Chapter 14: Transportation

A. INTRODUCTION

This chapter describes the transportation characteristics and potential impacts associated with the Proposed Actions, which involve zoning map and text amendments (the "Proposed Actions") to implement land use and zoning changes to better reflect existing neighborhood conditions, strengthen mixed-use, create opportunities for housing including affordable housing, and celebrate the architectural character and creative legacy of Manhattan's SoHo and NoHo neighborhoods. This proposal has been prepared in response to neighborhood-wide planning challenges brought by changing economic and demographic trends, and informed by local and citywide stakeholders during the Envision SoHo/NoHo process, a public engagement initiative undertaken in 2019 by the Manhattan Borough President, the Council Member for City Council District 1, and DCP.

The Proposed Actions would affect an approximately 56-block, 146-acre area (the Project Area) of the SoHo and NoHo neighborhoods of Manhattan, Community District 2. The Project Area is generally bounded by Astor Place and Houston Street to the north; Bowery, Lafayette Street, and Baxter Street to the east; Canal Street to the south, and Sixth Avenue, West Broadway, and Broadway to the west (see Figures 1-1 and 1-2 in Chapter 1, "Project Description").

In order to assess the potential effects of the Proposed Actions, a reasonable worst-case development scenario (RWCDS) for both future without the Proposed Actions (No Action) and future with the Proposed Actions (With Action) conditions are analyzed for an analysis year of 2031. To develop a reasonable estimate of future growth, likely development sites were identified and divided into two categories: projected development sites and potential development sites. The projected development sites are those considered more likely to be developed by the 2031 analysis year, while potential sites are considered less likely to be developed over the same period. Twenty-six projected development sites were identified and are considered for the purposes of the transportation analyses (see Figure 1-5 in Chapter 1, "Project Description").

Table 14-1 shows the total anticipated No Action and With Action land uses on projected development sites that were considered for the purposes of the transportation analyses. Gross square footage is used for the purposes of the transportation analyses; however, the amount of zoning square feet (zsf) is also shown for reference. As shown in **Table 14-1**, it is assumed that the Proposed Actions would facilitate the incremental development of a net total of 1,826 DUs, 15,722 gross square feet (gsf) of local retail space, 21,348 gsf of destination retail space, 33,608 gsf of supermarket space, and 20,778 gsf of community facility space, including 11,868 gsf of medical office uses and 8,910 gsf of arts and cultural uses. In addition, it is estimated that there would be a net decrease of 46,811 gsf of office space, 18,084 gsf of light industrial space and 5,000 gsf of warehouse space compared to the No Action condition. There would also be a net decrease of 39,000 gsf of parking garage space. However, as this parking garage space likely generates little if any travel demand independent of other land uses in the area, and as displaced parking demand would likely relocate to other parking facilities in the vicinity, it is not included

for the purposes of travel demand forecasting. Lastly, no accessory parking spaces are proposed for any of the projected development sites.

Table 14-1
2031 RWCDS No Action and With Action Land Uses for the Transportation Analyses

Land Use	No Action Condition[1]	With Action Condition	Net Increment
Residential			
Residential	32 DU	1,858 DU	1,826 DU
Commercial			
Office	207,576 gsf (184,738 zsf)	160,765 gsf (142,957 zsf)	-46,811 gsf (-41,781 zsf)
Local Retail	115,052 gsf (102,324 zsf)	130,774 gsf (115,571 zsf)	15,722 gsf (13,247 zsf)
Destination Retail	0 gsf (0 zsf)	21,348 gsf (18,572 zsf)	21,348 gsf (18,572 zsf)
Supermarket	0 gsf (0 zsf)	33,608 gsf (29,475 zsf)	33,608 gsf (29,475 zsf)
Total Commercial	***322,628 gsf (287,062 zsf)***	***346,495 gsf (306,575 zsf)***	***23,867 gsf (19,513 zsf)***
Industrial			
Light Industrial	18,084 gsf (16,094 zsf)	0 gsf (0 zsf)	-18,084 gsf (-16,094 zsf)
Warehouse	5,000 gsf (4,450 zsf)	0 gsf (0 zsf)	-5,000 gsf (-4,450 zsf)
Total Industrial	**23,084 gsf (20,544 zsf)**	***0 gsf (0 zsf)***	***-23,084 gsf (-20,544 zsf)***
Community Facility			
Arts & Cultural	0 gsf (0 zsf)	8,910 gsf (7,751 zsf)	8,910 gsf (7,751 zsf)
Medical Office	0 gsf (0 zsf)	11,868 gsf (10,562 zsf)	11,868 gsf (10,562 zsf)
Total Community Facility	***0 gsf (0 zsf)***	***20,778 gsf (18,313 zsf)***	***20,778 gsf (18,313 zsf)***

Notes:
[1] The No Action RWCDS includes a 39,000 gsf parking garage. As this facility likely generates little if any travel demand independent of other land uses in the area, this space is not reflected in the table.

