernon Boulevard and 50th Avenue, the north and west crosswalks at Vernon Boulevard and 50th Avenue, the west crosswalk at Vernon Boulevard and 51st Avenue, and the east and west crosswalks at the newly signalized intersection of 2nd Street and Borden Avenue. Potential measures to mitigate these projected significant adverse impacts are described in Chapter 22, "Mitigation."

B. METHODOLOGY

As described in Chapter 16, "Traffic and Parking," a travel demand projection was developed to identify the transportation elements likely to be affected by the proposed actions. Because the number of peak hour transit and pedestrian trips generated by the proposed actions would exceed the 200-trip-per-hour threshold specified in the 2001 *City Environmental Quality Review (CEQR) Technical Manual*, quantified transit and pedestrian analyses are required.

TRANSIT AND PEDESTRIAN STUDY AREAS

Mass transit options serving the project sites and surrounding areas, as depicted in **Figure 17-1**, include the New York City Transit (NYCT) E/V, G, and No. 7 subway lines; the Q103 and B61 bus routes, which travel in a north-south direction northeast of the sites; the Metropolitan Transportation Authority (MTA) Long Island Rail Road (LIRR) at the Long Island City station, which is located east of the project sites; and the New York Water Taxi.

The transit analyses include a quantified assessment of control areas and circulation elements at the No. 7 line's Vernon Boulevard-Jackson Avenue station and at the E/V lines' 23rd Street-Ely Avenue station, a ridership and peak period train loading analysis for the No. 7 train, and a line haul analysis for the Q103 and B61 bus routes—to include assessments of conditions at nearby bus stops. Because LIRR does not provide Manhattan-bound service at the Long Island City

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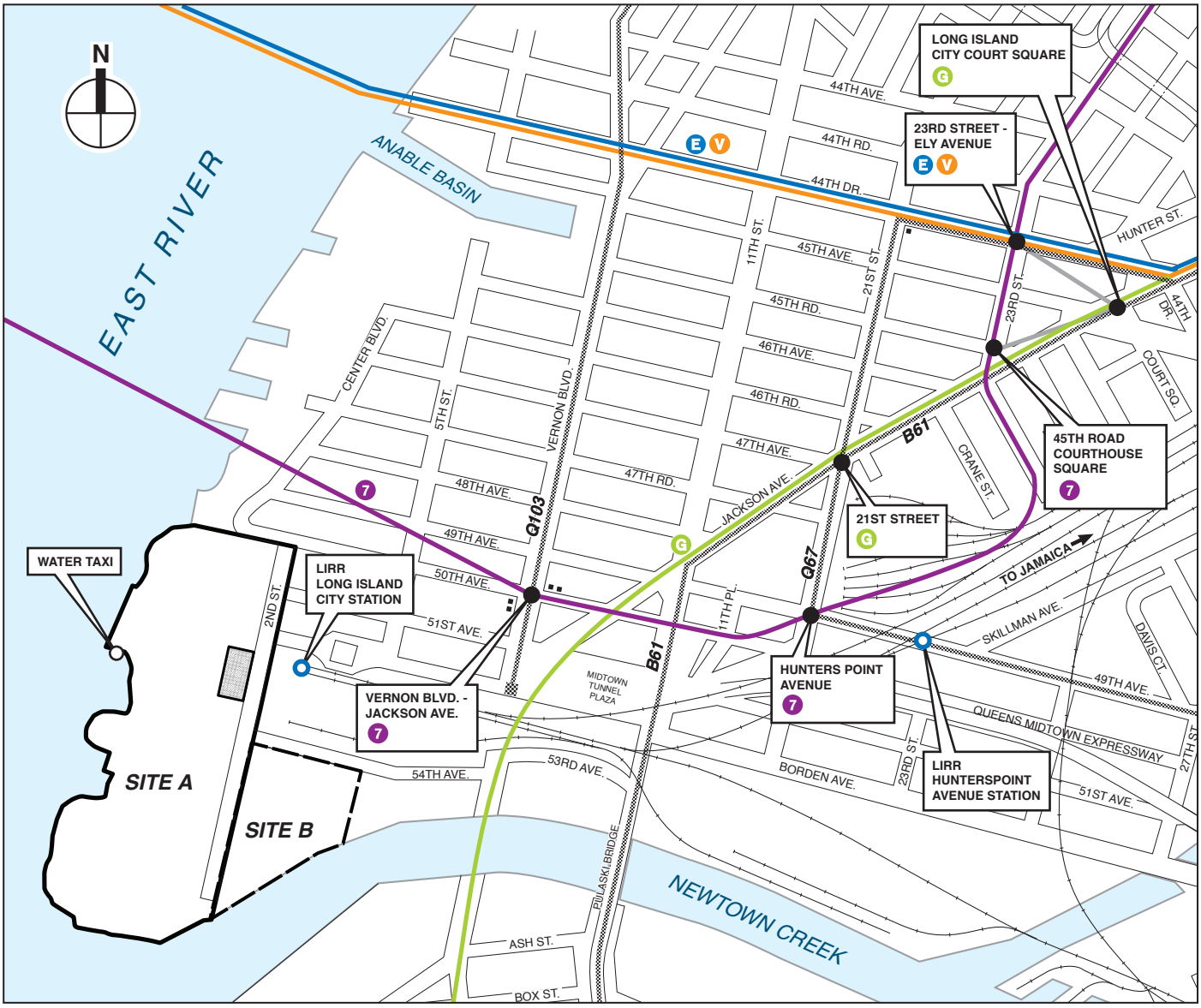


Site A

Not Included In Site A

Site B

Subway Route

Bus Route

Subway Stair Analyzed

Transit Study Area

Figure 17-1

station, only a small percentage of project-generated trips would use this transportation mode, thus not requiring a quantified impact analysis. Similarly, since water taxi utilization is not expected to increase substantially with the completion of the proposed development, a quantified impact analysis was also not conducted for this mode of transportation.

The evaluation of pedestrian flow includes an analysis of the sidewalks, corner reservoirs, and crosswalks north and east of Sites A and B, along Vernon Boulevard at 50th Avenue, 51st Avenue, and Borden Avenue. As part of the proposed actions, several new streets and pedestrian locations would be constructed or reconfigured. To assess pedestrian flow at the northeastern gateway of the project sites, crossing conditions along 2nd Street at the 51st and Borden Avenue intersections were also added to the analysis for the future conditions with the proposed actions. These pedestrian analysis locations are shown in Figure 17-2.

SUBWAY SERVICE

No. 7 Subway Line

The No. 7 train operates between Flushing, Queens, and Midtown Manhattan. Local service is available 24 hours a day, and express service is available during the weekday AM peak period for travel to Manhattan and during the weekday PM peak period for travel to Flushing. From 6:30 AM to 12:00 noon, the No. 7 train operates express service every 2 to 4 minutes and local service every 4 to 6 minutes to Manhattan. Flushing-bound, it operates local every 3 to 5 minutes from 7:20 to 9:40 AM, every 2 to 4 minutes until 10:20 AM, and every 5 minutes until 12:00 noon.

In the afternoon, the No. 7 train operates local service to Manhattan every 2 to 5 minutes until 8:15 PM. Flushing-bound, it operates express service every 4 to 5 minutes and local service every 10 minutes from 12:00 noon to 4:20 PM. Between 4:20 and 8:15 PM, the Flushing-bound No. 7 train operates express service every 3 to 5 minutes and local service every 5 to 8 minutes. Both local and express trains serve the study area at the Vernon Boulevard-Jackson Avenue station.

