

A. INTRODUCTION

This chapter addresses the potential impacts on transit and pedestrians from the proposed Willets Point Development Plan. In accordance with the approach outlined in Chapter 2, “Procedural and Analytical Framework,” this chapter analyzes the cumulative impact of both the Willets Point Development Plan and the anticipated development on Lot B.

Possible impacts resulting from the proposed Plan and Lot B on transit and pedestrian facilities in the vicinity of the Willets Point Development District were evaluated. This chapter includes a description of the existing and future operating conditions of these facilities and identification of potential significant adverse impacts that would require mitigation.

PRINCIPAL CONCLUSIONS

Significant adverse transit impacts were identified for the street-level stairway on the north side of Roosevelt Avenue at the Willets Point-Shea Stadium subway station, and for the Q48 and Q66 bus routes. Significant pedestrian impacts were identified for the east crosswalk at the intersection of Northern Boulevard and 126th Street, for the north, east, and west crosswalks at the intersection of Roosevelt Avenue and 126th Street, and for the new crosswalk at the signalized intersection of Roosevelt Avenue and the Lot B driveway.

Potential measures to mitigate these projected significant adverse impacts are described in Chapter 23, “Mitigation.”

B. METHODOLOGY

As described in Chapter 17, “Traffic and Parking,” a travel demand projection was developed to identify the transportation elements likely to be affected by the proposed Plan. Because the number of peak hour transit and pedestrian trips generated by the proposed Plan 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 District include the New York City Transit (NYCT) No. 7 subway line, which operates above Roosevelt Avenue with a stop at the Willets Point-Shea Stadium subway station; the Q19, Q48, and Q66 bus routes, which travel along the northern and southern boundaries of the District; and the Metropolitan Transportation Authority (MTA) Long Island Rail Road (LIRR) at the Shea Stadium LIRR station (game-day service only), which is accessible just south of the District (see Figure 18-1). The transit analyses include a quantified assessment of control areas and circulation elements at the No. 7 Willets Point-Shea Stadium subway station, a ridership and peak period train loading analysis for the No. 7 subway line, and a line-haul analysis for the Q19, Q48, and Q66 bus routes, which includes assessments of

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conditions at peak load points and at nearby bus stops. Because LIRR service is currently available only on game days at Shea Stadium and at the USTA National Tennis Center during the US Open, no quantified impact analysis was conducted for this transportation mode. Nonetheless, the City has discussed with MTA extending regular LIRR service to this station when the actual demand shows that such service improvement is warranted. The evaluation of pedestrian flow includes an analysis of the sidewalks, corner reservoirs, and crosswalks adjacent to the District, along 126th Street, Northern Boulevard, and Roosevelt Avenue (see Figure 18-2).

SUBWAY SERVICE

No. 7 Subway Line

The No. 7 train operates primarily along Roosevelt Avenue 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. Unscheduled express service is also supplemented during game days at Shea Stadium and during the US Open. 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. When games occur on weekday evenings, there is express service to Manhattan for an hour after the end of the game. On Saturdays, there is local service every 4 to 6 minutes in both directions. On Sundays, the No. 7 train operates every 8 minutes during the morning and every 6 minutes during the afternoon in both directions.

BUS SERVICE

There are three study area bus routes, Q48 operated by NYCT, and Q19 and Q66 operated by the MTA Bus Company. The Q48 operates between Flushing and LaGuardia Airport and stops within the study area along Roosevelt Avenue in both directions just west of 126th Street. The Q19 operates between Flushing and Astoria and the Q66 operates between Flushing and Queensboro Plaza in Long Island City. Within the study area, both the Q19 and Q66 routes make stops only eastbound along Northern Boulevard just east of 126th Street. Table 18-1 provides a summary of the weekday and Saturday service headways of these bus routes.

**Table 18-1
Local Bus Routes Serving the Study Area**

Bus Route	Start Point	End Point	Routing	Frequency of Bus Service (Headway in Minutes)				
				AM	Midday	PM	Pre-game Saturday	Post-game Saturday
Q19	Flushing	Astoria	via Northern Boulevard/ Astoria Boulevard	20	20	20	30	30
Q48 Local	Flushing	LaGuardia Airport	via Roosevelt Avenue/ Ditmars Boulevard	13	20	14	20	20
Q66 Local	Flushing	Long Island City	via Northern Boulevard	12	12	17	12	10
Q66 Local	Flushing	Woodside	via Northern Boulevard	6	11	8	12	10

Source: New York City Transit, *Queens Bus Map* (2005); conversation with MTA Bus Company.

LIRR SERVICE

The Port Washington Branch of the LIRR operates regular weekday local and express service, and weekend local only service between Port Washington and Penn Station. On game days at Shea Stadium and during the US Open, it makes stops at the Shea Stadium LIRR station to accommodate event patrons.

PEDESTRIAN ELEMENTS

Numerous sidewalks, corner reservoirs, and crosswalks surrounding the District were identified for analysis. These pedestrian elements, representing locations where most of the project-generated trips would be anticipated, are situated primarily along 126th Street between Roosevelt Avenue and Northern Boulevard. Where appropriate, new pedestrian elements contemplated as part of the proposed Plan were assumed in the analysis of the probable impacts of the proposed Plan.

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 ramps, similar considerations are made. 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 with New York City Transit (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 18-2 shows the LOS and corresponding v/c ratios for subway station elements.

**Table 18-2
Level of Service Criteria for Subway Station Elements**

LOS	V/C Ratio	
	Stairways/Ramps	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).

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For stairways and ramps, 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 and ramps, 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 six inches or more needed to restore LOS to the same level as the future with the proposed action or LOS C/D conditions is considered significant; for a future with the proposed action LOS E condition, a widening of three inches or more is considered significant; and for a future with the proposed action LOS F condition, a widening of one inch or more is considered significant. For ramps, a similar sliding scale is used to determine significant impacts. For a location with LOS D for the future with the proposed action, a widening of 12 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 six inches or more is considered significant; and for a future with the proposed action LOS F condition, a widening of three inches 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

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, on average, a subway car for a particular route is expected to incur 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 the 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 is 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 NYCT's 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 18-3 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 18-3

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. <i>Highway Capacity Manual</i> , 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 would be considered a significant adverse impact. However, if there is less than a 200-person increase at a location within the peak hour, any impact is not considered significant since such increases typically would not be perceptible.

C. EXISTING CONDITIONS

Existing pedestrian levels are based on field surveys conducted on August 20, September 13, September 17, and September 18, 2006. Existing conditions for the analysis of subway station elements are based upon field surveys conducted on August 20, September 13, and September 18, 2006, and September 12 and September 15, 2007. Bus ridership data for the Q19, Q48, and Q66 bus routes were obtained from NYCT and the MTA Bus Company, as well as field surveys conducted on September 13 and September 18, 2006. Subway ridership data were obtained from NYCT.

To determine peak conditions for subway stairwells and pedestrian facilities, weekday counts were conducted during the 7:00 to 9:30 AM, 11:00 AM to 1:00 PM, and 4:00 to 7:00 PM time periods. The evening counts were conducted on both a game day and a non-game day. Saturday pre-game and post-game counts were conducted during the 11:00 AM to 2:00 PM and 3:30 to 6:00 PM time periods, respectively. All counts were conducted at 15-minute intervals, and 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 and 4:00 to 7:00 PM time periods. The evening counts were conducted on both a game day and a non-game day. Saturday game day counts were conducted from 11:00 AM to 6:00 PM. The highest hourly volumes for each route were selected for analysis.

SUBWAY STATION OPERATIONS

Since the Willets Point-Shea Stadium subway station has multiple entrances, the quantified analysis was limited to the elements that would most likely be used by riders traveling to and

from the District and Lot B. Based on the travel demand estimates detailed in Chapter 17, it was determined that quantified analyses would be required for the street-level and mezzanine stairways and mezzanine ramps serving trips generated by the proposed Plan, as well as, control areas within the subway station.

Street-level stairways on the north and south sides of Roosevelt Avenue connect to the main control area across from the station agent's booth on the mezzanine level. Because all project-generated trips would be expected to use the street-level and street-mezzanine stairways on the north side of Roosevelt Avenue, those on the south side of Roosevelt Avenue were not analyzed. On the mezzanine level, the main control area, containing five turnstiles and one emergency exit gate, provides separation between the free and fare zones of the station. Within the fare zone, two ramps and two stairways provide access to the Manhattan-bound and Flushing-bound platforms, respectively.

On a typical day, access to and egress from the Willets Point-Shea Stadium subway station occur at the main control area. However, during several hours on game days, the main control area is disabled and the entire mezzanine level becomes a free zone to provide access to and from the LIRR station ramp to the south and the Stadium rotunda (the connection from the subway station to Shea Stadium) to the north. When this operation is in place, access to the No. 7 train is made through individual control areas, with six to seven turnstiles each, connecting to the four platform ramps and stairways. Hence, game-day station analysis considers the condition at these four locations instead of the main station control area.

In September 2006 and September 2007, surveys were conducted to determine 15-minute pedestrian volumes at the street level stairway, mezzanine stairways and ramps, and control areas within the station. Volumes collected in 2006 were adjusted to 2007 using a 1.0-percent growth rate. Typically, subway station elements would be evaluated for only the AM and PM commuter peak hours. However, to address worst-case game-day conditions at the Willets Point-Shea Stadium subway station, the weekday pre-game, and Saturday pre-game and post-game conditions were also included for analysis.

As shown in Table 18-4, the analyzed stairways and ramps currently operate at LOS A during both non-game peak hours. During the weekday pre-game peak period, the street-level and street-mezzanine stairways on the north side of Roosevelt Avenue operate at LOS C and LOS B, respectively, while all the other stairways and ramps operate at LOS A or LOS B. During the Saturday pre-game peak period, all stairways and ramps operate at LOS A or LOS B. During the Saturday post-game peak period, the northwest ramp to the Manhattan-bound platform operates at LOS C, while all the remaining stairways and ramps operate at LOS A.

As shown in Table 18-5, the main control area currently operates at LOS A during the weekday AM and PM peak periods. During the weekday and Saturday pre-game peak periods, the Manhattan-bound platform's two control areas operate at LOS A and the Flushing-bound platform's control areas operate at LOS B. During the post-game peak period, both Flushing-bound control areas operate at LOS A. At the Manhattan-bound platform, the northwest control area operates at LOS F while the northeast control area operates at LOS C.