This chapter describes in detail the existing transportation conditions in proximity to the Project Area. Future conditions in the year 2031 without the Proposed Actions (the No Action condition) are then determined, including additional transportation system demand and any changes expected by the year 2031. The increase in travel demand resulting from the Proposed Actions is then projected and added to the No Action condition to develop the 2031 future with the Proposed Actions (the With Action condition). Significant adverse impacts from project-generated trips are then identified and described in detail. Chapter 21, "Mitigation," discusses practicable measures to address these impacts.

B. PRINCIPAL CONCLUSIONS

Analyses of traffic, transit, pedestrian and parking conditions with the Proposed Actions were conducted. As detailed below, the Proposed Actions would result in a significant adverse pedestrian impact at one sidewalk in the Saturday peak hour and would significantly adversely impact one street stair at the Canal Street (A/C/E) subway station in both the AM and PM peak hours.

TRAFFIC

Under *City Environmental Quality Review (CEQR) Technical Manual* guidance, a quantified traffic analysis is typically required if a proposed action would result in 50 or more additional vehicle trip ends in a peak hour at one or more intersections. The Proposed Actions' RWCDS is expected to result in a net incremental increase of approximately 160, 109, 186 and 190 vehicle trips in the weekday AM, midday and PM peak hours, and Saturday peak hour, respectively. However, based on an assignment of these incremental traffic volumes to the Project Area street network, no intersection in proximity to the Project Area is expected experience a net incremental increase of 50 or more trips in any peak hour. Therefore, significant adverse traffic impacts are not expected to occur under the Proposed Actions, and a detailed traffic analysis is not warranted based on *CEQR Technical Manual* guidance.

TRANSIT

SUBWAY

Subway Stations

The Proposed Actions would generate a net increment of approximately 835 and 978 new subway trips during the weekday AM and PM commuter peak hours, respectively. The analysis of subway station conditions focuses on the Metropolitan Transportation Authority (MTA) New York City Transit (NYCT) Canal Street (J/N/Q/R/W/Z/6) subway station complex and the Canal Street (A/C/E) station where incremental demand from the Proposed Actions would exceed the 200-trip *CEQR Technical Manual* analysis threshold in one or both peak hours. Based on the results of the analysis, the Proposed Actions would significantly adversely impact one street stair at the Canal Street (A/C/E) station in both the AM and PM peak hours.

Subway Line Haul

The Project Area is served by 15 NYCT subway routes. These include the No. 1 train operating along the Broadway-Seventh Avenue Line; the No. 6 train operating along the Lexington Avenue Line; A, C and E trains operating on the Eighth Avenue Line; B, D, F and M trains operating on the Sixth Avenue Line; J and Z trains operating on the Nassau Street Line; and N, Q, R and W trains operating on the Broadway Line. The Project Area is located within the Manhattan Central Business District (CBD), which is typically defined as the area below 60th Street. The peak direction of subway travel is typically into the CBD from the north or from Brooklyn and Queens in the AM peak hour, and outbound from the CBD to the north or to Brooklyn and Queens in the PM peak hour.

In the With Action condition, no subway route operating at or over capacity would experience an average incremental increase of five or more passengers/car (the *CEQR Technical Manual* impact threshold) in the peak direction through their maximum load points in either of the weekday AM

and PM peak hours. Therefore, the Proposed Actions are not expected to result in significant adverse subway line haul impacts.

BUS

The Proposed Actions are expected to generate 47 incremental trips by transit bus in the weekday AM peak hour and 75 trips in the PM peak hour. Approximately seven NYCT bus routes operate within ¼-mile of projected development sites (the M1, M15, M15 SBS, M20, M21, M55 and M103), and the number of incremental trips in one direction on any one of these routes is not expected to reach the 50-trip CEQR Technical Manual analysis threshold for a detailed bus analysis. Therefore, a detailed analysis of bus conditions under the Proposed Actions is not warranted.