E/V Subway Lines

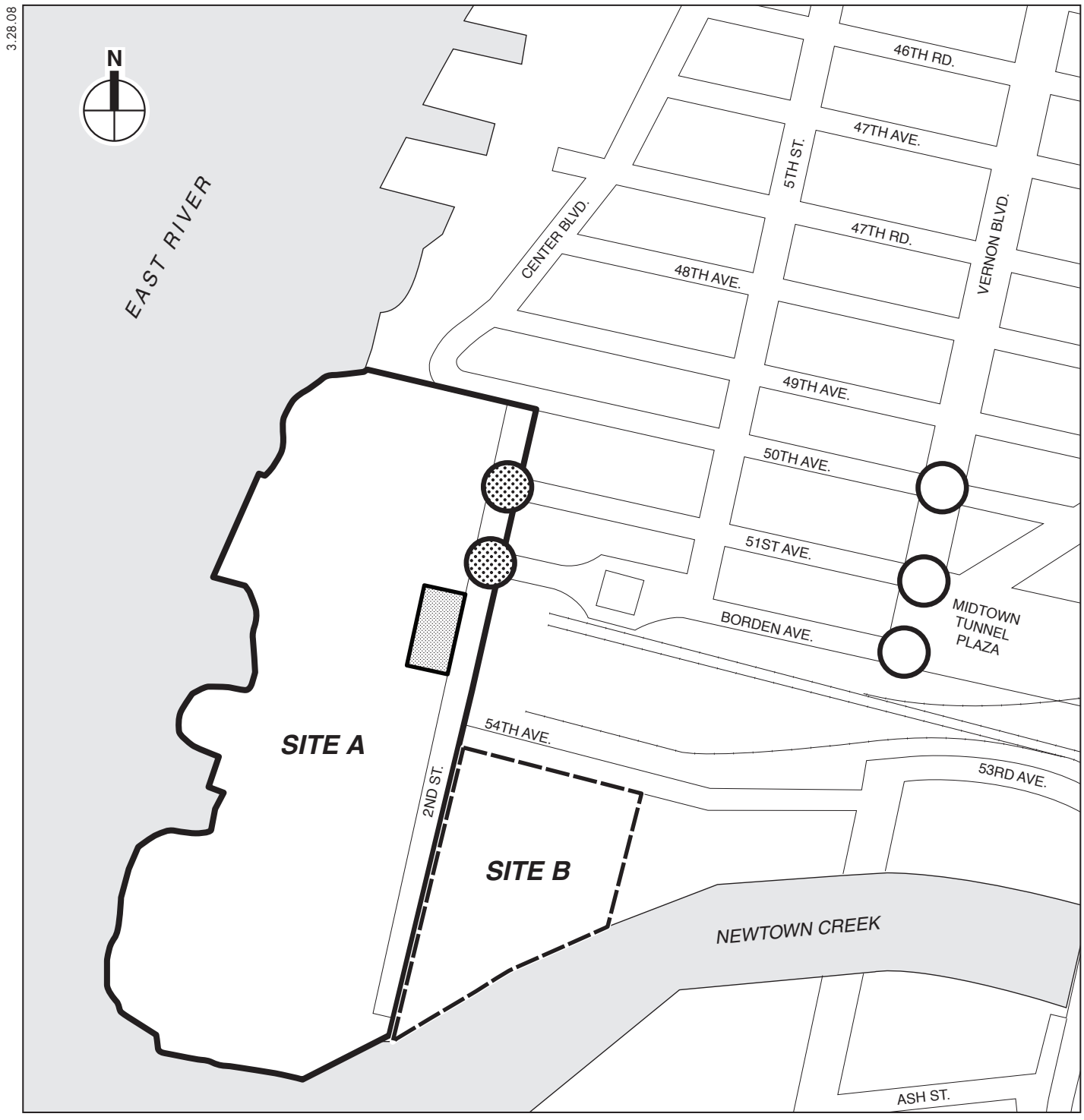
The E train operates between Jamaica, Queens, and lower Manhattan. In both the Manhattan- and Jamaica-bound directions, trains operate every 4 to 6 minutes during the AM and PM peak periods. The V train operates between Forest Hills, Queens, and the Lower East Side between 6:00 AM and 11:00 PM on weekdays only. In both the Manhattan- and Jamaica-bound directions, trains operate every 4 to 6 minutes during the AM and PM peak periods. The E/V trains serve the study area at the 23rd Street-Ely Avenue station.

G Subway Line

The G train operates between Forest Hills, Queens, and Brooklyn. In the study area, the G train stops at the 21st Street-Jackson Avenue station. Because only a small number of project-generated subway trips would likely use this subway line, no quantified analyses were undertaken for the G train.

BUS SERVICE

Two bus routes serve the study area, the Q103 operated by the MTA Bus Company and the B61 operated by NYCT. The Q103 operates north of the study area along Vernon Boulevard between



Pedestrian Analysis Locations

the Vernon Boulevard-Jackson Avenue subway station and Astoria. The B61 operates between Brooklyn and Court Square-Long Island City, Queens. The Queens portion runs along Jackson Avenue. **Table 17-1** provides a summary of the weekday service headways of these bus routes.

Table 17-1
Local Bus Routes Serving the Study Area

Bus Route	Start Point	End Point	Routing	Scheduled Bus Service (Headway in Minutes)		
				AM	Midday	PM
B61	Red Hook, Brooklyn	LIC, Queens	via Jackson Avenue (Queens portion only)	9	10	9
Q103	Astoria, Queens	LIC, Queens	via Vernon Boulevard	30	60	30

Source: New York City Transit, *Queens Bus Map* (2007).

LIRR SERVICE

The Long Island City station is the Queens terminus for a small number of LIRR trains from Jamaica, which operate only on weekdays. In the morning between approximately 7:30 and 9:30 AM, trains arrive at the Long Island City station at on average one train every 20 to 25 minutes, while in the afternoon between approximately 3:30 and 6:00 PM, trains depart from the Long Island City station at on average one train every half an hour.

WATER TAXI SERVICE

The New York water taxi operates commuter, touring, and charter service at numerous piers throughout the city. The Hunter's Point stop is located west of 2nd Street just south of Borden Avenue. Regular commuter service along its East River line connects the Hunter's Point stop with East 34th Street and Pier 11 in Manhattan, as well as Schaefer and Fulton Ferry Landings in Brooklyn. In the morning between approximately 6:30 and 9:00 AM and in the afternoon between approximately 5:00 and 7:30 PM, arrivals and departures at the Hunter's Point stop take place about once every 45 minutes to an hour.

PEDESTRIAN ELEMENTS

This chapter analyzes locations where most of the project-generated pedestrian trips would be anticipated, specifically sidewalks, corner reservoirs, and crosswalks along Vernon Boulevard, a commercial street north and east of the project sites providing access to the No. 7 train's Vernon Boulevard-Jackson Avenue station. New pedestrian elements created or modified as part of the proposed actions were also added to the future conditions analysis.

OPERATIONAL ANALYSIS METHODOLOGY

SUBWAY STATION ELEMENTS

Subway station operations were assessed according to methods and evaluation criteria presented in the *CEQR Technical Manual*. The methodology for assessing subway stairway, ramp, and control area (turnstiles, service gates, etc.) operations compares the user volume with the element's design capacity, resulting in a volume-to-capacity (v/c) ratio.

For stairways, the design capacity considers the effective width of a tread, which accounts for railings or other obstructions, the friction between upward and downward patrons, and the average area required for circulation. For control area elements, capacity is measured by the number and width of an element and the NYCT optimum capacity per element. In the analysis for each of these elements, volumes and capacities are presented for 15-minute intervals.

The estimated v/c ratio is compared to NYCT criteria to determine a level-of-service (LOS) for the operation of an element. This v/c ratio is also commonly referred to as V/SVCD, where SVCD is the service volume at LOS C/D. **Table 17-2** shows the LOS and corresponding v/c ratios for subway station elements.

Table 17-2
Level of Service Criteria for Subway Station Elements

LOS	V/C Ratio	
	Stairways	Turnstiles/Gates
A	0.00 to 0.45	0.00 to 0.20
B	0.45 to 0.70	0.20 to 0.40
C	0.70 to 1.00	0.40 to 0.60
D	1.00 to 1.33	0.60 to 0.80
E	1.33 to 1.67	0.80 to 1.00
F	1.67 or Greater	Greater than 1.00

Source: New York City Mayor's Office of Environmental Coordination, *CEQR Technical Manual* (December 2001).

For stairways, at LOS A and B, 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, 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, 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 and F, 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.

The determination of significant impacts for station elements varies based on their type and use. For stairways, impacts are considered significant based on the minimum amount of additional capacity, which would mitigate the location to its LOS under the future without the proposed action or LOS C/D operating conditions. For a stairway location with LOS D for the future with the proposed action, a widening of 6 inches or more needed to restore LOS to the same level as the future without the proposed action or LOS C/D conditions is considered significant; for a future with the proposed action LOS E condition, a widening of 3 inches or more is considered significant; and for a future with the proposed action LOS F condition, a widening of 1 inch or more is considered significant. For control areas, impacts are considered significant if the NYCT optimum capacity is exceeded and the increase in v/c ratio between the future with and without the proposed action conditions exceeds 0.01.

SUBWAY AND BUS LINE HAUL CAPACITIES

In accordance with the *CEQR Technical Manual*, line haul capacities are evaluated when a proposed action is anticipated to generate a perceptible number of passengers to particular

subway and bus routes. For subways, if, on average, a subway car for a particular route is expected to be used by five or more riders from a proposed action, a 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 practical capacity would be exceeded. NYCT operates three different types of subway cars with different seating and practical capacities. The practical capacity of a subway car, which ranges from 110 to 175 passengers, is compared with ridership levels to determine the acceptability of conditions. Projected increases from a future condition without the proposed action within practical capacity to a future condition with the proposed action that exceeds practical capacity may be considered a significant impact. 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.

Bus line haul capacities are evaluated when a proposed action is anticipated to generate a perceptible increase in number of passengers on a particular bus route. Typically, when numerous bus routes are available within the transit study area, projected trips would be dispersed and would not overburden one or more nearby bus routes. However, if a substantial number of new bus trips are anticipated for an already heavily used bus route, its peak load point and its bus stops closest to the project site are evaluated to identify the potential for the buses to exceed their practical capacities. NYCT and the MTA Bus Company operate two types of buses: standard and articulated. During peak hours, standard buses operate with up to 54 passengers per bus, while articulated buses operate with up to 93 passengers per bus. According to NYCT guidelines, an increase in bus load levels greater than the maximum capacity at any load point is defined as a 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 MTA or NYCT approval.