Table 18-4

2007 Existing Conditions: Subway Station Vertical Circulation Analysis

Willeys Point–Shea Stadium No. 7 Train Station Vertical Circulation Elements	Width (feet)	Effective Width (feet)	15-Minute Pedestrian Volumes		Friction Factor	15-Minute		
			Up	Down		SVCD Capacity	V/SVCD Ratio	LOS
Weekday AM Non-Game								
Street to Mezzanine								
Roosevelt Avenue (North) S2 Stairs	8.00	6.00	14	65	0.80	720	0.11	A
Roosevelt Avenue (North) M4A/4B Stairs	12.75	10.75	14	65	0.80	1290	0.06	A
Mezzanine to Platform								
Flushing-bound East P2/3/4/5 Stairs	20.00	16.00	7	9	0.90	2160	0.01	A
Flushing-bound West P10/11/12/13 Stairs	19.00	15.00	19	9	0.80	1800	0.02	A
Manhattan-bound East Ramp	19.50	17.50	27	71	0.80	3938	0.02	A
Manhattan-bound West Ramp	17.50	15.50	64	91	0.90	3488	0.04	A
Weekday PM Non-Game								
Street to Mezzanine								
Roosevelt Avenue (North) S2 Stairs	8.00	6.00	51	26	0.90	810	0.10	A
Roosevelt Avenue (North) M4A/4B Stairs	12.75	10.75	51	26	0.90	1451	0.05	A
Mezzanine to Platform								
Flushing-bound East P2/3/4/5 Stairs	20.00	16.00	19	12	0.90	2160	0.01	A
Flushing-bound West P10/11/12/13 Stairs	19.00	15.00	176	11	0.80	1800	0.10	A
Manhattan-bound East Ramp	19.50	17.50	12	103	0.80	3938	0.02	A
Manhattan-bound West Ramp	17.50	15.50	9	122	0.80	3488	0.03	A
Weekday Pre-Game								
Street to Mezzanine								
Roosevelt Avenue (North) S2 Stairs	8.00	6.00	51	543	0.80	720	0.83	C
Roosevelt Avenue (North) M4A/4B Stairs	12.75	10.75	51	543	0.80	1290	0.46	B
Mezzanine to Platform								
Flushing-bound East P2/3/4/5 Stairs	20.00	16.00	9	1117	0.80	1920	0.59	B
Flushing-bound West P10/11/12/13 Stairs	19.00	15.00	13	1130	0.80	1800	0.64	B
Manhattan-bound East Ramp	19.50	17.50	44	132	0.80	3938	0.04	A
Manhattan-bound West Ramp	17.50	15.50	118	180	0.90	3488	0.08	A
Saturday Pre-Game								
Street to Mezzanine								
Roosevelt Avenue (North) S2 Stairs	8.00	6.00	25	414	0.80	720	0.61	B
Roosevelt Avenue (North) M4A/4B Stairs	12.75	10.75	25	414	0.80	1290	0.34	A
Mezzanine to Platform								
Flushing-bound East P2/3/4/5 Stairs	20.00	16.00	8	915	0.80	1920	0.48	B
Flushing-bound West P10/11/12/13 Stairs	19.00	15.00	11	988	0.80	1800	0.56	B
Manhattan-bound East Ramp	19.50	17.50	39	26	0.90	3938	0.01	A
Manhattan-bound West Ramp	17.50	15.50	17	114	0.80	3488	0.03	A
Saturday Post-Game								
Street to Mezzanine								
Roosevelt Avenue (North) S2 Stairs	8.00	6.00	281	14	0.80	720	0.41	A
Roosevelt Avenue (North) M4A/4B Stairs	12.75	10.75	281	14	0.80	1290	0.23	A
Mezzanine to Platform								
Flushing-bound East P2/3/4/5 Stairs	20.00	16.00	106	131	0.90	2160	0.11	A
Flushing-bound West P10/11/12/13 Stairs	19.00	15.00	279	40	0.80	1800	0.18	A
Manhattan-bound East Ramp	19.50	17.50	1646	10	0.80	3938	0.34	A
Manhattan-bound West Ramp	17.50	15.50	4109	15	0.80	3488	0.95	C
Note: Capacities were calculated based on rates presented in the New York City Transit, <i>Station Planning and Design Guidelines</i> (January 2001), in accordance with the <i>CEQR Technical Manual</i> .								

**Table 18-5
2007 Existing Conditions: Subway Station Control Area Analysis**

Willels Point–Shea Stadium No. 7 Train Station Control Area Elements	Quantity	15-Minute Pedestrian Volumes		15-Minute		
		In	Out	SVCD Capacity	V/SVCD Ratio	LOS
Weekday AM Non-Game						
Main Control Area Turnstiles (R532)	5	86	125	2400	0.09	A
Weekday PM Non-Game						
Main Control Area Turnstiles (R532)	5	129	99	2400	0.10	A
Weekday Pre-Game						
Manhattan-bound West Ramp Turnstiles	6	118	180	3360	0.10	A
Manhattan-bound East Ramp Turnstiles	7	44	132	2880	0.05	A
Flushing-bound West Stair Turnstiles	6	13	1130	2880	0.40	B
Flushing-bound East Stair Turnstiles	6	9	1117	2880	0.39	B
Saturday Pre-Game						
Manhattan-bound West Ramp Turnstiles	6	17	114	3360	0.05	A
Manhattan-bound East Ramp Turnstiles	7	39	26	2880	0.02	A
Flushing-bound West Stair Turnstiles	6	11	988	2880	0.35	B
Flushing-bound East Stair Turnstiles	6	8	915	2880	0.32	B
Saturday Post-Game						
Manhattan-bound West Ramp Turnstiles	6	4109	15	3360	1.43	F
Manhattan-bound East Ramp Turnstiles	7	1646	10	2880	0.49	C
Flushing-bound West Stair Turnstiles	6	279	40	2880	0.11	A
Flushing-bound East Stair Turnstiles	6	106	131	2880	0.08	A
Note: Capacities were calculated based on rates presented in the New York City Transit, <i>Station Planning and Design Guidelines</i> (January 2001), in accordance with the <i>CEQR Technical Manual</i> .						

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. Although some of the projected subway trips originating or terminating in the District are expected to transfer to the E/F/R/V lines, with most transferring at the Jackson Heights-Roosevelt Avenue subway station, it was determined that a quantified subway line-haul analysis for the E/F/R/V lines is not required, as discussed in Section E, “Probable Impacts of the Proposed Plan.”

Because peak travel to and from the District is expected to be westbound in the morning and eastbound in the afternoon, a leave load analysis was conducted for the Manhattan-bound express trains at the Woodside-61st Street subway station and for the Manhattan-bound local trains at the 40th Street station for the AM peak period and for the Flushing-bound trains at the Queensboro Plaza subway station for the PM peak period.

The No. 7 subway 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 and the number of peak period trains were obtained from NYCT. A 0.5-percent growth factor was applied to the 2006 leave load counts to generate the existing 2007 leave load volumes. As described in more details in Section E, “Probable Impacts of the Proposed Plan,” the 0.5-percent background growth factor was used to account for regional subway travel between Queens and Manhattan. As shown in Table 18-6, the No. 7 train currently operates below guideline capacity during the weekday AM and PM commuter peak periods.

Table 18-6

2007 Existing Condition: Peak Hour Subway Line Haul

No. 7 Train Direction of Travel	Station	Trains /Hour	Volume	Leave Load		Available Capacity
				Guideline Capacity	V/C Ratio	
AM Peak Period						
Manhattan-bound Express	Woodside-61st Street	13	15,029	15,730	0.95	701
Manhattan-bound Local	40th Street	13	12,806	15,730	0.81	2,924
PM Peak Period						
Flushing-bound Express + Local	Queensboro Plaza	26	21,828	31,460	0.69	9,632
Sources: New York City Transit						

BUS LINE HAUL LEVELS

To assess the potential impacts on the study area bus routes, the most recent ridership data were acquired from NYCT, the MTA Bus Company, and field surveys of bus stops serving the District. The two-way average daily boarding count for the Q48 route was obtained from the “2006 Subway and Bus Ridership Report,” published by NYCT. Year 2003 maximum load point volumes for the Q48 bus were also obtained. During both the AM and the PM peak periods, the maximum load point for both the eastbound and westbound directions alternates between Roosevelt Avenue/108th Street and Roosevelt Avenue/Main Street, which are on either side of the District. To determine passenger volumes at the bus stops along Roosevelt Avenue just west of 126th Street, a survey was conducted in September 2006 to capture arrival loads and boarding/alighting volumes.

Maximum load point data are unavailable for the Q19 and Q66 bus routes. Therefore, the numbers of peak period riders were estimated by applying the hourly ridership distribution from the Q48 bus route to the 2006 bi-directional daily boardings for the Q19 and Q66 bus routes, obtained from the MTA Bus Company. Both the 2003 and 2006 passenger volumes were projected to 2007 levels by applying a 1.0-percent annual growth rate and averaged among the scheduled numbers of buses along each route during peak periods. As shown in Table 18-7, the Q19 and Q48 bus routes presently operate within guideline capacities (54 passengers per bus) at their respective maximum load points, as does the Q66 during the PM peak period. During the AM peak period, the Q66 exceeds its guideline capacity.

Table 18-7

2007 Existing Conditions: Bus Line Haul at NYCT Maximum Load Points

Route	Peak Period	Buses Per Hour	Eastbound		Buses Per Hour	Westbound	
			Max Load Point	AP		Max Load Point	AP
Q19	AM	3	unknown	18	--	Not analyzed	--
	PM	3	unknown	9	--	Not analyzed	--
Q48	AM	6	Roosevelt at 108th/Main	43	5	Roosevelt at 108th/Main	14
	PM	4	Roosevelt at 108th/Main	33	5	Roosevelt at 108th/Main	40
Q66 (to Woodside and LIC)	AM	15	unknown	(73)	--	Not analyzed	--
	PM	11	unknown	51	--	Not analyzed	--
Note: AP = average passengers per bus; (#) = exceeds NYCT guideline capacity							
Source: Q48 ridership data provided by NYCT; Q19 and Q66 ridership data provided by the MTA Bus Company							

Existing load levels for the Q48 route at the bus stops nearest to the District were also examined, as shown in Table 18-8. Because existing passenger volumes per bus at these bus stops are

similar to the passenger volumes per bus at the maximum load points during peak hours, the incremental bus passenger volumes generated by the proposed Plan are likely to shift the route’s maximum load points to these bus stops. Hence, while existing passenger volumes are presented for the NYCT maximum and District load points, the future conditions analyses would consider changes only at the bus stops serving the District.

**Table 18-8
2007 Existing Conditions: Bus Line Haul at District Load Points**

Route	Peak Period	Buses Per Hour	Eastbound		Buses Per Hour	Westbound	
			Load Point	AP		Load Point	AP
Q48	AM	6	Roosevelt at 126th	46	5	Roosevelt at 126th	7
	PM	4	Roosevelt at 126th	19	4	Roosevelt at 126th	40
Note: AP = average passengers per bus; (#) = exceeds NYCT guideline capacity Source: AKRF survey, September 2006							

STREET-LEVEL PEDESTRIAN OPERATIONS

The study area sidewalks, corner reservoirs, and crosswalks were assessed for the weekday AM, midday, PM, and pre-game peak periods, as well as, the Saturday midday non-game, pre-game, and post-game peak periods. Existing peak 15-minute pedestrian volumes were developed from the 2006 survey data and prorated to 2007 levels by applying a 1.0-percent background growth.