PEDESTRIANS

The Proposed Actions would generate a net increment of approximately 1,761 pedestrian trips (in and out combined) in the weekday AM peak hour, 1,397 in the weekday midday, 2,356 in the weekday PM peak hour, and 2,439 in the Saturday peak hour. Peak hour pedestrian conditions were evaluated at 16 pedestrian elements where these trips are expected to be most concentrated. These elements—five sidewalks, nine corner areas, and two crosswalks—are primarily located in proximity to the Canal Street (J/N/Q/R/W/Z/6) subway station complex and the cluster of projected development sites at Canal, Lafayette and Centre Streets, and along Lafayette and Great Jones Streets in proximity to projected development sites 1 and 2. As shown in **Table 14-2**, based on *CEQR Technical Manual* criteria, one sidewalk—the north sidewalk on Canal Street between Lafayette and Centre Streets—would be significantly adversely impacted by the Proposed Actions during the Saturday peak hour. This impact would occur at a point where pedestrian flow is constrained by the presence of a subway station elevator within the sidewalk. There would be no significant impacts to any corner areas or crosswalks in any peak hour.

Potential mitigation for the significant adverse impact to the north sidewalk on Canal Street between Lafayette and Centre Streets during the Saturday peak hour is discussed in Chapter 21, "Mitigation."

Table 14-2
Summary of Significant Pedestrian Impacts

Corridor/Intersection	Impacted Element	Peak Hour			
		Weekday AM	Weekday Midday	Weekday PM	Saturday
Canal Street between Lafayette and Centre Streets	North Sidewalk				X

STREET USER SAFETY

Under the *Vision Zero Manhattan Pedestrian Safety Action Plan* and the *Boroughs Pedestrian Safety Action Plan Update* released in 2019, much of the Project Area is located within a designated Priority Area where safety issues were found to occur systematically at an area-wide level. Canal Street between Bowery and Broadway, Houston Street from the FDR Drive to West Street, Second Avenue and Third Avenue are all currently identified as Priority Corridors. In addition, the intersections of Canal Street with Bowery, Lafayette Street and Varick Street were identified as Priority Intersections, as was the intersection of Bowery and Hester Street.

Crash data for intersections in the pedestrian study area were obtained from the New York City Department of Transportation (DOT) for the three-year period between January 1, 2016, and December 31, 2018 (the most recent three-year period for which data are available). During this period, a total of 209 reportable and non-reportable crashes, 82 pedestrian/bicyclist-related injury crashes and no fatalities occurred at intersections in the pedestrian study area.

Under *CEQR Technical Manual* guidance, high crash locations are defined as those with 48 or more total reportable and non-reportable crashes or five or more pedestrian/bicyclist injury crashes occurring in any consecutive 12 months of the most recent three-year period for which data are available. A review of the crash data identified four study area intersections along the Canal Street corridor as high crash locations. The intersection of Broadway and Canal Street experienced five pedestrian/bicyclist injury crashes in 2016 and again in 2018; Centre Street and Canal Street experienced seven pedestrian/bicyclist injury crashes in 2017 and nine in 2018; Lafayette Street and Canal Street experienced seven pedestrian/bicyclist injury crashes in both 2016 and 2017; and Sixth Avenue/Laight Street and Canal Street experienced six pedestrian/bicyclist injury crashes in 2016 and nine in 2018 (see **Table 14-3**). Improvements to enhance pedestrian and cyclist safety, including high visibility crosswalks, pedestrian signals with countdown clocks and the deployment of Traffic Enforcement Agents (TEAs) have been implemented at all four of these intersections.

Table 14-3
High Crash Locations

Intersection	Total Pedestrian/Bicycle Injury Crashes			Total Crashes (Reportable +Non-Reportable)		
	2016	2017	2018	2016	2017	2018
Broadway and Canal Street	5	4	5	10	10	23
Centre Street and Canal Street	1	7	9	3	11	19
Lafayette Street and Canal Street	7	7	3	15	14	14
Sixth Ave/Laight Street and Canal Street	6	3	9	13	11	39

PARKING

Development associated with the Proposed Actions would generate a net incremental parking demand of approximately 286 spaces in the weekday midday period (the peak period for commercial and retail demand), and 419 spaces overnight (the peak period for residential demand). In addition to generating new parking demand within the Project Area, new development on projected development sites under the Proposed Actions' RWCDS would displace five existing off-street public parking facilities, all but one of which operates 24-hours daily. Capacity at these five facilities currently totals approximately 474 spaces during daytime hours and 421 spaces overnight. The total incremental parking demand attributable to the Proposed Actions (new demand plus displaced capacity) would therefore be approximately 760 spaces in the weekday midday and approximately 840 spaces overnight. As it is assumed that under the Proposed Actions, no projected development site would include accessory parking, and no new off-street public parking capacity would be developed, this incremental demand would need to be accommodated in existing off-street public parking facilities or by on-street curbside parking. Consequently, the Proposed Actions may potentially contribute to, or result in, off-street and on-street parking shortfalls in the weekday midday and overnight periods in the 2031 With Action condition.