PEDESTRIAN OPERATIONS

Sidewalks, corner reservoirs, and crosswalks are the pedestrian facilities commonly analyzed for potential impacts from a proposed action. The adequacy of sidewalks and crosswalks in relation to the demand imposed on them is assessed using methodologies presented in the 2000 *Highway Capacity Manual (HCM)*. Sidewalks are analyzed in terms of pedestrian flow. The calculation of the average pedestrians per foot per minute (PFM) of effective walkway width is the basis for the LOS analysis. However, due to the tendency of pedestrians to move in congregated groups, a platoon factor (+4 PFM) is applied in the calculation of pedestrian flow to more accurately estimate the dynamics of walking. This procedure generally results in a LOS one level poorer than the average flow.

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, which is expressed in square feet per minute, is the net area of the corner (in square feet) multiplied by the cycle length. The analysis then determines the total circulation time for all pedestrian movements at the corner (expressed as pedestrians per minute). The ratio of net time-space divided by pedestrian circulation time provides the LOS measurement of square feet per pedestrian (SFP).

Crosswalk LOS is also a function of time and space. Crosswalk conditions are expressed as a measurement of the available area (the crosswalk width multiplied by the width of the street) and the permitted crossing time as determined by nearby traffic signals. This measure is expressed in square feet per minute. 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 average crossing time is the LOS measurement of available square feet per pedestrian. The LOS analysis also accounts for vehicular turning movements that traverse the crosswalk.

Table 17-3 shows the LOS standards for sidewalks, corner reservoirs, and crosswalks. The description of these LOS is similar to those described above for subway station elements. The *CEQR Technical Manual* specifies that a mid-LOS D condition or better is considered reasonable for sidewalks, corners, and crosswalks outside of the Manhattan central business district (CBD). For corners and crosswalks, a mid-LOS D condition requires a minimum of 20 SFP, while for sidewalks a mid-LOS D condition requires a maximum of 13 PFM.

Table 17-3
Level of Service Criteria for Pedestrian Elements

LOS	Sidewalks	Corner Reservoirs and Crosswalks
A	5 PFM or less	60 SFP or More
B	5 to 7 PFM	40 to 60 SFP
C	7 to 10 PFM	24 to 40 SFP
D	10 to 15 PFM	15 to 24 SFP
E	15 to 23 PFM	8 to 15 SFP
F	More than 23 PFM	Less than 8 SFP

Notes: PFM = pedestrians per foot per minute; SFP = square feet per pedestrian.
Source: Transportation Research Board. *Highway Capacity Manual*, 2000.

Project-related sidewalk impacts are considered significant and require the examination of mitigation measures if there is an increase of 2 PFM more than a no action condition with pedestrian flow rates greater than 13 PFM (mid-LOS D). For corners and crosswalks, a decrease of 1 SFP under the action condition when the no action condition has an average occupancy of less than 20 SFP (mid-LOS D) is considered significant. In addition, a service deterioration from LOS A, B, or C to mid-LOS D or worse for sidewalks, corners, or crosswalks is considered a significant adverse impact. However, if there is less than a 200-person increase at a location within the peak hour, no impact is considered significant since such increases typically would not be perceptible.

C. EXISTING CONDITIONS

May 2007 field surveys provided the baseline 2007 conditions for the analysis of sidewalks, corners, crosswalks, subway station elements, and line haul conditions for the B61 and Q103 buses. In addition, the MTA Bus Company provided 2007 daily ridership volumes for the Q103 bus. The subway line haul analysis is based on 2006 cordon count data that was grown to 2007 using a 0.5-percent growth rate.

For station operations, subway line haul, and bus line haul, the AM and PM peak periods were analyzed; for pedestrian facilities, the AM, midday, and PM peak periods were analyzed.

To determine peak conditions for subway station elements and pedestrian facilities, weekday 15-minutes counts were conducted during the 7:00 to 9:30 AM, 11:00 AM to 2:00 PM, and 4:00 to 6:30 PM time periods. The highest 15-minute volumes were selected for analysis from each of these peak periods.

To determine peak conditions for bus line haul, weekday counts were conducted during the 7:00 to 10:00 AM, 11:00 AM to 1:00 PM, and 4:00 to 6:30 PM time periods. The highest hourly volumes for each route were selected for analysis.

SUBWAY STATION OPERATIONS

The transit analyses include an evaluation of operational conditions at two subway stations near the project sites: the No. 7 line's Vernon Boulevard-Jackson Avenue station and the E/V lines' 23rd Street-Ely Avenue (which also allows transfers to the G line and 7 line) station during the weekday AM and PM peak periods.

The Vernon Boulevard-Jackson Avenue station runs the length of 50th Avenue between Vernon Boulevard and Jackson Avenue. Two stairways at the northeast corner of Vernon Boulevard and 50th Avenue provide access to the Manhattan-bound platform (N504 control area), while two stairways on the southwest corner of this intersection provide access to the Flushing-bound platforms (N503 control area).

The 23rd Street-Ely Avenue station occupies the block-length beneath 44th Drive, stretching east from 21st Street to almost 24th Street. Station entrances are located on 21st and 23rd Streets. Due to its closer proximity to the project sites, the stairway on the southeast corner of 21st Street and 44th Drive would be used by project-generated trips to access a common mezzanine that connects to the station's westernmost control area (N307) and both the Manhattan-bound and the Queens-bound platforms.

Based on the travel demand estimates detailed in Chapter 16, it was determined that quantified analyses would be required for street-level stairways and control areas within both of the subway stations described above. As shown in **Tables 17-4 and 17-5**, all analyzed stairways and control areas currently operate at LOS A or LOS B during the AM and PM peak periods.

SUBWAY LINE HAUL LEVELS

A subway line haul analysis typically considers the weekday commuter period leave load levels at the analysis routes' peak load points. Based on projected travel patterns and incremental increases due to project-generated subway trips, the subway line haul analysis has been conducted for the entry and exit points to the Manhattan CBD along the No. 7 line. It was also determined that a quantified subway line haul analysis for the E/V lines is not required, as discussed in section E, "Probable Impacts of the Proposed Actions."

Because peak travel to and from the project sites is expected to be westbound in the morning and eastbound in the afternoon, a leave load analysis was conducted for Manhattan-bound trains at the Vernon Boulevard-Jackson Avenue station for the AM peak period and for Flushing-bound trains at the Grand Central-42nd Street station for the PM peak period. The selection of these stations accounted for the number of project-generated subway trips per train/car.

The No. 7 line operates 11-car trains. The guideline capacity of these cars is 110 passengers each. However, crush loads could reach as many as 165 passengers per car. The 2006 leave load peak hour passenger volumes were obtained from the "Year 2006 Weekday Cordon Count"

published by NYCT. A 0.5-percent growth factor was applied to the 2006 leave-load counts to generate the existing 2007 leave load volumes. This 0.5-percent background growth factor accounted for expected growth in regional subway travel between Queens and Manhattan. As shown in **Table 17-6**, the NYCT data indicated that the No. 7 train currently operates within guideline capacity during the weekday AM and PM commuter peak periods.

Table 17-4
2007 Existing Conditions: Subway Station Stairway Analysis

Stairway	Width (feet)	Effective Width (feet)	15-Minute Pedestrian Volumes		Friction Factor	15-Minute		LOS
			Up	Down		SVCD Capacity	V/SVCD Ratio	
AM Peak Period								
Vernon Boulevard/Jackson Avenue(7)								
50th Ave/Vernon Blvd (S8, NE Corner)	4.8	3.8	23	284	0.80	456	0.67	B
50th Ave/Vernon Blvd (S6, NE Corner)	4.8	3.8	0	23	1.00	570	0.04	A
50th Ave/Vernon Blvd (S7, SW Corner)	5.8	4.8	78	21	0.80	576	0.17	A
50th Ave/Vernon Blvd (S5, SW Corner)	5.8	4.8	17	5	0.80	576	0.04	A
23rd Street/Ely Avenue (E/V)								
21st Street/44th Drive (SE Corner)	5.1	4.1	120	20	0.80	492	0.28	A
PM Peak Period								
Vernon Boulevard/Jackson Avenue(7)								
50th Ave/Vernon Blvd (S8, NE Corner)	4.8	3.8	15	108	0.80	456	0.27	A
50th Ave/Vernon Blvd (S6, NE Corner)	4.8	3.8	1	10	0.80	456	0.02	A
50th Ave/Vernon Blvd (S7, SW Corner)	5.8	4.8	158	18	0.80	576	0.31	A
50th Ave/Vernon Blvd (S5, SW Corner)	5.8	4.8	13	19	0.90	648	0.05	A
23rd Street/Ely Avenue (E/V)								
21st Street/44th Drive (SE Corner)	5.1	4.1	60	60	0.90	554	0.22	A

Note: Capacities were calculated based on rates presented in the New York City Transit, *Station Planning and Design Guidelines* (January 2001), in accordance with the *CEQR Technical Manual*.