As shown in Tables 18-9 through 18-13, all analyzed pedestrian elements currently operate at acceptable levels (13 PFM for sidewalks; 20 SFP for corners and crosswalks) during the analysis peak periods.

D. THE FUTURE WITHOUT THE PROPOSED PLAN

Transit and pedestrian conditions in the future without the proposed Plan were assessed to establish baseline 2017 conditions or the “No Build” condition against which to evaluate the potential project impacts. 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 1.0-percent annual background growth rate (except for the subway line-haul analysis, which uses a 0.5 percent annual background growth rate based on typical annual growth of regional subway travel between Queens and Manhattan) onto existing transit and pedestrian volumes 10 years into the future and by adding the estimated transit and pedestrian volumes generated by projects within and near the study area that would be completed independent of the proposed Plan.

Table 18-9

2007 Existing Conditions: Weekday Pedestrian LOS Analysis for Sidewalks

Location	Sidewalk	Effective Width (feet)	15-Minute Two-Way Volume	Average		Platoon	
				PFM	LOS	PFM	LOS
Weekday AM Non-Game							
126th St between Northern Blvd and 34th Ave	East	9.0	6	0.0	A	4.0	A
126th St between 34th Ave and Roosevelt Ave	West	11.0	32	0.2	A	4.2	A
Northern Blvd between 126th Street and 126th Place	East	7.5	8	0.1	A	4.1	A
	South	7.0	0	0.0	A	4.0	A
34th Ave between 126th St and 126th Pl	North	10.0	1	0.0	A	4.0	A
	South	5.0	5	0.1	A	4.1	A
Roosevelt Ave between 126th St and the Van Wyck Expressway	North	14.0	13	0.1	A	4.1	A
	South	5.0	2	0.0	A	4.0	A
Roosevelt Ave between 126th St and the Grand Central Parkway	North	14.5	65	0.3	A	4.3	A
	South	13.5	3	0.0	A	4.0	A
Weekday MD Non-Game							
126th St between Northern Blvd and 34th Ave	East	9.0	13	0.1	A	4.1	A
126th St between 34th Ave and Roosevelt Ave	West	11.0	10	0.1	A	4.1	A
Northern Blvd between 126th St and 126th Pl	East	7.5	8	0.1	A	4.1	A
	South	7.0	0	0.0	A	4.0	A
34th Ave between 126th St and 126th Pl	North	10.0	2	0.0	A	4.0	A
	South	5.0	4	0.1	A	4.1	A
Roosevelt Ave between 126th St and the Van Wyck Expressway	North	14.0	13	0.1	A	4.1	A
	South	5.0	4	0.1	A	4.1	A
Roosevelt Ave between 126th St and the Grand Central Parkway	North	14.5	18	0.1	A	4.1	A
	South	13.5	2	0.0	A	4.0	A
Weekday PM Non-Game							
126th St between Northern Blvd and 34th Ave	East	9.0	41	0.3	A	4.3	A
126th St between 34th Ave and Roosevelt Ave	West	11.0	51	0.3	A	4.3	A
Northern Blvd between 126th St and 126th Pl	East	7.5	36	0.3	A	4.3	A
	South	7.0	0	0.0	A	4.0	A
34th Ave between 126th St and 126th Pl	North	10.0	2	0.0	A	4.0	A
	South	5.0	5	0.1	A	4.1	A
Roosevelt Ave between 126th St and the Van Wyck Expressway	North	14.0	5	0.0	A	4.0	A
	South	5.0	4	0.1	A	4.1	A
Roosevelt Ave between 126th St and the Grand Central Parkway	North	14.5	29	0.1	A	4.1	A
	South	13.5	26	0.1	A	4.1	A
Weekday Pre-Game							
126th St between Northern Blvd and 34th Ave	East	9.0	98	0.7	A	4.7	A
126th St between 34th Ave and Roosevelt Ave	West	11.0	10	0.1	A	4.1	A
Northern Blvd between 126th St and 126th Pl	East	7.5	12	0.1	A	4.1	A
	South	7.0	0	0.0	A	4.0	A
34th Ave between 126th St and 126th Pl	North	10.0	1	0.0	A	4.0	A
	South	5.0	11	0.1	A	4.1	A
Roosevelt Ave between 126th St and the Van Wyck Expressway	North	14.0	27	0.1	A	4.1	A
	South	5.0	20	0.3	A	4.3	A
Roosevelt Ave between 126th St and the Grand Central Parkway	North	14.5	6	0.0	A	4.0	A
	South	13.5	60	0.3	A	4.3	A

Note: PFM = pedestrians per foot per minute.

Table 18-10

2007 Existing Conditions: Saturday Pedestrian LOS Analysis for Sidewalks

Location	Sidewalk	Effective Width (feet)	15-Minute Two-Way Volume	Average		Platoon	
				PFM	LOS	PFM	LOS
Saturday MD Non-game							
126th St between Northern Blvd and 34th Ave	East	9.0	3	0.0	A	4.0	A
126th St between 34th Ave and Roosevelt Ave	West	11.0	5	0.0	A	4.0	A
	East	7.5	4	0.0	A	4.0	A
Northern Blvd between 126th St and 126th Pl	South	7.0	0	0.0	A	4.0	A
34th Ave between 126th St and 126th Pl	North	10.0	2	0.0	A	4.0	A
	South	5.0	4	0.1	A	4.1	A
Roosevelt Ave between 126th St and the Van Wyck Expressway	North	14.0	4	0.0	A	4.0	A
	South	5.0	13	0.2	A	4.2	A
Roosevelt Ave between 126th St and the Grand Central Parkway	North	14.5	5	0.0	A	4.0	A
	South	13.5	20	0.1	A	4.1	A
Saturday Pre- Game							
126th St between Northern Blvd and 34th Ave	East	9.0	118	0.9	A	4.9	A
126th St between 34th Ave and Roosevelt Ave	West	11.0	7	0.0	A	4.0	A
	East	7.5	7	0.1	A	4.1	A
Northern Blvd between 126th St and 126th Pl	South	7.0	0	0.0	A	4.0	A
34th Ave between 126th St and 126th Pl	North	10.0	3	0.0	A	4.0	A
	South	5.0	17	0.2	A	4.2	A
Roosevelt Ave between 126th St and the Van Wyck Expressway	North	14.0	17	0.1	A	4.1	A
	South	5.0	3	0.0	A	4.0	A
Roosevelt Ave between 126th St and the Grand Central Parkway	North	14.5	47	0.2	A	4.2	A
	South	13.5	35	0.2	A	4.2	A
Saturday Post- Game							
126th St between Northern Blvd and 34th Ave	East	9.0	43	0.3	A	4.3	A
126th St between 34th Ave and Roosevelt Ave	West	9.0	79	0.5	A	4.5	A
	East	11.0	9	0.1	A	4.1	A
Northern Blvd between 126th St and 126th Pl	South	7.5	0	0.0	A	4.0	A
34th Ave between 126th St and 126th Pl	North	7.0	2	0.0	A	4.0	A
	South	10.0	2	0.0	A	4.0	A
Roosevelt Ave between 126th St and the Van Wyck Expressway	North	5.0	42	0.2	A	4.2	A
	South	14.0	11	0.1	A	4.1	A
Roosevelt Ave between 126th St and the Grand Central Parkway	North	5.0	26	0.1	A	4.1	A
	South	14.5	584	2.9	A	6.9	B

Note: PFM = pedestrians per foot per minute.

Table 18-11

2007 Existing Conditions: Pedestrian LOS Analysis for Corners

Location	Corner	Weekday								Saturday					
		AM		MD		PM		Pre-Game		MD Non-Game		Pre-Game		Post-Game	
		SFP	LOS	SFP	LOS	SFP	LOS	SFP	LOS	SFP	LOS	SFP	LOS	SFP	LOS
Roosevelt Avenue and 126th Street	Northeast	419.8	A	1089.4	A	1638.0	A	367.7	A	1023.3	A	603.5	A	240.4	A
	Northwest	2109.9	A	6038.1	A	2416.1	A	1760.8	A	5282.9	A	2561.4	A	1030.3	A

Note: SFP = square feet per pedestrian.

Table 18-12

2007 Existing Conditions: Weekday Pedestrian LOS Analysis for Crosswalks

Location	Crosswalk	Street Width (feet)	Cross-walk Width (feet)	With Conflicting Vehicles							
				Weekday AM		Weekday MD		Weekday PM		Weekday Pre-Game	
				SFP	LOS	SFP	LOS	SFP	LOS	SFP	LOS
Northern Blvd and 126th St	East	118.5	14.5	4320.9	A	1401.8	A	621.3	A	112.3	A
	South	57.0	20.0	7825.0	A	19557.0	A	19557.0	A	540.5	A
34th Ave and 126th St	North	87.0	10.5	4103.9	A	2001.4	A	2030.8	A	83.9	A
	East	28.5	14.5	11683.9	A	5813.9	A	726.0	A	372.5	A
	South	69.0	20.5	8068.7	A	4101.8	A	4362.3	A	92.1	A
	West	47.0	12.5	22440.7	A	11230.6	A	11176.3	A	126.0	A
Roosevelt Ave and 126th St	North	52.5	17.0	860.5	A	4083.9	A	9582.6	A	716.7	A
	East	41.0	11.5	6020.7	A	1884.0	A	2651.0	A	2826.0	A
	South	42.5	15.5	13661.5	A	6734.8	A	13700.7	A	2473.9	A
	West	43.0	16.0	4134.2	A	3940.4	A	295.7	A	1009.9	A

Note: SFP = square feet per pedestrian.

Table 18-13

2007 Existing Conditions: Saturday Pedestrian LOS Analysis for Crosswalks

Location	Crosswalk	Street Width (feet)	Crosswalk Width (feet)	With Conflicting Vehicles					
				Saturday MD Non-Game		Saturday Pre-Game		Saturday Post-Game	
				SFP	LOS	SFP	LOS	SFP	LOS
Northern Blvd and 126th St	East	118.5	14.5	2062.1	A	36.2	C	22.8	D
	South	57.0	20.0	19557.0	A	312.7	A	464.7	A
34th Ave and 126th St	North	87.0	10.5	1885.8	A	26.2	C	56.7	B
	East	28.5	14.5	11531.0	A	1080.8	A	201.8	A
	South	69.0	20.5	4161.9	A	263.2	A	87.4	A
	West	47.0	12.5	11092.7	A	105.3	A	82.1	A
Roosevelt Ave and 126th St	North	52.5	17.0	3155.5	A	1370.6	A	537.9	A
	East	41.0	11.5	2808.9	A	3030.9	A	433.6	A
	South	42.5	15.5	5493.1	A	13695.1	A	2285.1	A
	West	43.0	16.0	3923.2	A	763.1	A	351.3	A

Note: SFP = square feet per pedestrian.