Under *CEQR Technical Manual* guidance for projects located in Manhattan, the inability of a proposed project or the surrounding area to accommodate future parking demands would be considered a parking shortfall, but would generally not be considered significant due to the magnitude of available alternative modes of transportation. Therefore, under the Proposed Actions, any project-related shortfalls in off-street and on-street parking spaces within the Project Area and its vicinity during the weekday midday and overnight periods would not be considered significant.

C. PRELIMINARY ANALYSIS METHODOLOGY

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

D. LEVEL 1 SCREENING ASSESSMENT

A Level 1 trip generation screening assessment was conducted to estimate the numbers of person and vehicle trips by mode that would be generated by the Proposed Actions during the weekday AM, midday, PM, and Saturday peak hours for the RWCDS. These estimates were then compared to the *CEQR Technical Manual* analysis thresholds to determine if a Level 2 screening and/or quantified operational analyses may be warranted. The travel demand assumptions used for the assessment are described in the following sections along with a detailed forecast of the travel demand that would be generated by the RWCDS.

BACKGROUND

Overall, the Project Area encompasses approximately 56 blocks and includes 26 projected development sites (see Figure 1-5 in Chapter 1, "Project Description"). As shown in **Table 14-1**, under the RWCDS, the Proposed Actions would facilitate the incremental development of a net total of 1,826 DUs, 70,678 gsf of retail/supermarket space and 20,778 gsf of community facility space on projected development sites. There would also be a net decrease of 46,811 gsf of office space, and 23,084 gsf of light industrial space including warehousing and manufacturing uses.

TRANSPORTATION PLANNING FACTORS

The transportation planning factors used to forecast travel demand for the RWCDS land uses are summarized in **Table 14-4**. The trip generation rates, temporal distributions, modal splits, vehicle occupancies, and truck trip factors for each of the land uses were primarily based on those cited

in the 2020 *CEQR Technical Manual*, factors developed for recent environmental reviews, American Community Survey (ACS) journey-to-work five-year (2014–2018) data, American Association of State Highway and Transportation Officials (AASHTO) Census Transportation Planning Products Program (CTPP) reverse journey-to-work five-year (2012–2016) data, data provided by DOT, and data from other standard professional references. Factors are shown for the weekday AM and PM peak hours (typical peak periods for commuter travel demand) and the weekday midday and Saturday peak hours (typical peak periods for retail demand). Additional details on the transportation planning factors used for the travel demand forecast are presented in the *Transportation Planning Factors and Travel Demand Forecast (TPF/TDF) Technical Memorandum* provided in **Appendix E**.

TRAVEL DEMAND FORECAST

The net incremental change in person and vehicle trips expected to result from the Proposed Actions by the 2031 analysis year was derived based on the net change in land uses shown in **Table 14-1** and the transportation planning factors shown in **Table 14-4**. **Table 14-5** shows an estimate of the net incremental change in peak hour person trips and vehicle trips (versus the No Action condition) that would occur in 2031 with implementation of the Proposed Actions. As shown in **Table 14-5**, under the RWCDS, the Proposed Actions would generate a net increase of approximately 1,820 person trips in the weekday AM peak hour, 1,440 in the weekday midday, 2,432 in the weekday PM peak hour, and 2,532 in the Saturday peak hour. Peak hour vehicle trips (including auto, truck, and taxi trips balanced to reflect that some taxis arrive or depart empty) would increase by a net total of approximately 160, 109, 186, and 190 (in and out combined) in the weekday AM, midday, PM, and Saturday peak hours, respectively. Peak hour subway trips would increase by a net total of 835, 581, 978, and 924 during these periods, respectively, while trips by transit bus would increase by approximately 47, 59, 75, and 102, respectively. Lastly, walk-only trips would increase by 807, 679, 1,190, and 1,276 trips during the weekday AM, midday, PM, and Saturday peak hours, respectively.

Table 14-6 shows the net incremental change in peak hour vehicle trips (auto, taxi, and truck) that would be generated by each projected development site during the weekday AM, midday, PM, and Saturday peak hours.[1] As shown in **Table 14-6**, Site 10 would generate the greatest number of new vehicle trips in all peak hours, accounting for approximately 16, 20, 16 and 20 percent of the total incremental vehicle trips generated by the Proposed Actions in each of these periods, respectively. Under the RWCDS, there would be net decreases in vehicle trips during one or more peak hours at approximately seven sites, primarily due to the reduction in office, light industrial and warehouse uses on these sites compared to the No Action condition. It should also be noted that the under the Proposed Actions, five existing public parking facilities located on projected development sites would be displaced. Although these sites are located in a Transit Zone (and therefore alternative modes of transportation are readily available), it is conservatively assumed that all of the existing vehicle trips generated by these facilities would remain on the street network, and no credit is taken for displaced demand.