Table 17-5
2007 Existing Conditions: Subway Station Control Area Analysis

Control Area Elements	Quantity	15-Minute Pedestrian Volumes		15-Minute		LOS
		In	Out	SVCD Capacity	V/SVCD Ratio	
AM Peak Period						
Vernon Boulevard/ Jackson Avenue (7)						
R504 Control Area	4	307	23	1920	0.17	A
R503 Control Area	3	26	95	1440	0.08	A
23rd Street/ Ely Avenue (E/V)						
N307 Control Area	4	63	315	1920	0.20	A
PM Peak Period						
Vernon Boulevard/ Jackson Avenue (7)						
R504 Control Area	4	118	16	1920	0.07	A
R503 Control Area	3	37	171	1440	0.14	A
23rd Street/ Ely Avenue (E/V)						
N307 Control Area	4	263	83	1920	0.18	A

Note: Capacities were calculated based on rates presented in the New York City Transit, *Station Planning and Design Guidelines* (January 2001), in accordance with the *CEQR Technical Manual*.

Table 17-6
2007 Existing Conditions: Subway Line Haul Analysis

No. 7 Train Direction of Travel	Station	Train/ Hour	Volume	Leave Load		Available Capacity
				Guideline Capacity	V/C Ratio	
AM Peak Period						
Manhattan bound	Vernon Boulevard-Jackson Avenue	22	19,415	26,620	0.73	7,205
PM Peak Period						
Flushing bound	Grand Central-42nd Street	25	16,849	30,250	0.55	13,401

Source: Year 2006 Weekday Cordon Counts, New York City Transit, September 2007.

BUS LINE HAUL LEVELS

To assess the potential impacts on the study area bus routes, 2006 line haul data for the B61 were acquired from NYCT, and the two-way average daily boarding count for the Q103 was obtained the MTA Bus Company. In addition, field surveys of Q103 and B61 bus stops near the project sites were conducted.

Evaluation of the B61 line haul data revealed that the route's peak load point is in downtown Brooklyn, some distance from the project sites. Because very few project-generated trips on the B61 are likely to travel to/from the peak load point in Brooklyn, the line haul analysis was conducted for bus stops closest to the project sites, using data from the 2007 surveys conducted at the Jackson Avenue-11th Street stops. The total hourly passenger volumes were distributed evenly among scheduled buses to obtain the average passengers per hour on a single bus.

For the Q103, 2007 bus loading counts were conducted for northbound buses leaving the route's stop at Vernon Boulevard and 50th Avenue. In addition, the number of passengers exiting southbound buses at the stops near and at the southbound terminus was observed. For both directions, the average bus loading was less than four passengers per bus. Therefore, for purposes of the analysis, it was assumed that the Q103 currently operates with three passengers per bus in both the northbound and southbound directions at the stops nearest to the project sites.

As shown in **Table 17-7**, with the exception of the southbound B61 during the PM peak period, both bus routes currently operate within guideline capacities (54 passengers per bus) near the project sites.

Table 17-7
2007 Existing Conditions: Bus Line Haul Analysis at Project Site Load Points

Route	Peak Period	Buses Per Hour	Northbound		Buses Per Hour	Southbound	
			Load Point	AP		Load Point	AP
B61	AM	9	Jackson Avenue–11th Street	37	7	Jackson Avenue–11th Street	13
	PM	8	Jackson Avenue–11th Street	10	6	Jackson Avenue–11th Street	**(57)**
Q103	AM	2	Vernon Boulevard–50th Avenue	3	2	Vernon Boulevard–50th Avenue	3
	PM	2	Vernon Boulevard–50th Avenue	3	2	Vernon Boulevard–50th Avenue	3

Note: AP = average passengers per bus; **(#)** = exceeds NYCT guideline capacity.
Source: B61 and Q103 ridership data obtained from 2007 surveys conducted by AKRF.

STREET-LEVEL PEDESTRIAN OPERATIONS

The study area sidewalks, corner reservoirs, and crosswalks were assessed for the weekday AM, midday, and PM peak periods. Existing peak 15-minute pedestrian volumes were developed

from the 2007 survey data. As shown in **Tables 17-8 through 17-10**, all analyzed pedestrian elements currently operate at acceptable levels (13 PFM for sidewalks, 20 SFP for corners and crosswalks) during the analysis peak periods.

Table 17-8
2007 Existing Conditions: Pedestrian LOS Analysis for Sidewalks

Location	Sidewalk	Effective Width (feet)	15-Minute Two-Way Volume	Average		Platoon	
				PFM	LOS	PFM	LOS
AM Peak Period							
Vernon Boulevard	East	6.5	125	1.3	A	5.3	B
between 49th Avenue and 50th Avenue	West	8.0	91	0.8	A	4.8	A
Vernon Boulevard	East	5.5	15	0.2	A	4.2	A
between 50th Avenue and 51st Avenue	West	5.0	55	0.7	A	4.7	A
Vernon Boulevard							
between 51st Avenue and Borden Avenue	West	5.0	14	0.2	A	4.2	A
50th Avenue	North	8.5	52	0.4	A	4.4	A
between 5th Street and Vernon Boulevard	South	9.5	6	0.0	A	4.0	A
51st Avenue	North	5.5	21	0.3	A	4.3	A
between 5th Street and Vernon Boulevard	South	6.0	2	0.0	A	4.0	A
Borden Avenue	North	10.0	5	0.0	A	4.0	A
between 5th Street and Vernon Boulevard	South	4.5	2	0.0	A	4.0	A
Midday Peak Period							
Vernon Boulevard	East	6.5	31	0.3	A	4.3	A
between 49th Avenue and 50th Avenue	West	8.0	65	0.5	A	4.5	A
Vernon Boulevard	East	5.5	15	0.2	A	4.2	A
between 50th Avenue and 51st Avenue	West	5.0	79	1.1	A	5.1	B
Vernon Boulevard							
between 51st Avenue and Borden Avenue	West	5.0	8	0.1	A	4.1	A
50th Avenue	North	8.5	16	0.1	A	4.1	A
between 5th Street and Vernon Boulevard	South	9.5	5	0.0	A	4.0	A
51st Avenue	North	5.5	25	0.3	A	4.3	A
between 5th Street and Vernon Boulevard	South	6.0	1	0.0	A	4.0	A
Borden Avenue	North	10.0	7	0.0	A	4.0	A
between 5th Street and Vernon Boulevard	South	4.5	3	0.0	A	4.0	A
PM Peak Period							
Vernon Boulevard	East	6.5	57	0.6	A	4.6	A
between 49th Avenue and 50th Avenue	West	8.0	86	0.7	A	4.7	A
Vernon Boulevard	East	5.5	17	0.2	A	4.2	A
between 50th Avenue and 51st Avenue	West	5.0	44	0.6	A	4.6	A
Vernon Boulevard							
between 51st Avenue and Borden Avenue	West	5.0	14	0.2	A	4.2	A
50th Avenue	North	8.5	28	0.2	A	4.2	A
between 5th Street and Vernon Boulevard	South	9.5	9	0.1	A	4.1	A
51st Avenue	North	5.5	15	0.2	A	4.2	A
between 5th Street and Vernon Boulevard	South	6.0	6	0.1	A	4.1	A
Borden Avenue	North	10.0	12	0.1	A	4.1	A
between 5th Street and Vernon Boulevard	South	4.5	11	0.2	A	4.2	A

Note: PFM = pedestrians per foot per minute.

Table 17-9
2007 Existing Conditions: Pedestrian LOS Analysis for Corners

Location	Corner	AM Peak Period		Midday Peak Period		PM Peak Period	
		SFP	LOS	SFP	LOS	SFP	LOS
Vernon Boulevard and 50th Avenue	Northeast	190.8	A	453.0	A	483.3	A
	Southeast	813.3	A	872.8	A	507.2	A
	Southwest	475.1	A	452.8	A	317.5	A
	Northwest	133.3	A	210.9	A	195.1	A
Vernon Boulevard and 51st Avenue	Northeast	219.0	A	255.0	A	240.7	A
	Southwest	2723.0	A	3354.5	A	2423.2	A
	Northwest	1089.4	A	1116.3	A	612.8	A
Vernon Boulevard and Borden Avenue	Northwest	1949.7	A	2117.0	A	2118.4	A

Note: SFP = square feet per pedestrian.

Table 17-10
2007 Existing Conditions: Pedestrian LOS Analysis for Crosswalks

Location	Crosswalk	Street Width (feet)	Crosswalk Width (feet)	With Conflicting Vehicles					
				AM Peak		Midday Peak		PM Peak	
				SFP	LOS	SFP	LOS	SFP	LOS
Vernon Boulevard and 50th Avenue	North*	44.0	13.0	40.5	B	107.4	A	142.7	A
	East*	43.5	10.0	396.7	A	643.6	A	511.6	A
	South	94.0	11.0	1057.3	A	527.4	A	218.8	A
	West*	29.5	15.5	136.3	A	135.4	A	104.4	A
Vernon Boulevard and 51st Avenue	North	65.5	13.0	1869.0	A	1432.7	A	1463.3	A
	East	30.0	9.0	272.0	A	358.7	A	359.0	A
	South	96.0	11.0	4316.1	A	4253.5	A	8555.5	A
	West	29.5	12.0	909.9	A	1091.2	A	757.3	A
Vernon Boulevard and Borden Avenue	North	34.0	12.5	2671.9	A	4450.3	A	4450.3	A
	West	55.5	15.5	1000.6	A	1243.0	A	1619.4	A

Note: SFP = square feet per pedestrian; * = school crosswalks.