As discussed in Chapter 2, numerous projects located near the District are expected to be completed by 2017 independent of the proposed Plan. The transit and pedestrian analysis considers projects expected to be developed in the future without the proposed Plan, as shown in Figure 17-11. However, because the District is geographically separated from these No Build projects by the adjacent highway network, new trips associated with these projects would have limited effects on most of the study area transit and pedestrian elements. Therefore, as detailed further below, these trips are accounted for differently in each of the specific analyses.

CHANGES IN THE PEDESTRIAN ENVIRONMENT

Across 126th Street from the District, the future Citi Field would replace Shea Stadium as the new home for the New York Mets in 2009. Although there is likely to be very little difference in the trip-making of game-day patrons as a result of the new stadium, several transportation-related modifications surrounding it are anticipated. Specifically, those changes to the eastern boundary of the stadium proper or the west side of 126th Street would affect the future No Build pedestrian operations. Although the detailed design effort of Citi Field is still on-going, some changes in the pedestrian environment were assumed for analysis based on schematic diagrams and narratives available to date. These changes include:

- Formalizing the west leg of 34th Avenue, thereby creating an approximately 50-foot wide street extending west from 126th Street;
- Formalizing the west curb-line of 126th Street as part of the Citi Field project; and,
- Incorporating reconfigured pedestrian circulation areas that front the new Citi Field on the west side of 126th Street between Roosevelt Avenue and Northern Boulevard.

SUBWAY STATION OPERATIONS

The same station elements previously analyzed for existing conditions were analyzed under the No Build condition. Pedestrian volumes were adjusted to 2017 levels using a 1.0-percent annual background growth rate. Because all No Build projects—with the exception of Citi Field, which would not generate additional transit trips compared with those associated with Shea Stadium—are not in the immediate vicinity of the District, they are not expected to generate trips within the District or using the Willets Point-Shea Stadium subway station. The Citi Field project includes the demolition and reconstruction of the existing rotunda. The new rotunda would connect to a new pedestrian plaza on the Citi Field site. Because this new and improved connection would provide greater capacity for future patron arrivals and departures, as per discussion with NYCT, those Mets patrons who currently use the street-level S2 stairway during the weekday and Saturday pre-game and post-game analysis periods were reassigned to the new rotunda connection. Table 18-14 details the operating conditions for stairways and ramps while Table 18-15 details operating conditions at control areas within the station in the future No Build condition.

As shown in Table 18-14, the analyzed stairways and ramps would continue to operate at LOS A during both non-game peak hours. During the weekday and Saturday pre-game peak periods, all stairways and ramps would operate at LOS C or better. During the Saturday post-game peak period, the northwest ramp to the Manhattan-bound platform would operate at LOS D while the remaining stairways and ramps would operate at LOS A.

As shown in Table 18-15, the main control area would operate at LOS A during the weekday AM and PM peak periods. During the weekday and Saturday pre-game peak periods, the Manhattan-bound platform's two control areas would operate at LOS A while the Flushing-bound platform's control areas would operate at LOS C during the weekday pre-game peak period and LOS B during the Saturday pre-game peak period. During the post-game peak period, both Flushing-bound control areas would operate at LOS A. For the Manhattan-bound platform, the northwest control area would operate at LOS F and the northeast control area would operate at LOS C.

SUBWAY LINE HAUL LEVELS

A 0.5-percent annual growth rate was applied to the existing line-haul volumes to determine the 2017 background line-haul volumes. Although background growth for other the transit and pedestrian analyses account for the CEQR-recommended 1.0-percent per year growth rate, the reduced growth rate used for the subway line-haul analysis reflects the more regional nature of overall subway ridership levels and the typical growth experienced at the East River portal between Queens and Manhattan. Furthermore, trips associated with major new developments along the No. 7 subway line were superimposed onto the 2017 background line-haul volumes to generate No Build peak period volumes for the subway line-haul analysis.

Table 18-14

2017 No Build Condition: Subway Station Vertical Circulation Analysis

Willets Point–Shea Stadium No. 7 Train Station Vertical Circulation Elements	Width (feet)	Effective Width (feet)	15-Minute Pedestrian Volumes		Friction Factor	15-Minute			
			Up	Down		SVCD Capacity	V/SVCD Ratio	LOS	
Weekday AM Non-Game									
Street to Mezzanine									
Roosevelt Avenue (North) S2 Stairs	8.00	6.00	15	72	0.80	720	0.12	A	
Roosevelt Avenue (North) M4A/4B Stairs	12.75	10.75	15	72	0.80	1290	0.07	A	
Mezzanine to Platform									
Flushing-bound East P2/3/4/5 Stairs	20.00	16.00	8	10	0.90	2160	0.01	A	
Flushing-bound West P10/11/12/13 Stairs	19.00	15.00	21	10	0.80	1800	0.02	A	
Manhattan-bound East Ramp	19.50	17.50	30	78	0.80	3938	0.02	A	
Manhattan-bound West Ramp	17.50	15.50	71	101	0.90	3488	0.04	A	
Weekday PM Non-Game									
Street to Mezzanine									
Roosevelt Avenue (North) S2 Stairs	8.00	6.00	56	29	0.90	810	0.10	A	
Roosevelt Avenue (North) M4A/4B Stairs	12.75	10.75	56	29	0.90	1451	0.06	A	
Mezzanine to Platform									
Flushing-bound East P2/3/4/5 Stairs	20.00	16.00	21	13	0.90	2160	0.02	A	
Flushing-bound West P10/11/12/13 Stairs	19.00	15.00	194	12	0.80	1800	0.11	A	
Manhattan-bound East Ramp	19.50	17.50	13	114	0.80	3938	0.03	A	
Manhattan-bound West Ramp	17.50	15.50	10	135	0.80	3488	0.03	A	
Weekday Pre-Game									
Street to Mezzanine									
Roosevelt Avenue (North) S2 Stairs	8.00	6.00	56	29	0.80	720	0.12	A	
Roosevelt Avenue (North) M4A/4B Stairs	12.75	10.75	56	29	0.80	1290	0.07	A	
Mezzanine to Platform									
Flushing-bound East P2/3/4/5 Stairs	20.00	16.00	10	1234	0.80	1920	0.65	B	
Flushing-bound West P10/11/12/13 Stairs	19.00	15.00	14	1248	0.80	1800	0.70	C	
Manhattan-bound East Ramp	19.50	17.50	49	146	0.80	3938	0.04	A	
Manhattan-bound West Ramp	17.50	15.50	130	199	0.90	3488	0.08	A	
Saturday Pre-Game									
Street to Mezzanine									
Roosevelt Avenue (North) S2 Stairs	8.00	6.00	28	23	0.80	720	0.07	A	
Roosevelt Avenue (North) M4A/4B Stairs	12.75	10.75	28	23	0.80	1290	0.04	A	
Mezzanine to Platform									
Flushing-bound East P2/3/4/5 Stairs	20.00	16.00	9	1011	0.80	1920	0.53	B	
Flushing-bound West P10/11/12/13 Stairs	19.00	15.00	12	1091	0.80	1800	0.61	B	
Manhattan-bound East Ramp	19.50	17.50	43	29	0.90	3938	0.02	A	
Manhattan-bound West Ramp	17.50	15.50	19	126	0.80	3488	0.03	A	
Saturday Post-Game									
Street to Mezzanine									
Roosevelt Avenue (North) S2 Stairs	8.00	6.00	15	15	0.80	720	0.04	A	
Roosevelt Avenue (North) M4A/4B Stairs	12.75	10.75	15	15	0.80	1290	0.02	A	
Mezzanine to Platform									
Flushing-bound East P2/3/4/5 Stairs	20.00	16.00	117	145	0.90	2160	0.12	A	
Flushing-bound West P10/11/12/13 Stairs	19.00	15.00	308	44	0.80	1800	0.20	A	
Manhattan-bound East Ramp	19.50	17.50	1818	11	0.80	3938	0.37	A	
Manhattan-bound West Ramp	17.50	15.50	4539	17	0.80	3488	1.05	D	
Note: Capacities were calculated based on rates presented in the New York City Transit, <i>Station Planning and Design Guidelines</i> (January 2001), in accordance with the <i>CEQR Technical Manual</i> .									

Table 18-15

2017 No Build Condition: Subway Station Control Area Analysis

Willels Point–Shea Stadium No. 7 Train Station Control Area Elements	Quantity	15-Minute Pedestrian Volumes		15-Minute		
		In	Out	SVCD Capacity	V/SVCD Ratio	LOS
Weekday AM Non-Game						
Main Control Area Turnstiles (R532)	5	95	138	2400	0.10	A
Weekday PM Non-Game						
Main Control Area Turnstiles (R532)	5	142	109	2400	0.10	A
Weekday Pre-Game						
Manhattan-bound West Ramp Turnstiles	6	130	199	3360	0.11	A
Manhattan-bound East Ramp Turnstiles	7	49	146	2880	0.06	A
Flushing-bound West Stair Turnstiles	6	14	1248	2880	0.44	C
Flushing-bound East Stair Turnstiles	6	10	1234	2880	0.43	C
Saturday Pre-Game						
Manhattan-bound West Ramp Turnstiles	6	19	126	3360	0.05	A
Manhattan-bound East Ramp Turnstiles	7	43	29	2880	0.02	A
Flushing-bound West Stair Turnstiles	6	12	1091	2880	0.38	B
Flushing-bound East Stair Turnstiles	6	9	1011	2880	0.35	B
Saturday Post-Game						
Manhattan-bound West Ramp Turnstiles	6	4539	17	3360	1.58	F
Manhattan-bound East Ramp Turnstiles	7	1818	11	2880	0.54	C
Flushing-bound West Stair Turnstiles	6	308	44	2880	0.12	A
Flushing-bound East Stair Turnstiles	6	117	145	2880	0.09	A
Note: Capacities were calculated based on rates presented in the New York City Transit, <i>Station Planning and Design Guidelines</i> (January 2001), in accordance with the <i>CEQR Technical Manual</i> .						

Subway trips generated by No Build projects in Corona and Flushing were distributed directionally in a similar manner as subway trips generated by the proposed Plan, as detailed in Section E, “Probable Impacts of the Proposed Plan,” due to the proximity of these neighborhoods to the District. Because the Flushing-Main Street subway station is the No. 7 subway line’s eastern terminus, all trips generated by No Build projects in that area were assigned to the Manhattan-bound direction in the AM peak period and the Flushing-bound direction in the PM peak period. These trips include several large and small projects planned for the Flushing area. Although a small number of trips from the No Build projects in Corona could travel in the off-peak direction, to/from Flushing, it was conservatively assumed that all of these trips would also travel in the peak direction during both the AM and PM peak periods.