Table 14-7 summarizes the number of additional trips that would be generated by the Proposed Actions during the weekday AM, midday, PM, and Saturday peak hours by various modes of

[1] Detailed demand forecasts for each projected development site are provided in the *TPF/TDF Technical Memorandum* included in Appendix E1.

travel. Since these numbers of peak hour trips would exceed the *CEQR Technical Manual* analysis thresholds for vehicular traffic, transit and pedestrians, a Level 2 screening assessment was undertaken to identify specific locations where additional detailed analyses would be warranted.

Table 14-4
Transportation Planning Factors

Land Use:	Supermarket		Office		Residential		Destination Retail		Local Retail		Light Industrial		Warehouse		Medical Office		Arts & Cultural	
Trip Generation:	(1)		(1)		(1)		(1)		(1)		(2)		(8)		(9)		(10)	
Weekday	175.0		18.0		8.075		78.2		205.0		14.7		2.36		76.0		40.24	
Saturday	231.0		3.9		9.6		92.5		240.0		2.2		0.2		39.0		40.24	
	per 1,000 sf		per 1,000 sf		per DU		per 1,000 sf		per 1,000 sf		per 1,000 sf		per 1,000 sf		per 1,000 sf		per 1,000 sf	
Temporal Distribution:	(1)		(1)		(1)		(1)		(1)		(2)		(8)		(9)		(10)	
AM	5.0%		12.0%		10.0%		3.0%		3.0%		13.2%		10.0%		11.0%		0.6%	
MD	6.0%		15.0%		5.0%		9.0%		19.0%		11.0%		9.0%		13.0%		11.5%	
PM	10.0%		14.0%		11.0%		9.0%		10.0%		14.2%		11.0%		9.0%		10.3%	
SAT	9.0%		17.0%		8.0%		11.0%		10.0%		10.7%		33.0%		17.0%		11.5%	
Modal Splits:	(11)		(7)	(2)	(3)		(6)		(11)		(7)	(2)	(7)		(11)		(10)	
	AM/MD/PM	SAT	AM/PM/SAT	MD	All Periods		AM/MD/PM	SAT	AM/MD/PM	SAT	AM/PM/SAT	MD	All Periods		All Periods		All Periods	
Auto	1.0%	2.0%	9.8%	2.0%	5.0%		15.0%	17.0%	6.0%	6.0%	9.8%	2.0%	9.8%		1.0%		15.0%	
Taxi	2.0%	4.0%	0.9%	3.0%	3.0%		9.0%	10.0%	1.0%	1.0%	0.9%	3.0%	0.9%		5.0%		0.0%	
Subway/PATH	18.0%	13.0%	66.9%	6.0%	54.0%		27.0%	16.0%	1.0%	1.0%	66.9%	6.0%	66.9%		60.0%		30.0%	
Bus	6.0%	4.0%	7.0%	6.0%	2.0%		12.0%	20.0%	1.0%	1.0%	7.0%	6.0%	7.0%		5.0%		15.0%	
Walk/Other	73.0%	77.0%	15.4%	83.0%	36.0%		37.0%	37.0%	91.0%	91.0%	15.4%	83.0%	15.4%		29.0%		40.0%	
Total	100.0%	100.0%	100.0%	100.0%	100.0%		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%		100.0%		100.0%	
In/Out Splits:	(11)		(6)		(4)		(6)		(6)		(2)		(8)		(9)		(10)	
	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
AM	53%	47%	95%	5%	24%	76%	61%	39%	50%	50%	88%	12%	77%	23%	62%	38%	100%	0%
MD	50%	50%	48%	52%	50%	50%	55%	45%	50%	50%	50%	50%	53%	47%	47%	53%	71%	29%
PM	50%	50%	15%	85%	61%	39%	47%	53%	50%	50%	12%	88%	27%	73%	35%	65%	24%	76%
SAT	49%	51%	60%	40%	45%	55%	55%	45%	50%	50%	47%	53%	64%	36%	49%	51%	71%	29%
Vehicle Occupancy:	(11)		(7)		(2)(3)(5)		(6)		(11)		(7)		(8)		(2)(11)		(10)	
					AM/PM	MD/SAT	AM/MD/PM	SAT	AM/MD/PM	SAT					AM/MD/PM	SAT		
Auto	1.60		1.14		1.23	1.72	2.00	2.70	1.20	1.20	1.14		1.30		1.53	2.60	2.70	
Taxi	1.60		1.14		1.30	1.30	2.00	2.80	1.20	1.20	1.14		1.30		1.53	2.60	3.70	
Truck Trip Generation:	(1)		(1)		(1)		(6)		(1)		(2)		(8)(12)		(2)		(10)	
Weekday	0.35		0.32		0.06		0.35		0.35		0.67		0.91		0.29		0.29	
Saturday	0.04		0.01		0.02		0.02		0.04		0.67		0.08		0.29		0.29	
	per 1,000 sf		per 1,000 sf		per DU		per 1,000 sf		per 1,000 sf		per 1,000 sf		per 1,000 sf		per 1,000 sf		per 1,000 sf	
Truck Temporal Distribution:	(1)		(1)		(1)		(6)		(1)		(2)		(8)(11)		(2)		(10)	
AM	8.0%		10.0%		12.0%		7.7%		8.0%		14.0%		9.9%		3.0%		10.0%	
MD	11.0%		11.0%		9.0%		11.0%		11.0%		9.0%		8.0%		11.0%		11.0%	
PM	2.0%		2.0%		2.0%		1.0%		2.0%		1.0%		7.0%		1.0%		2.0%	
SAT	11.0%		11.0%		9.0%		11.0%		11.0%		0.0%		28.0%		0.0%		0.0%	
Truck In/Out Splits:	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
All Periods	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	----	----	50%	50%	50.0%	50.0%
AM	----	----	----	----	----	----	----	----	----	----	----	----	67.0%	33%	----	----	----	----
MD	----	----	----	----	----	----	----	----	----	----	----	----	57.0%	43%	----	----	----	----
PM	----	----	----	----	----	----	----	----	----	----	----	----	60.0%	40%	----	----	----	----
SAT	----	----	----	----	----	----	----	----	----	----	----	----	42.0%	58.0%	----	----	----	----