D. THE FUTURE WITHOUT THE PROPOSED ACTIONS

Transit and pedestrian conditions in the future without the proposed actions were assessed to establish the baseline 2017 "No Build" condition against which to evaluate the potential impacts of the proposed actions. The No Build analyses incorporate background growth, new trips associated with nearby developments, and changes in the transportation environment that would affect transit service and pedestrian movements in the study area.

TRANSIT AND PEDESTRIAN VOLUME PROJECTIONS

Estimates of peak hour transit and pedestrian volumes in the No Build condition were developed by applying the CEQR-recommended 0.5-percent annual background growth rate to existing transit and pedestrian volumes 10 years into the future to obtain projected 2017 volumes and then adding trips associated with other planned projects. As discussed in Chapter 2, "Land Use, Zoning, and Public Policy," numerous projects near the project sites are expected to be completed by 2017 independent of the proposed actions. Estimated transit and pedestrian volumes generated by these projects were distributed throughout the transit and pedestrian networks and added to the projected 2017 volumes to generate the 2017 No Build transit and pedestrian volumes for analysis.

SUBWAY STATION OPERATIONS

The same station elements previously analyzed for existing conditions were analyzed for the No Build condition. No Build subway riders were distributed to the stairways at the Vernon Boulevard-Jackson Avenue and 23rd Street-Ely Avenue stations based on travel patterns described in the next section, "Subway Line Haul Levels." **Tables 17-11** and **17-12** detail the operating levels for the street-level stairways and control areas at the two analysis stations.

During the AM peak period, the S5, S6, and S7 stairways at the Vernon Boulevard-Jackson Avenue station would continue to operate at LOS A, while the S8 stairway would decline to LOS E. The southeast stairway at the 23rd Street-Ely Avenue station would continue to operate at LOS A. During the PM peak period, all stairways at both the Vernon Boulevard-Jackson Avenue and 23rd Street-Ely Avenue stations would continue to operate at acceptable LOS C or better. All control areas at both stations would also continue to operate at acceptable LOS C or better during both the AM and PM peak periods.

Table 17-11
2017 No Build Condition: Subway Station Stairway Analysis

Stairway	Width (feet)	Effective Width (feet)	15-Minute Pedestrian Volumes		Friction Factor	15-Minute		
			Up	Down		SVCD Capacity	V/SVCD Ratio	LOS
AM Peak Period								
Vernon Boulevard/Jackson Avenue(7)								
50th Ave/Vernon Blvd (S8, NE Corner)	4.8	3.8	37	607	0.80	456	1.41	E
50th Ave/Vernon Blvd (S6, NE Corner)	4.8	3.8	1	58	0.80	456	0.13	A
50th Ave/Vernon Blvd (S7, SW Corner)	5.8	4.8	151	52	0.80	576	0.35	A
50th Ave/Vernon Blvd (S5, SW Corner)	5.8	4.8	30	35	0.90	648	0.10	A
23rd Street/Ely Avenue (E/V)								
21st Street/44th Drive (SE Corner)	5.1	4.1	139	74	0.90	554	0.38	A
PM Peak Period								
Vernon Boulevard/Jackson Avenue(7)								
50th Ave/Vernon Blvd (S8, NE Corner)	4.8	3.8	72	268	0.80	456	0.75	C
50th Ave/Vernon Blvd (S6, NE Corner)	4.8	3.8	7	28	0.80	456	0.08	A
50th Ave/Vernon Blvd (S7, SW Corner)	5.8	4.8	466	34	0.80	576	0.87	C
50th Ave/Vernon Blvd (S5, SW Corner)	5.8	4.8	67	35	0.90	648	0.16	A
23rd Street/Ely Avenue (E/V)								
21st Street/44th Drive (SE Corner)	5.1	4.1	118	90	0.90	554	0.38	A

Note: Capacities were calculated based on rates presented in the New York City Transit, *Station Planning and Design Guidelines* (January 2001), in accordance with the *CEQR Technical Manual*.

Table 17-12
2017 No Build Condition: Subway Station Control Area Analysis

Control Area Elements	Quantity	15-Minute Pedestrian Volumes		15-Minute		
		In	Out	SVCD Capacity	V/SVCD Ratio	LOS
AM Peak Period						
Vernon Boulevard/Jackson Avenue (7)						
R504 Control Area	4	665	38	1920	0.37	B
R503 Control Area	3	88	181	1440	0.19	A
23rd Street/ Ely Avenue (E/V)						
N307 Control Area	4	119	344	1920	0.24	B
PM Peak Period						
Vernon Boulevard/Jackson Avenue (7)						
R504 Control Area	4	296	79	1920	0.20	A
R503 Control Area	3	70	533	1440	0.42	C
23rd Street/ Ely Avenue (E/V)						
N307 Control Area	4	303	142	1920	0.23	B

Note: Capacities were calculated based on rates presented in the New York City Transit, *Station Planning and Design Guidelines* (January 2001), in accordance with the *CEQR Technical Manual*.

SUBWAY LINE HAUL LEVELS

A 0.5-percent annual growth rate was applied to the existing line haul volumes to develop the 2017 background line haul volumes. Then, trips associated with major new developments along the No. 7 line were added to the 2017 background line haul volumes to generate No Build peak period volumes for the subway line haul analysis.

Because there would be a substantial number of development projects planned for Corona, Willets Point, and Flushing, with the bulk of the resulting new subway trips made on the No. 7

line, these trips were considered in the subway line-haul analysis. Subway trips generated by No Build projects in Corona, Willets Point, and Flushing were distributed along the No. 7 line based on ratios and trip distribution patterns of current subway trips revealed in an analysis of "The Part 3 Worker Flow Tables" from the 2000 U.S. Census Transportation Planning Package for the 36 census tracts in the vicinity of the Shea Stadium/Willets Point and Flushing Main Street stations. Based on this analysis, 47 percent of subway trips generated by these projects were estimated to be on the Manhattan-bound No. 7 train during the AM peak period and on the Flushing-bound No. 7 train during the PM peak period at the East River portals.

Subway trips generated by No Build projects in the Long Island City area were also added to the No. 7 line for the No Build line haul analysis. Of these trips, 85 percent were assigned to the No. 7 train while the remaining 15 percent were assigned to the E/V lines. In each case, 85 percent of the trips were assumed to be Manhattan bound and 15 percent were assumed to be Queens bound. Per discussions with the MTA and NYCT, some of the assumptions made in the assignment of project-generated transit trips will be refined, and together with changes to the related analyses, will be presented in the FEIS. Compared to the 2007 existing conditions, the 2017 No Build subway line haul volumes are expected to increase by approximately 18 percent in the Manhattan-bound direction during the AM peak hour and 22 percent in the Flushing-bound direction during the PM peak hour. At the same time, NYCT is expected to schedule two additional trains in the peak direction of travel during peak hours to accommodate future increases in ridership. As shown in **Table 17-13**, the No. 7 train would continue to operate within guideline capacity during both the AM and PM peak periods under the No Build condition.

Table 17-13
2017 No Build Condition: Subway Line Haul Analysis

No. 7 Train Direction of Travel	Station	Trains /Hour	Volume	Leave Load		Available Capacity
				Guideline Capacity	V/C Ratio	
AM Peak Period						
Manhattan bound	Vernon Boulevard-Jackson Avenue	24	22,994	29,040	0.79	6,046
PM Peak Period						
Flushing bound	Grand Central-42nd Street	27	20,597	32,670	0.63	12,073
Source: Year 2006 Weekday Cordon Counts, New York City Transit, September 2007.						

BUS LINE HAUL LEVELS

The 2017 No Build condition bus line haul analysis incorporates a 0.5-percent annual growth rate as well as bus-only and bus-to-subway trips generated by No Build projects near the project sites. Since most bus trips are more local (i.e., shorter distances), no adjustments were made to the bus line haul information related to the large amount of development expected to occur in the Brooklyn portion of the B61 bus route. It was assumed that bus-only trips would be evenly distributed to the Q103 and the B61. All trips on the Q103 would travel to/from the north. Of the trips on the B61, 40 percent were assumed to travel to/from the north and 60 percent were assumed to travel to/from the south. The bus-to-subway trips were assumed to primarily use the Q103 to connect to the 23rd Street-Ely Avenue and other subway stations in Long Island City. Based on these assumptions, bus-only and bus-to-subway trips were added to the 2017 baseline volumes to generate the 2017 No Build bus line haul volumes, as summarized in **Table 17-14**.