In anticipation of major development projects in Long Island City, including the proposed Hunter’s Point South development, which is expected to have the same build year as the proposed Plan, projected subway trips from these projects were also added to the No. 7 subway line for the No Build line-haul analysis. It was assumed that 85 percent of the subway trips generated by the proposed Hunter’s Point South development would utilize the No. 7 subway line at the Vernon Boulevard-Jackson Avenue subway station, while the remaining 15 percent would access the E/V lines at the 23rd Street-Ely Avenue subway station. Subway trips from other projects in the area were similarly distributed to these and other nearby subway lines. In addition, NYCT plans to add two trains to the peak direction for both the AM and PM peak periods.

Compared with the 2007 existing conditions, the 2017 No Build subway line-haul volumes are expected to increase by approximately 24 percent in the Manhattan-bound direction during the AM peak hour and 27 percent in the Flushing-bound direction during the PM peak hour. As

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shown in Table 18-16, assuming that planned service improvements are implemented, 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 18-16
2017 No Build Condition: Peak Hour Subway Line Haul

No. 7 Train Direction of Travel	Station	Trains /Hour	Volume	Leave Load		Available Capacity
				Guideline Capacity	V/C Ratio	
AM Peak Period						
Manhattan-bound Express	Woodside–61st Street	14	16,194	16,940	0.96	746
Manhattan-bound Local	40th Street	14	13,785	16,940	0.81	3,155
PM Peak Period						
Flushing-bound Express + Local	Queensboro Plaza	28	23,676	33,880	0.70	10,204
Sources: New York City Transit						

BUS LINE HAUL LEVELS

The 2017 No Build condition analysis of bus line-haul levels incorporates a 1.0-percent annual growth rate on the three study area bus routes. Since there is an abundance of bus routes serving the many development projects planned for the Flushing area, the incorporation of only the background growth is expected to be adequate in accounting for potential increases in ridership on the three study area bus routes absent the proposed Plan. The No Build analysis results are presented in Table 18-17. Under the No Build condition, the eastbound Q66 would operate above guideline capacity during the AM and PM peak periods.

Table 18-17
2017 No Build Condition: Bus Line Haul at NYCT Maximum and District Load Points

Route	Peak Period	Buses Per Hour	Eastbound		Buses Per Hour	Westbound	
			Load Point	AP		Load Point	AP
Q19	AM	3	unknown	20	--	Not analyzed	--
	PM	3	unknown	10	--	Not analyzed	--
Q48	AM	6	Roosevelt at 126th	52	5	Roosevelt at 126th	8
	PM	4	Roosevelt at 126th	21	4	Roosevelt at 126th	45
Q66 (to Woodside and LIC)	AM	15	unknown	(81)	--	Not analyzed	--
	PM	11	unknown	(56)	--	Not analyzed	--
Note: AP = average passengers per bus; (#) = exceeds NYCT guideline capacity							
Source: Q48 ridership data provided by NYCT; Q19 and Q66 ridership data provided by the MTA Bus Company							

STREET-LEVEL PEDESTRIAN OPERATIONS

Since new trips associated with the No Build projects are not expected to traverse the study area analysis locations, the 2017 No Build pedestrian volumes incorporate only a 1.0-percent annual background growth. As described above, certain changes to the pedestrian environment are anticipated to result from the completion of Citi Field in 2009. These changes are reflected in the analysis for conditions at the 126th Street and 34th Avenue intersection and along the west side of 126th Street. As shown in Tables 18-18 through 18-22, all analyzed pedestrian elements would continue to operate at acceptable levels (13 PFM for sidewalks; 20 SFP for corners and crosswalks) during all analysis time periods under the No Build condition, except for the east

crosswalk of Northern Boulevard and 126th Street, where it would operate at LOS D (19.5 SFP) during the Saturday post-game peak period.

Table 18-18
2017 No Build Condition: Weekday Pedestrian LOS Analysis for Sidewalks

Location	Sidewalk	Effective Width (feet)	15-Minute Two-Way Volume	Average		Platoon	
				PFM	LOS	PFM	LOS
Weekday AM Non-Game							
126th St between Northern Blvd and 34th Ave	East	9.0	7	0.0	A	4.0	A
126th St between 34th Ave and Roosevelt Ave	West	10.0	35	0.2	A	4.2	A
	East	7.5	9	0.1	A	4.1	A
Northern Blvd between 126th St and 126th Pl	South	7.0	0	0.0	A	4.0	A
34th Ave between 126th St and 126th Pl	North	10.0	1	0.0	A	4.0	A
	South	5.0	6	0.1	A	4.1	A
Roosevelt Ave between 126th St and the Van Wyck Expressway	North	14.0	14	0.1	A	4.1	A
	South	5.0	2	0.0	A	4.0	A
Roosevelt Ave between 126th St and the Grand Central Parkway	North	14.5	72	0.3	A	4.3	A
	South	13.5	3	0.0	A	4.0	A
Weekday MD Non-Game							
126th St between Northern Blvd and 34th Ave	East	9.0	14	0.1	A	4.1	A
126th St between 34th Ave and Roosevelt Ave	West	10.0	11	0.1	A	4.1	A
	East	7.5	9	0.1	A	4.1	A
Northern Blvd between 126th St and 126th Pl	South	7.0	0	0.0	A	4.0	A
34th Ave between 126th St and 126th Pl	North	10.0	2	0.0	A	4.0	A
	South	5.0	4	0.1	A	4.1	A
Roosevelt Ave between 126th St and the Van Wyck Expressway	North	14.0	14	0.1	A	4.1	A
	South	5.0	4	0.1	A	4.1	A
Roosevelt Ave between 126th St and the Grand Central Parkway	North	14.5	20	0.1	A	4.1	A
	South	13.5	2	0.0	A	4.0	A
Weekday PM Non-Game							
126th St between Northern Blvd and 34th Ave	East	9.0	45	0.3	A	4.3	A
126th St between 34th Ave and Roosevelt Ave	West	10.0	56	0.4	A	4.4	A
	East	7.5	40	0.4	A	4.4	A
Northern Blvd between 126th St and 126th Pl	South	7.0	0	0.0	A	4.0	A
34th Ave between 126th St and 126th Pl	North	10.0	2	0.0	A	4.0	A
	South	5.0	6	0.1	A	4.1	A
Roosevelt Ave between 126th St and the Van Wyck Expressway	North	14.0	6	0.0	A	4.0	A
	South	5.0	4	0.1	A	4.1	A
Roosevelt Ave between 126th St and the Grand Central Parkway	North	14.5	32	0.1	A	4.1	A
	South	13.5	29	0.1	A	4.1	A
Weekday Pre-Game							
126th St between Northern Blvd and 34th Ave	East	9.0	108	0.8	A	4.8	A
126th St between 34th Ave and Roosevelt Ave	West	10.0	11	0.1	A	4.1	A
	East	7.5	13	0.1	A	4.1	A
Northern Blvd between 126th St and 126th Pl	South	7.0	0	0.0	A	4.0	A
34th Ave between 126th St and 126th Pl	North	10.0	1	0.0	A	4.0	A
	South	5.0	12	0.2	A	4.2	A
Roosevelt Ave between 126th St and the Van Wyck Expressway	North	14.0	30	0.1	A	4.1	A
	South	5.0	22	0.3	A	4.3	A
Roosevelt Ave between 126th St and the Grand Central Parkway	North	14.5	7	0.0	A	4.0	A
	South	13.5	66	0.3	A	4.3	A

Note: PFM = pedestrians per foot per minute.

Table 18-19

2017 No Build Condition: Saturday Pedestrian LOS Analysis for Sidewalks

Location	Sidewalk	Effective Width (feet)	15-Minute Two-Way Volume	Average		Platoon	
				PFM	LOS	PFM	LOS
Saturday MD Non-Game							
126th St between Northern Blvd and 34th Ave	East	9.0	3	0.0	A	4.0	A
126th St between 34th Ave and Roosevelt Ave	West	10.0	6	0.0	A	4.0	A
	East	7.5	4	0.0	A	4.0	A
Northern Blvd between 126th St and 126th Pl	South	7.0	0	0.0	A	4.0	A
34th Ave between 126th St and 126th Pl	North	10.0	2	0.0	A	4.0	A
	South	5.0	4	0.1	A	4.1	A
Roosevelt Ave between 126th St and the Van Wyck Expressway	North	14.0	4	0.0	A	4.0	A
	South	5.0	14	0.2	A	4.2	A
Roosevelt Ave between 126th St and the Grand Central Parkway	North	14.5	6	0.0	A	4.0	A
	South	13.5	22	0.1	A	4.1	A
Saturday Pre-Game							
126th St between Northern Blvd and 34th Ave	East	9.0	130	1.0	A	5.0	A
126th St between 34th Ave and Roosevelt Ave	West	10.0	8	0.1	A	4.1	A
	East	7.5	8	0.1	A	4.1	A
Northern Blvd between 126th St and 126th Pl	South	7.0	0	0.0	A	4.0	A
34th Ave between 126th St and 126th Pl	North	10.0	3	0.0	A	4.0	A
	South	5.0	19	0.3	A	4.3	A
Roosevelt Ave between 126th St and the Van Wyck Expressway	North	14.0	19	0.1	A	4.1	A
	South	5.0	3	0.0	A	4.0	A
Roosevelt Ave between 126th St and the Grand Central Parkway	North	14.5	52	0.2	A	4.2	A
	South	13.5	39	0.2	A	4.2	A
Saturday Post-Game							
126th St between Northern Blvd and 34th Ave	East	9.0	47	0.4	A	4.4	A
126th St between 34th Ave and Roosevelt Ave	West	10.0	87	0.6	A	4.6	A
	East	7.5	10	0.1	A	4.1	A
Northern Blvd between 126th St and 126th Pl	South	7.0	0	0.0	A	4.0	A
34th Ave between 126th St and 126th Pl	North	10.0	2	0.0	A	4.0	A
	South	5.0	2	0.0	A	4.0	A
Roosevelt Ave between 126th St and the Van Wyck Expressway	North	14.0	46	0.2	A	4.2	A
	South	5.0	12	0.2	A	4.2	A
Roosevelt Ave between 126th St and the Grand Central Parkway	North	14.5	29	0.1	A	4.1	A
	South	13.5	645	3.2	A	7.2	C

Note: PFM = pedestrians per foot per minute.

Table 18-20

2017 No Build Condition: Pedestrian LOS Analysis for Corners

Location	Corner	Weekday								Saturday							
		AM		MD		PM		Pre-Game		MD Non-Game		Pre-Game		Post-Game			
		SFP	LOS	SFP	LOS	SFP	LOS	SFP	LOS	SFP	LOS	SFP	LOS	SFP	LOS		
Roosevelt Avenue and 126th Street	Northeast	379.9	A	985.6	A	1482.4	A	332.4	A	926.0	A	545.9	A	217.1	A		
	Northwest	1909.4	A	5465.7	A	2187.1	A	1593.9	A	4782.1	A	2318.6	A	931.4	A		

Note: SFP = square feet per pedestrian.