Notes:

(1) Based on data from the 2020 *City Environmental Quality Review* (CEQR) *Technical Manual*.

(2) Based on data from the 2015 *East New York Rezoning Proposal FEIS*.

(3) Based on American Community Survey journey-to-work 5-Year (2014-2018) data for Manhattan Census Tracts 41, 43, 45, 47, 49, 55.01, 55.02 and 57

(4) Based on NYCDOT citywide residential survey data.

(5) Midday and Saturday auto occupancy determined by applying a multiplier (1.4) to the AM/PM rate.

(6) Based on data from the 2017 *East Harlem Rezoning FEIS*.

(7) Based on AASHTO CTPP reverse journey-to-work 5-Year (2012-2016) data for Manhattan Census Tracts 41, 43, 45, 47, 49, 55.01, 55.02, and 57.

(8) Based on data from *ITE Trip Generation Manual, 10th Edition,* Land Use Code 150 (Warehousing); includes 1.51 adjustment factor based on NYCDOT survey data.

(9) Based on NYCDOT medical office trip generation factors.

(10) Based on data from the 2015 *BAM North Site II EAS*. Weekday midday person and truck trip rates and temporal distributions assumed for Saturday.

(11) Based on NYCDOT survey data.

(12) Saturday truck trips adjusted as per the weekday/Saturday ratio from *ITE Trip Generation Handbook, 10th Edition,* Land Use Code 150, (Warehousing).