Table 17-14
2017 No Build Condition: Bus Line Haul Analysis at Project Site Load Points

Route	Peak Period	Buses Per Hour	Northbound		Buses Per Hour	Southbound	
			Load Point	AP		Load Point	AP
B61	AM	9	Jackson Avenue–11th Street	44	7	Jackson Avenue–11th Street	21
	PM	8	Jackson Avenue–11th Street	23	6	Jackson Avenue–11th Street	**(74)**
Q103	AM	2	Vernon Boulevard–50th Avenue	**(55)**	2	Vernon Boulevard–50th Avenue	21
	PM	2	Vernon Boulevard–50th Avenue	50	2	Vernon Boulevard–50th Avenue	**(74)**

Note: AP = average passengers per bus; **(#)** = exceeds NYCT guideline capacity.
Source: B61 and Q103 ridership data obtained from 2007 surveys conducted by AKRF.

Under the No Build condition, the northbound B61 would continue to operate within guideline capacity (54 passengers per bus) during both peak periods, as would the southbound B61 during the AM peak period. However, during the PM peak period, the southbound B61 would exceed guideline capacity. The Q103 would operate within guideline capacity northbound during the PM peak period and southbound during the AM peak period. However, it would exceed guideline capacity northbound during the AM peak period and southbound during the PM peak period.

STREET-LEVEL PEDESTRIAN OPERATIONS

The study area sidewalks, corner reservoirs, and crosswalks were assessed for the weekday AM, midday, and PM peak periods using the No Build peak 15-minute pedestrian volumes. As shown in **Tables 17-15 through 17-17**, all analyzed pedestrian elements would continue to operate at acceptable levels (13 PFM for sidewalks, 20 SFP for corners and crosswalks) during the analysis peak periods, except for the north crosswalk of Vernon Boulevard and 50th Avenue, where service levels would deteriorate to LOS E with an average pedestrian space of 11.9 SFP during the AM peak period, and to LOS D with an average pedestrian space of 17.0 and 17.9 SFP during the midday and PM peak periods, respectively.

E. PROBABLE IMPACTS OF THE PROPOSED ACTIONS

The future with the proposed actions, or the "Build" condition, would result in increased transit and 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 transit and pedestrian facilities.

TRIP DISTRIBUTION AND ASSIGNMENT

The Build condition transit and pedestrian networks incorporate project-generated increases in transit and pedestrian volumes, as well as proposed changes to study area transit and pedestrian facilities. Project-generated volumes presented in Chapter 16 were added to the No Build volumes to generate Build condition transit and pedestrian volumes. These volumes were then assigned to the Build condition transit and pedestrian network analysis locations.

SUBWAY STATION OPERATIONS

The same station elements previously analyzed for the existing and No Build conditions were analyzed under the Build condition. Project-generated subway trips were added to the 2017 No Build volumes to generate the 2017 Build volumes for the analysis of station operations.

Table 17-15
2017 No Build Condition: Pedestrian LOS Analysis for Sidewalks

Location	Sidewalk	Effective Width (feet)	15-Minute Two-Way Volume	Average		Platoon	
				PFM	LOS	PFM	LOS
AM Peak Period							
Vernon Boulevard	East	6.5	283	2.9	A	6.9	B
between 49th Avenue and 50th Avenue	West	8.0	378	3.2	A	7.2	C
Vernon Boulevard	East	5.5	35	0.4	A	4.4	A
between 50th Avenue and 51st Avenue	West	5.0	127	1.7	A	5.7	B
Vernon Boulevard							
between 51st Avenue and Borden Avenue	West	5.0	41	0.5	A	4.5	A
50th Avenue	North	8.5	251	2.0	A	6.0	B
between 5th Street and Vernon Boulevard	South	9.5	94	0.7	A	4.7	A
51st Avenue	North	5.5	70	0.8	A	4.8	A
between 5th Street and Vernon Boulevard	South	6.0	28	0.3	A	4.3	A
Borden Avenue	North	10.0	21	0.1	A	4.1	A
between 5th Street and Vernon Boulevard	South	4.5	2	0.0	A	4.0	A
Midday Peak Period							
Vernon Boulevard	East	6.5	250	2.6	A	6.6	B
between 49th Avenue and 50th Avenue	West	8.0	430	3.6	A	7.6	C
Vernon Boulevard	East	5.5	72	0.9	A	4.9	A
between 50th Avenue and 51st Avenue	West	5.0	216	2.9	A	6.9	B
Vernon Boulevard							
between 51st Avenue and Borden Avenue	West	5.0	48	0.6	A	4.6	A
50th Avenue	North	8.5	325	2.5	A	6.5	B
between 5th Street and Vernon Boulevard	South	9.5	173	1.2	A	5.2	B
51st Avenue	North	5.5	144	1.7	A	5.7	B
between 5th Street and Vernon Boulevard	South	6.0	62	0.7	A	4.7	A
Borden Avenue	North	10.0	17	0.1	A	4.1	A
between 5th Street and Vernon Boulevard	South	4.5	3	0.0	A	4.0	A
PM Peak Period							
Vernon Boulevard	East	6.5	251	2.6	A	6.6	B
between 49th Avenue and 50th Avenue	West	8.0	477	4.0	A	8.0	C
Vernon Boulevard	East	5.5	56	0.7	A	4.7	A
between 50th Avenue and 51st Avenue	West	5.0	156	2.1	A	6.1	B
Vernon Boulevard							
between 51st Avenue and Borden Avenue	West	5.0	53	0.7	A	4.7	A
50th Avenue	North	8.5	339	2.7	A	6.7	B
between 5th Street and Vernon Boulevard	South	9.5	195	1.4	A	5.4	B
51st Avenue	North	5.5	99	1.2	A	5.2	B
between 5th Street and Vernon Boulevard	South	6.0	53	0.6	A	4.6	A
Borden Avenue	North	10.0	31	0.2	A	4.2	A
between 5th Street and Vernon Boulevard	South	4.5	11	0.2	A	4.2	A

Note: PFM = pedestrians per foot per minute.

Table 17-16
2017 No Build Conditions: Pedestrian LOS Analysis for Corners

Location	Corner	AM Peak Period		Midday Peak Period		PM Peak Period	
		SFP	LOS	SFP	LOS	SFP	LOS
Vernon Boulevard and 50th Avenue	Northeast	66.0	A	72.2	A	78.5	A
	Southeast	182.3	A	88.7	A	103.0	A
	Southwest	143.0	A	92.8	A	71.4	A
	Northwest	44.4	B	47.2	B	42.3	B
Vernon Boulevard and 51st Avenue	Northeast	108.4	A	57.8	B	76.2	A
	Southwest	435.2	A	218.9	A	272.0	A
	Northwest	332.5	A	186.9	A	193.4	A
Vernon Boulevard and Borden Avenue	Northwest	797.4	A	562.9	A	599.1	A

Note: SFP = square feet per pedestrian.

Table 17-17
2017 No Build Condition: Pedestrian LOS Analysis for Crosswalks

Location	Crosswalk	Street Width (feet)	Crosswalk Width (feet)	With Conflicting Vehicles					
				AM Peak		Midday Peak		PM Peak	
				SFP	LOS	SFP	LOS	SFP	LOS
Vernon Boulevard and 50th Avenue	North*	44.0	13.0	11.9	E	17.0	D	17.9	D
	East*	43.5	10.0	128.1	A	72.1	A	90.5	A
	South	94.0	11.0	114.3	A	47.6	B	51.2	B
	West*	29.5	15.5	50.8	B	35.8	C	28.1	C
Vernon Boulevard and 51st Avenue	North	65.5	13.0	481.1	A	195.7	A	277.4	A
	East	30.0	9.0	166.6	A	109.6	A	141.2	A
	South	96.0	11.0	383.8	A	143.6	A	215.0	A
	West	29.5	12.0	152.4	A	83.3	A	97.9	A
Vernon Boulevard and Borden Avenue	North	34.0	12.5	782.9	A	377.6	A	530.3	A
	West	55.5	15.5	664.6	A	446.0	A	618.3	A

Note: SFP = square feet per pedestrian; * = school crosswalks.

Of these trips, based on the distance of the subway stations from the project sites, 85 percent were assigned to the No. 7 train at Vernon Boulevard-Jackson Avenue station while the remaining 15 percent were assigned to the E/V trains at the 23rd Street-Ely Avenue station. It was also assumed that 85 percent of project-generated trips at each station would travel to/from Manhattan while the remaining 15 percent would travel to/from locations in Queens. As with the analyses presented for the No Build condition, these assignment assumptions and the analyses that follow will be refined per consultation with the MTA and NYCT for the FEIS.

For the Vernon Boulevard-Jackson Avenue station, all Flushing-bound trips would use the two stairways on the southwest corner of the Vernon Boulevard and 50th Avenue intersection, and all Manhattan-bound trips would use the two stairways on the northeast corner of this intersection. Because the mezzanine at the 23rd Street-Ely Avenue station allows access to either platform, project-generated trips were assigned to the stairway closest to the project sites, on the south side of 44th Drive.

As shown in **Table 17-18**, during the AM peak period, the S8 stairway at the Vernon Boulevard-Jackson Avenue station would deteriorate from a No Build LOS E to a Build LOS F. Also during the PM peak period, the same stairway would deteriorate from a No Build LOS C to a Build LOS D. The S7 stairway would also deteriorate from LOS C under the No Build condition to LOS D under the Build condition.