Table 18-21
2017 No Build Condition: Weekday Pedestrian LOS Analysis for Crosswalks

Location	Crosswalk	Street Width (feet)	Cross-walk Width (feet)	With Conflicting Vehicles							
				Weekday AM		Weekday MD		Weekday PM		Weekday Pre-Game	
				SFP	LOS	SFP	LOS	SFP	LOS	SFP	LOS
Northern Blvd and 126th St	East	118.5	14.5	3863.7	A	1248.9	A	556.2	A	100.3	A
	South	57.0	20.0	7083.9	A	17704.1	A	17704.1	A	488.3	A
34th Ave and 126th St	North	62.0	10.5	4112.9	A	1987.3	A	2030.4	A	84.8	A
	East	28.5	14.5	10531.3	A	5240.3	A	654.2	A	336.7	A
	South	50.0	20.5	7271.2	A	3726.6	A	4069.0	A	135.8	A
Roosevelt Ave and 126th St	West	50.0	12.5	20460.0	A	10238.2	A	10184.1	A	83.1	A
	North	50.0	17.0	756.3	A	3521.0	A	8266.6	A	609.5	A
	East	41.0	11.5	5032.5	A	1300.9	A	1874.2	A	2109.8	A
	South	42.5	15.5	12346.6	A	6076.0	A	12382.1	A	2234.0	A
	West	43.0	16.0	3638.8	A	3442.3	A	258.8	A	841.5	A

Note: SFP = square feet per pedestrian.

Table 18-22
2017 No Build Condition: Saturday Pedestrian LOS Analysis for Crosswalks

Location	Crosswalk	Street Width (feet)	Crosswalk Width (feet)	With Conflicting Vehicles					
				Saturday MD Non-Game		Saturday Pre-Game		Saturday Post-Game	
				SFP	LOS	SFP	LOS	SFP	LOS
Northern Blvd and 126th St	East	118.5	14.5	1832.7	A	32.3	C	19.5	D
	South	57.0	20.0	17704.1	A	282.1	A	420.6	A
34th Ave and 126th St	North	62.0	10.5	1832.5	A	26.3	C	55.3	B
	East	28.5	14.5	10387.2	A	976.6	A	181.4	A
	South	50.0	20.5	3803.3	A	375.0	A	83.8	A
Roosevelt Ave and 126th St	West	50.0	12.5	10104.9	A	70.8	A	74.8	A
	North	50.0	17.0	2676.5	A	1164.3	A	464.8	A
	East	41.0	11.5	1727.4	A	2121.4	A	586.4	A
	South	42.5	15.5	4966.2	A	12377.0	A	2065.0	A
	West	43.0	16.0	3426.7	A	637.6	A	381.5	A

Note: SFP = square feet per pedestrian.

E. PROBABLE IMPACTS OF THE PROPOSED PLAN

The future with the proposed Plan (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. Where significant adverse impacts are identified, measures to mitigate the impacts are described in Chapter 23.

TRIP DISTRIBUTION AND ASSIGNMENT

Transit and pedestrian volumes for the Build condition were estimated by overlaying peak 15-minute volumes derived from the trip generation estimates presented in Chapter 17 onto the No Build analysis networks. These volumes were then assigned to the transit and pedestrian analysis locations based on the following assumptions.

- Automobile and taxi person trips are likely to have a negligible effect on the pedestrian network, since both would be dispersed throughout the District east of 126th Street, and the

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associated pedestrian trips, which would mostly occur in the District itself, would traverse a limited number of the pedestrian elements included for analysis.

- Subway trips were assigned to the Willets Point-Shea Stadium subway station. The assignments to specific stairways were based on logical patterns of travel to/from the subway station and the District.
- Based on existing ridership patterns, bus trips were assigned to the study area bus routes as follows: 5 percent to the Q19, 5 percent to the Q66, and 90 percent to the Q48 bus routes. Assignments on these bus routes were made with logical origins and destinations.
- Walk-only trips, primarily within the District, were evenly distributed to the surrounding street network.

CHANGES IN THE PEDESTRIAN ENVIRONMENT

The Build condition pedestrian analysis reflects crosswalk lengths, sidewalk widths, and corner dimensions outlined in the District's current transportation network design. Specific geometric changes affecting the analysis elements include:

- Providing a new connection for Willets Point Boulevard from its existing location intersecting Roosevelt Avenue and 126th Street to a new location farther north within the District, resulting in a new intersection along 126th Street and the reconstruction of the Roosevelt Avenue and 126th Street intersection's northeast corner;
- Modifying 126th Street to serve as the main entryway to the District, resulting in an altered street width¹ and enlarged pedestrian circulation areas on sidewalks on the east side of the street;
- Constructing new streets within the District, resulting in different crossing distances and sidewalk widths from the No Build condition;
- Reconstructing both sidewalks along the north side of Roosevelt Avenue to achieve wider pedestrian circulation areas fronting new development parcels; and
- Creating a new intersection with a 24-foot crosswalk along the north side of Roosevelt Avenue at the new Lot B driveway.

New bicycle lanes would be required on the connector streets as part of the proposed Plan. In addition, NYCEDC is currently considering additional bikeway and greenway connections between the Flushing Bay Promenade to the north and Flushing Meadows-Corona Park, as well as other areas surrounding the District.

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. It was assumed that all incremental subway trips would access the Willets Point-Shea Stadium subway station via the street-level and street-mezzanine stairways on the north side of Roosevelt Avenue. Once inside the station, these trips were distributed to the Manhattan-bound and

¹ The modified width of 126th Street was assumed to be in place under the No Build condition after the completion of Citi Field and its associated changes to the pedestrian environment.

Flushing-bound platforms using the directional split developed for the subway line-haul analysis, as detailed in the next sub-section. Passenger movements between the mezzanine and platform levels were distributed based on existing flow patterns during the various analysis time periods.

As shown in Table 18-23, operating conditions at the street-level stairway (S2) connecting to the north side of Roosevelt Avenue would experience a decline in level of service for all analysis time periods, from LOS A, B, or C under the No Build condition to LOS D, E, or F 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*. Since this stairway would require up to several feet of widening, the projected deterioration in service levels constitutes a significant adverse subway station impact.

During the Saturday post-game peak period, the Manhattan-bound platform’s already near-capacity northwest ramp would become more congested due to the addition of project-generated subway trips. If passenger flows were to resemble existing conditions, the projected passenger volumes at this ramp would exceed its capacity. However, because the northeast ramp would still have an abundance of capacity, some passengers are expected to use the less congested platform access. Applying this passenger redistribution to the projected incremental trips would yield acceptable service levels at both ramps at all analysis time periods. The other remaining mezzanine-platform stairways and ramps would continue to operate at acceptable LOS C or better for all analysis time periods.

As shown in Table 18-24, the main control area would operate at LOS C during the weekday AM and PM peak periods under the Build condition. During the weekday pre-game peak period, operations at the Manhattan-bound platform’s northeast control area would decline from LOS C to LOS D. During the Saturday post-game peak period, the northwest control area to the Manhattan-bound platform would continue to operate at LOS F, while the northeast control area would continue to operate at LOS C.

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. During the Saturday post-game peak period, control area volumes at the Manhattan-bound platform’s northwest ramp would exceed capacity under both the No build and Build conditions. The associated increase in v/c ratio, from 1.43 to 1.59, exceeds the impact threshold under *CEQR Technical Manual* guidelines. However, because this condition exists today and would exist in the future for very short durations (single 15-minute post-game surge) and for a limited number of Saturdays a year, the projected deterioration in service levels would not be considered a significant adverse subway station impact.

Table 18-23

2017 Build Condition: Subway Station Vertical Circulation Analysis

Willets Point–Shea Stadium No. 7 Train Station Vertical Circulation Elements	Width (feet)	Effective Width (feet)	15-Minute Pedestrian Volumes		Friction Factor	15-Minute		
			Up	Down		SVCD Capacity	V/SVCD Ratio	LOS
Weekday AM Non-Game								
Street to Mezzanine								
Roosevelt Avenue (North) S2 Stairs	8.00	6.00	518	425	0.90	810	1.16	D+
Roosevelt Avenue (North) M4A/4B Stairs	12.75	10.75	518	425	0.90	1451	0.65	B
Mezzanine to Platform								
Flushing-bound East P2/3/4/5 Stairs	20.00	16.00	15	19	0.90	2160	0.02	A
Flushing-bound West P10/11/12/13 Stairs	19.00	15.00	39	19	0.80	1800	0.03	A
Manhattan-bound East Ramp	19.50	17.50	172	225	0.90	3938	0.09	A
Manhattan-bound West Ramp	17.50	15.50	407	289	0.90	3488	0.18	A
Weekday PM Non-Game								
Street to Mezzanine								
Roosevelt Avenue (North) S2 Stairs	8.00	6.00	703	681	0.90	810	1.71	F+
Roosevelt Avenue (North) M4A/4B Stairs	12.75	10.75	703	681	0.90	1451	0.95	C
Mezzanine to Platform								
Flushing-bound East P2/3/4/5 Stairs	20.00	16.00	24	30	0.90	2160	0.03	A
Flushing-bound West P10/11/12/13 Stairs	19.00	15.00	223	28	0.80	1800	0.14	A
Manhattan-bound East Ramp	19.50	17.50	364	398	0.90	3938	0.17	A
Manhattan-bound West Ramp	17.50	15.50	273	471	0.80	3488	0.19	A
Weekday Pre-Game								
Street to Mezzanine								
Roosevelt Avenue (North) S2 Stairs	8.00	6.00	507	599	0.90	810	1.37	E+
Roosevelt Avenue (North) M4A/4B Stairs	12.75	10.75	507	599	0.90	1451	0.76	C
Mezzanine to Platform								
Flushing-bound East P2/3/4/5 Stairs	20.00	16.00	19	1248	0.80	1920	0.66	B
Flushing-bound West P10/11/12/13 Stairs	19.00	15.00	27	1262	0.80	1800	0.72	C
Manhattan-bound East Ramp	19.50	17.50	165	375	0.80	3938	0.11	A
Manhattan-bound West Ramp	17.50	15.50	443	511	0.90	3488	0.25	A
Saturday Pre-Game								
Street to Mezzanine								
Roosevelt Avenue (North) S2 Stairs	8.00	6.00	430	481	0.90	810	1.12	D+
Roosevelt Avenue (North) M4A/4B Stairs	12.75	10.75	430	481	0.90	1451	0.63	B
Mezzanine to Platform								
Flushing-bound East P2/3/4/5 Stairs	20.00	16.00	17	1022	0.80	1920	0.54	B
Flushing-bound West P10/11/12/13 Stairs	19.00	15.00	24	1103	0.80	1800	0.63	B
Manhattan-bound East Ramp	19.50	17.50	309	110	0.90	3938	0.09	A
Manhattan-bound West Ramp	17.50	15.50	135	480	0.80	3488	0.14	A
Saturday Post-Game								
Street to Mezzanine								
Roosevelt Avenue (North) S2 Stairs	8.00	6.00	443	395	0.90	810	1.03	D+
Roosevelt Avenue (North) M4A/4B Stairs	12.75	10.75	443	395	0.90	1451	0.58	B
Mezzanine to Platform								
Flushing-bound East P2/3/4/5 Stairs	20.00	16.00	123	159	0.90	2160	0.13	A
Flushing-bound West P10/11/12/13 Stairs	19.00	15.00	324	48	0.80	1800	0.21	A
Manhattan-bound East Ramp	19.50	17.50	2744	155	0.80	3938	0.59	B
Manhattan-bound West Ramp	17.50	15.50	4020	233	0.80	3488	0.98	C
<p>Note: Capacities were calculated based on rates presented in the New York City Transit, <i>Station Planning and Design Guidelines</i> (January 2001), in accordance with the <i>CEQR Technical Manual</i>. + = Significant adverse impact.</p>								