Table 14-5
RWCDS Travel Demand Forecast

Land Use:	Supermarket		Office		Residential		Destination Retail		Local Retail		Light Industrial		Warehouse		Medical Office		Arts & Cultural		Total	
Size/Units:	33,608 gsf		-46,811 gsf		1,826 DU		21,348 gsf		15,722 gsf		-18,084 gsf		-5,000 gsf		11,868 gsf		8,910 gsf			
Peak Hour Trips:																				
AM	294		-106		1,486		50		32		-36		-2		100		2		1,820	
Midday	354		-134		752		150		190		-30		-2		118		42		1,440	
PM	590		-122		1,636		150		98		-38		-2		82		38		2,432	
Saturday	700		-34		1,414		218		116		-4		0		80		42		2,532	
Person Trips:																				
AM	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
Auto	1	1	-10	1	16	57	5	3	0	0	-3	0	0	0	1	0	0	0	10	62
Taxi	3	3	-1	0	8	36	3	2	0	0	0	0	0	0	3	2	0	0	16	43
Subway	29	26	-71	-2	193	613	8	5	0	0	-22	-3	-2	0	37	23	1	0	173	662
Bus	10	8	-5	0	4	21	4	2	0	0	-2	0	0	0	3	2	0	0	14	33
Walk/Other	113	100	-18	0	128	410	11	7	16	16	-5	-1	0	0	18	11	1	0	264	543
Total	156	138	-105	-1	349	1,137	31	19	16	16	-32	-4	-2	0	62	38	2	0	477	1,343
MD	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
Auto	2	2	-1	-1	16	16	12	10	7	7	0	0	0	0	1	1	4	2	41	37
Taxi	4	4	-1	-1	9	9	7	6	0	0	0	0	0	0	3	3	0	0	22	21
Subway	31	31	-3	-5	203	203	22	18	0	0	-1	-1	0	0	33	37	9	4	294	287
Bus	11	11	-1	-2	6	6	10	8	0	0	-1	-1	0	0	3	3	4	2	32	27
Walk/Other	129	129	-57	-62	142	142	32	25	88	88	-13	-13	-1	-1	16	18	12	5	348	331
Total	177	177	-63	-71	376	376	83	67	95	95	-15	-15	-1	-1	56	62	29	13	737	703
PM	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
Auto	3	3	-1	-8	49	35	11	12	3	3	0	-3	0	0	0	1	1	4	66	47
Taxi	6	6	0	-1	32	16	6	7	0	0	0	0	0	0	1	3	0	0	45	31
Subway	53	53	-13	-71	541	340	19	21	0	0	-3	-23	0	-1	17	33	3	9	617	361
Bus	17	17	-1	-8	16	9	8	10	0	0	0	-2	0	0	1	3	1	4	42	33
Walk/Other	216	216	-2	-17	366	232	26	30	46	46	-1	-6	0	-1	8	15	4	12	663	527
Total	295	295	-17	-105	1,004	632	70	80	49	49	-4	-34	0	-2	27	55	9	29	1,433	999
SAT	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
Auto	7	7	-1	-1	33	41	20	17	4	4	0	0	0	0	0	0	4	2	67	70
Taxi	14	14	0	0	16	23	12	10	0	0	0	0	0	0	2	2	0	0	44	49
Subway	44	47	-17	-11	347	420	19	16	0	0	-1	-1	0	0	24	24	9	4	425	499
Bus	14	14	-1	0	9	12	24	20	0	0	0	0	0	0	2	2	4	2	52	50
Walk/Other	264	275	-2	-1	233	280	44	36	54	54	-1	-1	0	0	11	13	12	5	615	661
Total	343	357	-21	-13	638	776	119	99	58	58	-2	-2	0	0	39	41	29	13	1,203	1,329
Vehicle Trips :																				
AM	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
Auto	1	1	-9	1	15	48	3	2	0	0	-3	0	0	0	1	0	0	0	8	52
Taxi (Balanced)	4	4	-1	-1	39	39	2	2	0	0	0	0	0	0	2	2	0	0	46	46
Truck	0	0	1	1	4	4	0	0	0	0	-1	-1	0	0	0	0	0	0	4	4
Total	5	5	-9	1	58	91	5	4	0	0	-4	-1	0	0	3	2	0	0	58	102
MD	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
Auto	2	2	-1	-1	12	12	6	5	7	7	0	0	0	0	1	1	1	1	28	27
Taxi (Balanced)	5	5	-3	-3	17	17	5	5	0	0	0	0	0	0	3	3	0	0	27	27
Truck	0	0	-1	-1	2	2	0	0	0	0	-1	-1	0	0	0	0	0	0	0	0
Total	7	7	-5	-5	31	31	11	10	7	7	-1	-1	0	0	4	4	1	1	55	54
PM	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
Auto	2	2	-1	-7	42	31	6	6	3	3	0	-3	0	0	0	1	0	1	52	34
Taxi (Balanced)	7	7	-1	-1	35	35	6	6	0	0	0	0	0	0	3	3	0	0	50	50
Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	9	9	-2	-8	77	66	12	12	3	3	0	-3	0	0	3	4	0	1	102	84
SAT	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
Auto	4	4	-1	-1	24	29	7	6	4	4	0	0	0	0	0	0	1	1	39	43
Taxi (Balanced)	14	14	0	0	32	32	6	6	0	0	0	0	0	0	2	2	0	0	54	54
Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	18	18	-1	-1	56	61	13	12	4	4	0	0	0	0	2	2	1	1	93	97

Notes:
70% internal and external linkage and pass-by credit applied to local retail use.