As described in section B, "Methodology," station stairway impacts are considered significant when the minimum amount of additional capacity required to mitigate a stairway location to its No Build condition or LOS C/D is greater than the minimum widening recommended by the *CEQR Technical Manual*. For the S8 stairway, since the required widening would exceed the CEQR criteria for LOS F (1 inch), the projected deterioration in service levels constitutes a significant adverse subway station impact. For the S7 stairway during the PM peak hour, although the service level is projected to exceed acceptable NYCT guidelines, the exceedance is below the CEQR impact threshold for a significant adverse impact. However, it is possible that further refinements undertaken for the FEIS could yield a conclusion of significant adverse impact at this stairway, requiring six or more inches of stairway widening. Hence, for the purposes of disclosure, the impact identified for the S7 stairway is deemed significant. Potential measures to mitigate the significant adverse impacts identified for the S7 and S8 stairways are presented in Chapter 22, "Mitigation."

Table 17-18
2017 Build Condition: Subway Station Stairway Analysis

Stairway	Width (feet)	Effective Width (feet)	15-Minute Pedestrian Volumes Up	15-Minute Pedestrian Volumes Down	Friction Factor	15-Minute SVCD Capacity	15-Minute V/SVCD Ratio	15-Minute LOS
AM Peak Period								
Vernon Boulevard/Jackson Avenue(7)								
50th Ave/Vernon Blvd (S8, NE Corner)	4.8	3.8	48	800	0.80	456	1.86	**F+**
50th Ave/Vernon Blvd (S6, NE Corner)	4.8	3.8	17	348	0.80	456	0.80	C
50th Ave/Vernon Blvd (S7, SW Corner)	5.8	4.8	190	73	0.80	576	0.46	B
50th Ave/Vernon Blvd (S5, SW Corner)	5.8	4.8	147	99	0.90	648	0.38	A
23rd Street/Ely Avenue (E/V)								
21st Street/44th Drive (SE Corner)	5.1	4.1	163	149	0.90	554	0.56	B
PM Peak Period								
Vernon Boulevard/Jackson Avenue(7)								
50th Ave/Vernon Blvd (S8, NE Corner)	4.8	3.8	106	363	0.80	456	1.03	D
50th Ave/Vernon Blvd (S6, NE Corner)	4.8	3.8	58	170	0.80	456	0.50	B
50th Ave/Vernon Blvd (S7, SW Corner)	5.8	4.8	587	45	0.80	576	1.10	**D+**
50th Ave/Vernon Blvd (S5, SW Corner)	5.8	4.8	431	66	0.80	576	0.86	C
23rd Street/Ely Avenue (E/V)								
21st Street/44th Drive (SE Corner)	5.1	4.1	194	127	0.90	554	0.58	B

Note: Capacities were calculated based on rates presented in the New York City Transit, *Station Planning and Design Guidelines* (January 2001), in accordance with the *CEQR Technical Manual*;
+ = significant adverse impact.

As shown in **Table 17-19**, control areas at the two analysis subway stations would experience a decline in service levels. However, because the projected volumes would continue to be less than the processing capacities at these locations, the proposed actions would not result in any significant adverse control area impacts.

Table 17-19
2017 Build Condition: Subway Station Control Area Analysis

Control Area Elements	Quantity	15-Minute Pedestrian Volumes In	15-Minute Pedestrian Volumes Out	15-Minute SVCD Capacity	15-Minute V/SVCD Ratio	15-Minute LOS
AM Peak Period						
Vernon Boulevard/Jackson Avenue (7)						
R504 Control Area	4	1148	66	1920	0.63	D
R503 Control Area	3	173	337	1440	0.35	B
23rd Street/Ely Avenue (E/V)						
N307 Control Area	4	194	368	1920	0.29	B
PM Peak Period						
Vernon Boulevard/Jackson Avenue (7)						
R504 Control Area	4	533	165	1920	0.36	B
R503 Control Area	3	112	1019	1440	0.79	D
23rd Street/ Ely Avenue (E/V)						
N307 Control Area	4	340	218	1920	0.29	B

Note: Capacities were calculated based on rates presented in the New York City Transit, *Station Planning and Design Guidelines* (January 2001), in accordance with the *CEQR Technical Manual*.

SUBWAY LINE HAUL LEVELS

Subway trips generated by the proposed actions were added to the No. 7 line for the Build condition line haul analysis. As with No Build projects in the Long Island City area, 85 percent

of the subway trips generated by the proposed actions were assigned to the No. 7 train while the remaining 15 percent were assigned to the E/V lines. In each instance, 85 percent of the trips were assumed to be Manhattan bound and 15 percent were assumed to be Queens bound. Subway trip-making patterns during the commuter peak hours are likely to be similar for the various residential, retail, and educational uses anticipated on the project sites. Hence, the above trip distribution was used for assigning all AM and PM peak hour project-generated subway trips to different segments of the No. 7 line.

Based on the above assumptions, the proposed actions would generate approximately 307 Manhattan-bound trips for the E/V lines during the AM peak hour and approximately 309 Queens-bound trips during the PM peak hour. According to NYCT, the E/V line runs 25 Queens-bound trains (up to 230 cars) during the PM peak hour. Assuming that the 309 project-generated trips are evenly distributed across the 230 cars available during the PM peak hour, there would be fewer than two additional passengers per subway car. As this number is less than the five riders per car impact criterion outlined in the *CEQR Technical Manual*, a quantified subway line haul analysis for the E/V lines is not required.

The projected peak hour subway trip increments crossing the East River portals were superimposed onto the No Build line haul volumes. As shown in **Table 17-20**, with the overlay of these project-generated trips, the No. 7 line would continue to operate within guideline capacity during both the AM and PM peak periods under the Build condition.

Table 17-20
2017 Build Condition: Subway Line Haul Analysis

No. 7 Train Direction of Travel	Station	Trains /Hour	Volume	Leave Load		Available Capacity
				Guideline Capacity	V/C Ratio	
AM Peak Period						
Manhattan bound	Vernon Boulevard-Jackson Avenue	24	24,733	29,040	0.85	4,307
PM Peak Period						
Flushing bound	Grand Central-42nd Street	27	22,345	32,670	0.68	10,325

Source: Year 2006 Weekday Cordon Counts, New York City Transit, September 2007.

BUS LINE HAUL LEVELS

Peak period bus ridership for the Build condition was generated by adding the incremental trips associated with the proposed actions to the No Build bus line haul volumes. Similar assignment patterns as those applied for the No Build analysis were used to develop bus-only and bus-to-subway trip assignments for the Build condition.

As described in section B, "Methodology," impacts to bus line haul levels are considered significant if a proposed action would result in operating conditions above guideline capacities. As shown in **Table 17-21**, under the Build condition, the B61 would exceed guideline capacity (54 passengers per bus) northbound during the AM peak period and southbound during the PM peak period, while the Q103 would exceed guideline capacity during both peak periods in both directions. These projected increases in bus ridership beyond guideline capacities constitute significant adverse bus line haul impacts.

Table 17-21
2017 Build Condition: Bus Line Haul Analysis at Project Site Load Points

Route	Peak Period	Buses Per Hour	Northbound		Buses Per Hour	Southbound	
			Load Point	AP		Load Point	AP
B61	AM	9	Jackson Avenue–11th Street	**(69)**	7	Jackson Avenue–11th Street	45
	PM	8	Jackson Avenue–11th Street	45	6	Jackson Avenue–11th Street	**(109)**
Q103	AM	2	Vernon Boulevard–50th Avenue	**(219)**	2	Vernon Boulevard–50th Avenue	**(148)**
	PM	2	Vernon Boulevard–50th Avenue	**(168)**	2	Vernon Boulevard–50th Avenue	**(256)**

Note: AP = average passengers per bus; **(#)** = exceeds NYCT guideline capacity
Source: B61 and Q103 ridership data obtained from 2007 surveys conducted by AKRF

Recognizing that new or improved bus service for future occupants of the project sites would be necessary, discussions have been initiated with the MTA and NYCT to explore opportunities to extend the Q103 bus route from its current terminus at Vernon Boulevard and 50th Avenue to serve the future developments within the project sites. The City will continue these discussions and collaborate with the MTA and NYCT during and after this environmental review process to establish development guidelines and provisions to ensure that bus service improvements, such as the extension of the Q103 or other measures, would be implemented.

STREET-LEVEL PEDESTRIAN OPERATIONS

As discussed in Chapter 16, the proposed actions would incorporate the creation of new streets within the project sites as well as the signalization of existing intersections adjacent to the project sites. Second Street at 51st Avenue and at Borden Avenue are two of the intersections that would become signalized under the Build condition and represent the gateway to the project sites. Because these newly signalized intersections would accommodate a large portion of the project-generated pedestrian trips traveling to/from nearby mass transit connections and local destinations, they were included in the Build condition street-level pedestrian operations analysis. The crosswalk lengths and sidewalk widths used in the analysis at the newly signalized intersections are based on schematic drawings from the project sites' Master Plan. Reasonable crosswalk widths, in accordance with NYCDOT standards, were assumed for analysis.