Table 18-24
2017 Build Condition: Subway Station Control Area Analysis

Willets Point–Shea Stadium No. 7 Train Station Control Area Elements	Quantity	15-Minute Pedestrian Volumes		15-Minute		
		In	Out	SVCD Capacity	V/SVCD Ratio	LOS
Weekday AM Non-Game						
Main Control Area Turnstiles (R532)	5	574	393	2400	0.40	C
Weekday PM Non-Game						
Main Control Area Turnstiles (R532)	5	781	609	2400	0.58	C
Weekday Pre-Game						
Manhattan-bound West Ramp Turnstiles	6	139	213	3360	0.12	A
Manhattan-bound East Ramp Turnstiles	7	62	160	2880	0.07	A
Flushing-bound West Stair Turnstiles	6	130	1477	2880	0.56	C
Flushing-bound East Stair Turnstiles	6	323	1546	2880	0.65	D
Saturday Pre-Game						
Manhattan-bound West Ramp Turnstiles	6	27	137	3360	0.06	A
Manhattan-bound East Ramp Turnstiles	7	55	41	2880	0.03	A
Flushing-bound West Stair Turnstiles	6	278	1172	2880	0.50	C
Flushing-bound East Stair Turnstiles	6	125	1365	2880	0.52	C
Saturday Post-Game						
Manhattan-bound West Ramp Turnstiles	6	4545	31	3360	1.59	F
Manhattan-bound East Ramp Turnstiles	7	1834	15	2880	0.55	C
Flushing-bound West Stair Turnstiles	6	424	188	2880	0.21	B
Flushing-bound East Stair Turnstiles	6	408	361	2880	0.27	B
Note: Capacities were calculated based on rates presented in the New York City Transit, <i>Station Planning and Design Guidelines</i> (January 2001), in accordance with the <i>CEQR Technical Manual</i> .						

SUBWAY LINE HAUL LEVELS

Trips associated with the proposed Plan were superimposed onto the No Build line-haul volumes to generate the Build peak period volumes for the subway line-haul analysis. The Part 3 Worker Flow Tables from the 2000 U.S. Census Transportation Planning Package were examined for the 36 census tracts in the vicinity of the Shea Stadium-Willets Point and Flushing-Main Street stations to establish ratios and trip distribution patterns of current subway trips originating in the area near the District. These data, as summarized in Table 18-25, were used to develop trip distribution patterns for subway trips generated by the proposed Plan.

Table 18-25
Distribution of District Subway Trips

No. 7 Train Load	Percent of Total Trips
Out Bound Trips (from District)	
Arriving at Roosevelt Avenue/Jackson Heights	95%
Leaving Roosevelt Avenue/Jackson Heights	67%
Entering Manhattan from Queens	47%
In Bound Trips (to District)	
Entering Queens from Manhattan	47%
Arriving at Roosevelt Avenue/Jackson Heights	67%
Leaving Roosevelt Avenue/Jackson Heights	95%
Sources: U.S. Census 2000, Journey to Work Data	

Although there are various uses planned for the District, subway trip-making patterns during the commuter peak hours are likely to be similar for all uses. 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 subway line.

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Based on the census data, it was also estimated that approximately 25 percent of the project-generated subway trips would transfer to the Manhattan-bound E/F/R/V trains at the Roosevelt Avenue-Jackson Heights subway station during the AM peak period. Similarly, during the PM peak period, 25 percent of the project-generated subway trips would transfer from the Queens-bound E/F/R/V trains to the No. 7 train at this station. Applying this ratio to the highest hourly (PM peak hour) projected subway trip generation of 2,347 trips would yield 587 transfer trips for the E/F/R/V lines. During the PM peak hour, the E/V line runs 14 Queens-bound trains (132 cars), the F train runs 15 Queens-bound trains (126 cars), and the R line runs 10 Queens-bound trains (80). Assuming that the 587 transfer trips are evenly distributed across the combined 338 cars available during the PM peak hour, there would be fewer than 2 additional passengers per subway car. As this number is less than the five riders per car threshold outlined in the *CEQR Technical Manual*, a quantified subway line-haul analysis for the E/F/R/V lines is not required.

With regard to the No. 7 subway line, the projected peak hour subway trip increments at the peak load points were superimposed onto the No Build line-haul volumes. As shown in Table 18-26, with the overlay of these project-generated trips, the No. 7 subway line would continue to operate within guideline capacity during both the AM and PM peak periods under the Build condition.

**Table 18-26
2017 Build Condition: Peak Hour Subway Line Haul**

No. 7 Train Direction of Travel	Station	Trains /Hour	Volume	Leave Load		Available Capacity
				Guideline Capacity	V/C Ratio	
AM Peak Period						
Manhattan-bound Express	Woodside-61st Street	14	16,860	16,940	1.00	80
Manhattan-bound Local	40th Street	14	14,331	16,940	0.85	2,609
PM Peak Period						
Flushing-bound Express + Local	Queensboro Plaza	28	25,249	33,880	0.75	8,631
Sources: New York City Transit						

BUS LINE HAUL LEVELS

Peak hour bus ridership levels were estimated by adding the incremental trips associated with the proposed Plan to bus stop locations along Roosevelt Avenue at 126th Street for the Q48 route and to maximum load points along the Q19 and Q66 routes.

As described in Section B, “Methodology,” impacts to bus line-haul levels would be considered significant if a proposed action would result in operating conditions above guideline capacities. As shown in Table 18-27, the Q19 route would continue to operate within guideline capacity during the AM peak period. During the PM peak period, the route would operate at capacity. However, incremental trips generated by the proposed Plan would cause the eastbound and westbound Q48 routes to operate far above guideline capacity during both the AM and PM peak periods. The eastbound Q66 route would continue to operate above guideline capacity during both the AM and PM peak periods. All these projected increases in bus ridership beyond guideline capacities constitute significant adverse bus line-haul impacts.

Table 18-27

2017 Build Condition: Bus Line Haul at NYCT Maximum and District Load Points

Route	Peak Period	Buses Per Hour	Eastbound		Buses Per Hour	Westbound	
			Load Point	AP		Load Point	AP
Q19	AM	3	unknown	40	--	Not analyzed	--
	PM	3	unknown	54	--	Not analyzed	--
Q48	AM	6	Roosevelt at 126th	(177)	5	Roosevelt at 126th	(133)
	PM	4	Roosevelt at 126th	(417)	4	Roosevelt at 126th	(374)
Q66 (to Woodside and LIC)	AM	15	unknown	(85)	--	Not analyzed	--
	PM	11	unknown	(68)	--	Not analyzed	--
<p>Note: AP = average passengers per bus; (#) = exceeds NYCT guideline capacity Source: Q48 ridership data provided by NYCT; Q19 and Q66 ridership data provided by the MTA Bus Company</p>							

STREET-LEVEL PEDESTRIAN OPERATIONS

The study area sidewalks, corner reservoirs, and crosswalks were assessed for the weekday AM, midday, PM, and pre-game peak periods, as well as, the Saturday midday non-game, pre-game, and post-game peak periods by superimposing project-generated trips onto the No Build pedestrian analysis networks. As shown in Tables 18-28 through 18-30, all sidewalks and corner reservoirs would operate at acceptable levels (13 PFM for sidewalks; 20 SFP for corners) during the analysis peak periods under Build condition. However, as shown in Tables 18-31 and 18-32, several study area crosswalks would operate beyond mid-LOS D (less than 20 SFP). These significant adverse pedestrian impacts are expected to occur at the following locations:

NORTHERN BOULEVARD AND 126TH STREET

- The east crosswalk would deteriorate to LOS D (19.0 SFP) during the Saturday pre-game peak period and to LOS E (12.6 SFP) during the Saturday post-game peak period.

ROOSEVELT AVENUE AND 126TH STREET

- The north crosswalk would deteriorate to LOS D (16.0 SFP) during the weekday midday peak period, LOS E (11.8 SFP) during the weekday PM peak period, LOS E (12.9 SFP) during the weekday pre-game peak period, LOS E (12.2 SFP) during the Saturday non-game peak period, LOS E (14.6 SFP) during the Saturday pre-game peak period, and LOS D (18.0 SFP) during the Saturday post-game peak period.
- The east crosswalk would deteriorate to LOS D (17.8 SFP) during the weekday midday peak period, LOS D (15.5 SFP) during the weekday PM peak period, LOS D (16.9 SFP) during the weekday pre-game peak period, LOS E (11.8 SFP) during the Saturday non-game peak period, and LOS D (16.5 SFP) during the Saturday pre-game peak period.
- The west crosswalk would deteriorate to LOS D (19.2 SFP) during the weekday PM peak period, LOS E (14.6 SFP) during the weekday pre-game peak period, LOS D (18.5 SFP) during the Saturday non-game peak period, and LOS E (12.1 SFP) during the Saturday pre-game peak period.