As described in section B, "Methodology," project-related sidewalk impacts are considered significant if there is an increase of 2 PFM or more over the No Build condition beyond mid-LOS D (13 PFM). For corner reservoirs and crosswalks, impacts resulting in a decrease of 1 SFP or more over the No Build condition beyond mid-LOS D (20 SFP) is considered significant. As shown in **Tables 17-22 through 17-24**, significant adverse pedestrian impacts were identified for one sidewalk, one corner, and five crosswalks during the three analysis time periods, as detailed below.

AM PEAK PERIOD

Sidewalks

- The Vernon Boulevard west sidewalk between 50th and 51st Avenues would deteriorate from LOS B (5.7 PFM) to LOS D (13.4 PFM).

Corner Reservoirs

- The northwest corner of Vernon Boulevard and 50th Avenue would deteriorate from LOS B (44.4 SFP) to LOS E (13.9 SFP).

Table 17-22
2017 Build Condition: Pedestrian LOS Analysis for Sidewalks

Location	Sidewalk	Effective Width (feet)	15-Minute Two-Way Volume	Average		Platoon	
				PFM	LOS	PFM	LOS
AM Peak Period							
Vernon Boulevard	East	6.5	428	4.4	A	8.4	C
between 49th Avenue and 50th Avenue	West	8.0	456	3.8	A	7.8	C
Vernon Boulevard	East	5.5	62	0.8	A	4.8	A
between 50th Avenue and 51st Avenue	West	5.0	702	9.4	C	13.4	**D+**
Vernon Boulevard							
between 51st Avenue and Borden Avenue	West	5.0	243	3.2	A	7.2	C
50th Avenue	North	8.5	452	3.5	A	7.5	C
between 5th Street and Vernon Boulevard	South	9.5	380	2.7	A	6.7	B
51st Avenue	North	5.5	281	3.4	A	7.4	C
between 5th Street and Vernon Boulevard	South	6.0	230	2.6	A	6.6	B
Borden Avenue	North	10.0	180	1.2	A	5.2	A
between 5th Street and Vernon Boulevard	South	4.5	145	2.1	A	6.1	B
Midday Peak Period							
Vernon Boulevard	East	6.5	482	4.9	A	8.9	C
between 49th Avenue and 50th Avenue	West	8.0	553	4.6	A	8.6	C
Vernon Boulevard	East	5.5	110	1.3	A	5.3	B
between 50th Avenue and 51st Avenue	West	5.0	682	9.1	C	13.1	**D+**
Vernon Boulevard							
between 51st Avenue and Borden Avenue	West	5.0	223	3.0	A	7.0	B
50th Avenue	North	8.5	498	3.9	A	7.9	C
between 5th Street and Vernon Boulevard	South	9.5	451	3.2	A	7.2	C
51st Avenue	North	5.5	326	4.0	A	8.0	C
between 5th Street and Vernon Boulevard	South	6.0	233	2.6	A	6.6	B
Borden Avenue	North	10.0	145	1.0	A	5.0	A
between 5th Street and Vernon Boulevard	South	4.5	121	1.8	A	5.8	B
PM Peak Period							
Vernon Boulevard	East	6.5	438	4.5	A	8.5	C
between 49th Avenue and 50th Avenue	West	8.0	581	4.8	A	8.8	C
Vernon Boulevard	East	5.5	88	1.1	A	5.1	B
between 50th Avenue and 51st Avenue	West	5.0	768	10.2	D	14.2	**D+**
Vernon Boulevard							
between 51st Avenue and Borden Avenue	West	5.0	260	3.5	A	7.5	C
50th Avenue	North	8.5	543	4.3	A	8.3	C
between 5th Street and Vernon Boulevard	South	9.5	620	4.4	A	8.4	C
51st Avenue	North	5.5	344	4.2	A	8.2	C
between 5th Street and Vernon Boulevard	South	6.0	269	3.0	A	7.0	B
Borden Avenue	North	10.0	199	1.3	A	5.3	A
between 5th Street and Vernon Boulevard	South	4.5	161	2.4	A	6.4	B

Notes: PFM = pedestrians per foot per minute;
+ = significant adverse impact

Table 17-23
2017 Build Condition: Pedestrian LOS Analysis for Corners

Location	Corner	AM Peak Period		Midday Peak Period		PM Peak Period	
		SFP	LOS	SFP	LOS	SFP	LOS
Vernon Boulevard and 50th Avenue	Northeast	28.5	C	33.4	C	33.5	C
	Southeast	78.7	A	42.5	B	51.6	B
	Southwest	47.2	B	43.2	B	34.1	C
	Northwest	13.9	**E+**	20.2	D	18.2	**D+**
Vernon Boulevard and 51st Avenue	Northeast	65.7	A	37.0	C	47.9	B
	Southwest	80.5	A	76.4	A	71.8	A
	Northwest	58.0	B	56.8	B	48.3	B
Vernon Boulevard and Borden Avenue	Northwest	141.7	A	161.3	A	129.0	A

Notes: SFP = square feet per pedestrian;
+ = significant adverse impact

Table 17-24
2017 Build Condition: Pedestrian LOS Analysis for Crosswalks

Location	Crosswalk	Street Width (feet)	Crosswalk Width (feet)	With Conflicting Vehicles					
				AM Peak		Midday Peak		PM Peak	
				SFP	LOS	SFP	LOS	SFP	LOS
Vernon Boulevard and 50th Avenue	North*	44.0	13.0	4.1	**F+**	6.9	**F+**	6.6	**F+**
	East*	43.5	10.0	65.0	A	38.2	C	48.7	B
	South	94.0	11.0	45.5	B	23.9	D	27.5	C
	West*	29.5	15.5	17.6	**D+**	17.6	**D+**	15.2	**D+**
Vernon Boulevard and 51st Avenue	North	65.5	13.0	281.2	A	139.0	A	188.2	A
	East	30.0	9.0	105.3	A	68.1	A	86.9	A
	South	96.0	11.0	213.6	A	97.2	A	134.1	A
	West	29.5	12.0	23.4	D	22.8	D	19.6	**D+**
Vernon Boulevard and Borden Avenue	North	34.0	12.5	414.0	A	222.3	A	292.9	A
	West	55.5	15.5	84.7	A	96.0	A	80.6	A
2nd Street and 51st Avenue	North	50.0	13.0	56.5	B	63.8	A	51.6	B
	East	30.0	15.0	52.5	B	65.1	A	48.5	B
	South*	50.0	13.0	35.9	C	42.4	B	35.1	C
	West*	30.0	15.0	33.2	C	38.5	C	30.1	C
2nd Street and Borden Avenue	North*	50.0	15.0	105.5	A	81.0	A	100.9	A
	East	53.0	15.0	16.5	**D+**	24.0	D	15.8	**D+**
	South	50.0	15.0	53.1	B	21.2	D	25.1	C
	West*	53.0	15.0	12.8	**E+**	12.8	**E+**	9.6	**E+**

Notes: SFP = square feet per pedestrian;
+ = significant adverse impact

Crosswalks

- The north crosswalk at Vernon Boulevard and 50th Avenue would deteriorate from LOS E (11.9 SFP) to LOS F (4.1 SFP). Also, the west crosswalk would deteriorate from LOS B (50.8 SFP) to LOS D (17.6 SFP).
- At the new signalized intersection of 2nd Street and Borden Avenue, the east crosswalk would operate at LOS D (16.5 SFP) while the west crosswalk would operate at LOS E (12.8 SFP).

MIDDAY PEAK PERIOD

Sidewalks

- The Vernon Boulevard west sidewalk between 50th and 51st Avenues would deteriorate from LOS B (6.9 PFM) to LOS D (13.1 PFM).

Crosswalks

- The north crosswalk at Vernon Boulevard and 50th Avenue would deteriorate from LOS D (17.0 SFP) to LOS F (6.9 SFP). Also, the west crosswalk would deteriorate from LOS C (35.8 SFP) to LOS D (17.6 SFP).
- At the new signalized intersection of 2nd Street and Borden Avenue, the west crosswalk would operate at LOS E (12.8 SFP).

PM PEAK PERIOD

Sidewalks

- The Vernon Boulevard west sidewalk between 50th and 51st Avenues would deteriorate from LOS B (6.1 PFM) to LOS D (14.2 PFM).

Corner Reservoirs

- The northwest corner of Vernon Boulevard and 50th Avenue would deteriorate from LOS C (42.3 SFP) to LOS D (18.2 SFP).

Crosswalks

- The north crosswalk at Vernon Boulevard and 50th Avenue would deteriorate from LOS D (17.9 SFP) to LOS F (6.6 SFP). Also, the west crosswalk would deteriorate from LOS C (28.1 SFP) to LOS D (15.2 SFP).
- The west crosswalk at Vernon Boulevard and 51st Avenue would deteriorate from LOS A (97.9 SFP) to LOS D (19.6 SFP).
- At the new signalized intersection of 2nd Street and Borden Avenue, the east crosswalk would operate at LOS D (15.8 SFP) while the west crosswalk would operate at LOS E (9.6 SFP).

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