Table 18-28

2017 Build Condition: Weekday Pedestrian LOS Analysis for Sidewalks

Location	Sidewalk	Effective Width (feet)	15-Minute Two-Way Volume	Average		Platoon	
				PFM	LOS	PFM	LOS
Weekday AM Non-Game							
126th St between Northern Blvd and 34th Ave	East	10.0	42	0.3	A	4.3	A
126th St between 34th Ave and Roosevelt Ave	West	10.0	180	1.2	A	5.2	B
	East	10.0	37	0.2	A	4.2	A
Northern Blvd between 126th St and 126th Pl	South	7.0	0	0.0	A	4.0	A
34th Ave between 126th St and 126th Pl	North	10.0	19	0.1	A	4.1	A
	South	10.0	8	0.1	A	4.1	A
Roosevelt Ave between 126th St and the Van Wyck Expressway	North	14.0	268	1.3	A	5.3	B
	South	5.0	2	0.0	A	4.0	A
Roosevelt Ave between 126th St and the Grand Central Parkway	North	20.0	1130	3.8	A	7.8	C
	South	13.5	222	1.1	A	5.1	B
Weekday MD Non-Game							
126th St between Northern Blvd and 34th Ave	East	10.0	82	0.5	A	4.5	A
126th St between 34th Ave and Roosevelt Ave	West	10.0	318	2.1	A	6.1	B
	East	10.0	115	0.8	A	4.8	A
Northern Blvd between 126th St and 126th Pl	South	7.0	0	0.0	A	4.0	A
34th Ave between 126th St and 126th Pl	North	10.0	37	0.2	A	4.2	A
	South	10.0	20	0.1	A	4.1	A
Roosevelt Ave between 126th St and the Van Wyck Expressway	North	14.0	397	1.9	A	5.9	B
	South	5.0	4	0.1	A	4.1	A
Roosevelt Ave between 126th St and the Grand Central Parkway	North	20.0	1288	4.3	A	8.3	C
	South	13.5	425	2.1	A	6.1	B
Weekday PM Non-Game							
126th St between Northern Blvd and 34th Ave	East	10.0	119	0.8	A	4.8	A
126th St between 34th Ave and Roosevelt Ave	West	10.0	317	2.1	A	6.1	B
	East	10.0	113	0.8	A	4.8	A
Northern Blvd between 126th St and 126th Pl	South	7.0	0	0.0	A	4.0	A
34th Ave between 126th St and 126th Pl	North	10.0	37	0.2	A	4.2	A
	South	10.0	14	0.1	A	4.1	A
Roosevelt Ave between 126th St and the Van Wyck Expressway	North	14.0	441	2.1	A	6.1	B
	South	5.0	4	0.1	A	4.1	A
Roosevelt Ave between 126th St and the Grand Central Parkway	North	20.0	1779	5.8	B	9.8	C
	South	13.5	496	2.4	A	6.4	B
Weekday Pre-Game							
126th St between Northern Blvd and 34th Ave	East	10.0	166	1.1	A	5.1	B
126th St between 34th Ave and Roosevelt Ave	West	10.0	174	1.2	A	5.2	B
	East	10.0	72	0.5	A	4.5	A
Northern Blvd between 126th St and 126th Pl	South	7.0	0	0.0	A	4.0	A
34th Ave between 126th St and 126th Pl	North	10.0	34	0.2	A	4.2	A
	South	10.0	18	0.1	A	4.1	A
Roosevelt Ave between 126th St and the Van Wyck Expressway	North	14.0	369	1.8	A	5.8	B
	South	5.0	22	0.3	A	4.3	A
Roosevelt Ave between 126th St and the Grand Central Parkway	North	20.0	1340	4.5	A	8.5	C
	South	13.5	433	2.1	A	6.1	B

Note: PFM = pedestrians per foot per minute.

Table 18-29
2017 Build Condition: Saturday Pedestrian LOS Analysis for Sidewalks

Location	Sidewalk	Effective Width (feet)	15-Minute Two-Way Volume	Average		Platoon	
				PFM	LOS	PFM	LOS
Saturday MD Non-game							
126th St between Northern Blvd and 34th Ave	East	10.0	92	0.6	A	4.6	A
126th St between 34th Ave and Roosevelt Ave	West	10.0	243	1.6	A	5.6	B
	East	10.0	82	0.5	A	4.5	A
Northern Blvd between 126th St and 126th Pl	South	7.0	0	0.0	A	4.0	A
	North	10.0	45	0.3	A	4.3	A
34th Ave between 126th St and 126th Pl	South	10.0	12	0.1	A	4.1	A
	North	14.0	418	2.0	A	6.0	B
Roosevelt Ave between 126th St and the Van Wyck Expressway	South	5.0	14	0.2	A	4.2	A
	North	20.0	1569	5.2	B	9.2	C
Roosevelt Ave between 126th St and the Grand Central Parkway	South	13.5	571	2.8	A	6.8	B
	North	20.0	1569	5.2	B	9.2	C
Saturday Pre-game							
126th St between Northern Blvd and 34th Ave	East	10.0	196	1.3	A	5.3	B
126th St between 34th Ave and Roosevelt Ave	West	10.0	182	1.2	A	5.2	B
	East	10.0	75	0.5	A	4.5	A
Northern Blvd between 126th St and 126th Pl	South	7.0	0	0.0	A	4.0	A
	North	10.0	36	0.2	A	4.2	A
34th Ave between 126th St and 126th Pl	South	10.0	27	0.2	A	4.2	A
	North	14.0	344	1.6	A	5.6	B
Roosevelt Ave between 126th St and the Van Wyck Expressway	South	5.0	3	0.0	A	4.0	A
	North	20.0	1265	4.2	A	8.0	C
Roosevelt Ave between 126th St and the Grand Central Parkway	South	13.5	445	2.2	A	6.2	B
	North	20.0	1265	4.2	A	8.0	C
Saturday Post-game							
126th St between Northern Blvd and 34th Ave	East	10.0	104	0.7	A	4.7	A
126th St between 34th Ave and Roosevelt Ave	West	10.0	229	1.5	A	5.5	B
	East	10.0	71	0.5	A	4.5	A
Northern Blvd between 126th St and 126th Pl	South	7.0	0	0.0	A	4.0	A
	North	10.0	29	0.2	A	4.2	A
34th Ave between 126th St and 126th Pl	South	10.0	10	0.1	A	4.1	A
	North	14.0	341	1.6	A	5.6	B
Roosevelt Ave between 126th St and the Van Wyck Expressway	South	5.0	12	0.2	A	4.2	A
	North	20.0	1129	3.8	A	7.8	C
Roosevelt Ave between 126th St and the Grand Central Parkway	South	13.5	984	4.9	A	8.9	C
	North	20.0	1129	3.8	A	7.8	C

Note: PFM = pedestrians per foot per minute.

Table 18-30
2017 Build Condition: Pedestrian LOS Analysis for Corners

Location	Corner	Weekday								Saturday					
		AM		MD		PM		Pre-Game		MD Non-Game		Pre-Game		Post-Game	
		SFP	LOS	SFP	LOS	SFP	LOS	SFP	LOS	SFP	LOS	SFP	LOS	SFP	LOS
Roosevelt Avenue and 126th Street	Northeast	47.0	B	35.3	C	26.9	C	34.4	C	28.1	C	37.6	C	39.9	C
	Northwest	61.7	A	44.3	B	31.1	C	44.6	B	36.0	C	47.8	B	51.4	B

Note: SFP = square feet per pedestrian.

Table 18-31

2017 Build Condition: Weekday Pedestrian LOS Analysis for Crosswalks

Location	Crosswalk	Street Width (feet)	Cross-walk Width (feet)	With Conflicting Vehicles							
				Weekday AM		Weekday MD		Weekday PM		Weekday Pre-Game	
				SFP	LOS	SFP	LOS	SFP	LOS	SFP	LOS
Northern Blvd and 126th St	East	118.5	14.5	100.4	A	46.7	B	40.2	B	35.7	C
	South	57.0	20.0	5996.2	A	17704.1	A	9289.5	A	482.2	A
34th Ave and 126th St	North	62.0	10.5	3350.4	A	1685.3	A	1632.0	A	72.4	A
	East	43.0	14.5	1182.9	A	536.0	A	293.6	A	245.4	A
	South	50.0	20.5	4091.4	A	2238.6	A	3083.0	A	125.3	A
	West	50.0	12.5	20164.4	A	9665.5	A	9272.9	A	85.2	A
126th St and New Willetts Point Blvd	North	50.0	15.0	513.2	A	158.2	A	253.6	A	335.9	A
	South	50.0	15.0	89.8	A	65.4	A	94.1	A	122.0	A
Roosevelt Ave and 126th St	North	50.0	17.0	21.5	D	16.0	D+	11.8	E+	12.9	E+
	East	41.0	11.5	48.9	B	17.8	D+	15.5	D+	16.9	D+
	South	42.5	15.5	260.4	A	128.5	A	122.6	A	143.8	A
	West	43.0	16.0	56.0	B	25.8	C	19.2	D+	14.6	E+
Roosevelt Avenue and Lot B Driveway	NA	30.0	24.0	27.9	C	23.2	D	13.7	E+	22.1	D

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

Table 18-32

2017 Build Condition: Saturday Pedestrian LOS Analysis for Crosswalks

Location	Crosswalk	Street Width (feet)	Crosswalk Width (feet)	With Conflicting Vehicles					
				Saturday MD Non-Game		Saturday Pre-Game		Saturday Post-Game	
				SFP	LOS	SFP	LOS	SFP	LOS
Northern Blvd and 126th St	East	118.5	14.5	35.5	C	19.0	D+	12.6	E+
	South	57.0	20.0	6295.5	A	273.8	A	403.0	A
34th Ave and 126th St	North	62.0	10.5	1355.4	A	21.0	D	43.5	B
	East	43.0	14.5	431.0	A	443.6	A	162.1	A
	South	50.0	20.5	2433.5	A	344.1	A	76.5	A
	West	50.0	12.5	9471.0	A	73.4	A	74.8	A
126th St and New Willetts Point Blvd	North	50.0	15.0	1034.4	A	569.9	A	256.0	A
	South	50.0	15.0	83.6	A	95.4	A	103.6	A
Roosevelt Ave and 126th St	North	50.0	17.0	12.2	E+	14.6	E+	18.0	D+
	East	41.0	11.5	11.8	E+	16.5	D+	24.4	C
	South	42.5	15.5	102.8	A	142.3	A	157.0	A
	West	43.0	16.0	18.5	D+	12.1	E+	37.3	C
Roosevelt Avenue and Lot B Driveway	NA	30.0	24.0	18.2	D+	23.9	D	28.2	C

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

ROOSEVELT AVENUE AND THE LOT B DRIVEWAY

Pedestrian operations would be below acceptable levels during two analysis time periods.

- The new crosswalk would operate at LOS E (13.7 SFP) during the weekday PM peak period and at LOS D (18.2 SFP) during the Saturday non-game peak period.

THE NO CONVENTION CENTER SCENARIO

As discussed in Chapter 17, the No Convention Center Scenario would result in an overall reduction in projected trips. The total person-trip increments generated by the No Convention Center Scenario, ranging from approximately 11,000 to 22,800 peak hour person trips, would be 88 to 96 percent during analysis peak hours of those generated by the proposed Plan. For transit

only (subway and bus) trips, the No Convention Center Scenario would also yield lower trip generation (95 to 100 percent) during analysis peak hours, except for the weekday AM peak hour, during which higher commuter trips generated by the additional residential development replacing lower morning activities from the convention center would result in a one-percent higher transit trip generation. Total peak hour subway and bus trips generated by this development scenario would be approximately 2,500 to 4,300 and 1,200 to 3,000, respectively. These differences in peak hour project-generated trips distributed among the many subway, bus, and pedestrian elements analyzed for peak hour and peak 15-minute conditions above are not expected to yield materially different analysis results. Therefore, the impact findings for transit and pedestrian conditions discussed above for the proposed Plan would also apply to the No Convention Center Scenario. *