Table 14-6
RWCDS Net Incremental Vehicle Trips by Projected Development Site

	Weekday Peak Hour			Saturday
	AM	MD	PM	Peak Hour
Site 1	9	8	8	8
Site 2	20	24	24	21
Site 3	3	0	4	2
Site 4	4	2	6	6
Site 5	14	10	15	8
Site 6	5	0	5	4
Site 7	3	0	4	2
Site 8	10	6	8	9
Site 9	16	7	22	25
Site 10	25	22	30	38
Site 12	15	12	18	9
Site 13	10	10	10	11
Site 14	0	0	-1	0
Site 15	0	-2	0	-2
Site 16	0	2	0	2
Site 20	22	18	23	24
Site 21	0	0	0	0
Site 22	14	14	15	5
Site 23	0	2	2	2
Site 24	2	0	3	2
Site 25	0	-4	0	1
Site 26	3	2	6	6
Site 27	3	-4	0	2
Site 28	2	0	1	1
Site 30	-7	-8	-5	0
Site 31	-9	-4	-6	5
Site 32	-4	-8	-6	-1
Total	**160**	**109**	**186**	**190**

Table 14-7
Summary of Net Incremental Peak Hour Trips Generated Under the RWCDS

Mode/Description	Trip Type	Weekday AM	Weekday Midday	Weekday PM	Saturday
Auto/Taxi/Truck	vehicle trips	160	109	186	190
Subway	person trips	835	581	978	924
Local Bus	person trips	47	59	75	102
Walk/Other	person trips	807	679	1,190	1,276

E. LEVEL 2 SCREENING ASSESSMENT

A Level 2 screening assessment involves the assignment of project-generated trips to the study area street network, transit facilities, and pedestrian elements (sidewalks, corner areas and crosswalks), and the identification of specific locations where the incremental increase in demand may potentially exceed *CEQR Technical Manual* analysis thresholds and therefore require a quantitative analysis.

VEHICULAR TRAFFIC

Based on the amount of projected development associated with the Proposed Actions, there would be 160 additional vehicle trips during the weekday AM peak hour, 109 during the midday peak hour, 186 during the PM peak hour, and 190 during the Saturday peak hour. These traffic volumes would exceed the *CEQR Technical Manual* threshold of 50 peak hour vehicle trips for Level 1 screening and, therefore, an assignment of net increment traffic volumes was prepared for each period to determine which, if any, intersections would require detailed analysis (a Level 2 screening assessment). The *CEQR Technical Manual* Level 2 screening threshold for detailed analysis is also 50 vehicles, but this threshold applies to individual intersections during the peak hours (rather than total trips generated).

The assignments of auto and taxi trips to the street network in proximity to the Project Area were based on the locations of each projected development site and the anticipated origins and destinations of vehicle trips associated with the different land uses projected for each site under the RWCDS (e.g., commercial, residential, community facility, etc.). The origins/destinations of residential trips were based on 2012-2016 ACS journey-to-work data, while the origins/destinations of office, warehouse and industrial uses were based on 2012-2016 ACS reverse journey-to-work data. Origins/destinations for uses that generate mostly local trips, including local retail, supermarket, and community facility (arts and cultural) were based on population density in proximity to the Project Area and surrounding neighborhoods within a 0.5-mile radius. Origins/destinations for the destination retail and medical office uses were based on population density in proximity to the Project Area and surrounding neighborhoods within a two-mile radius. (Additional data on the distributions of auto and taxi trips by land use are presented in the *TPF/TDF Technical Memorandum* included in **Appendix E**.)

Based on the origin/destination data, auto and taxi trips were first assigned to various portals on the periphery of the Project Area and from there via the most direct route to each projected development site. Although much of the project-generated auto demand is expected to park at off-street public parking facilities in the area or on street, auto trips were assigned directly to their

respective projected development sites. This can be considered a conservative approach with respect to the traffic impact analysis as it concentrates project traffic at analyzed intersections in proximity to the Project Area rather than dispersing it to outlying public parking facilities.

Truck trips were first assigned to designated Through Truck Route river crossings into Manhattan such as the Manhattan and Williamsburg bridges and the Lincoln and Holland tunnels. They were then assigned to designated truck routes providing access to the Project Area, including West Street, Sixth Avenue, Seventh Avenue/Varick Street, Canal and Houston Streets, Broadway and Bowery.

Figures 14-1 through 14-4 show the assignment of net incremental peak hour vehicle trips from the Proposed Actions' RWCDS at intersections in proximity to the Project Area in the weekday AM, midday and PM peak hours, and Saturday peak hour, respectively. As discussed above, based on *CEQR Technical Manual* guidance, a quantified traffic analysis is typically warranted if a proposed action would result in 50 or more vehicle trip ends in a peak hour at one or more intersections. Based on the assignment of vehicle trips described above and shown in **Figures 14-1 through 14-4**, no intersection in proximity to the Project Area is expected experience a net incremental increase of 50 or more trips in any peak hour. Therefore, a detailed analysis of traffic conditions under the Proposed Actions is not warranted.

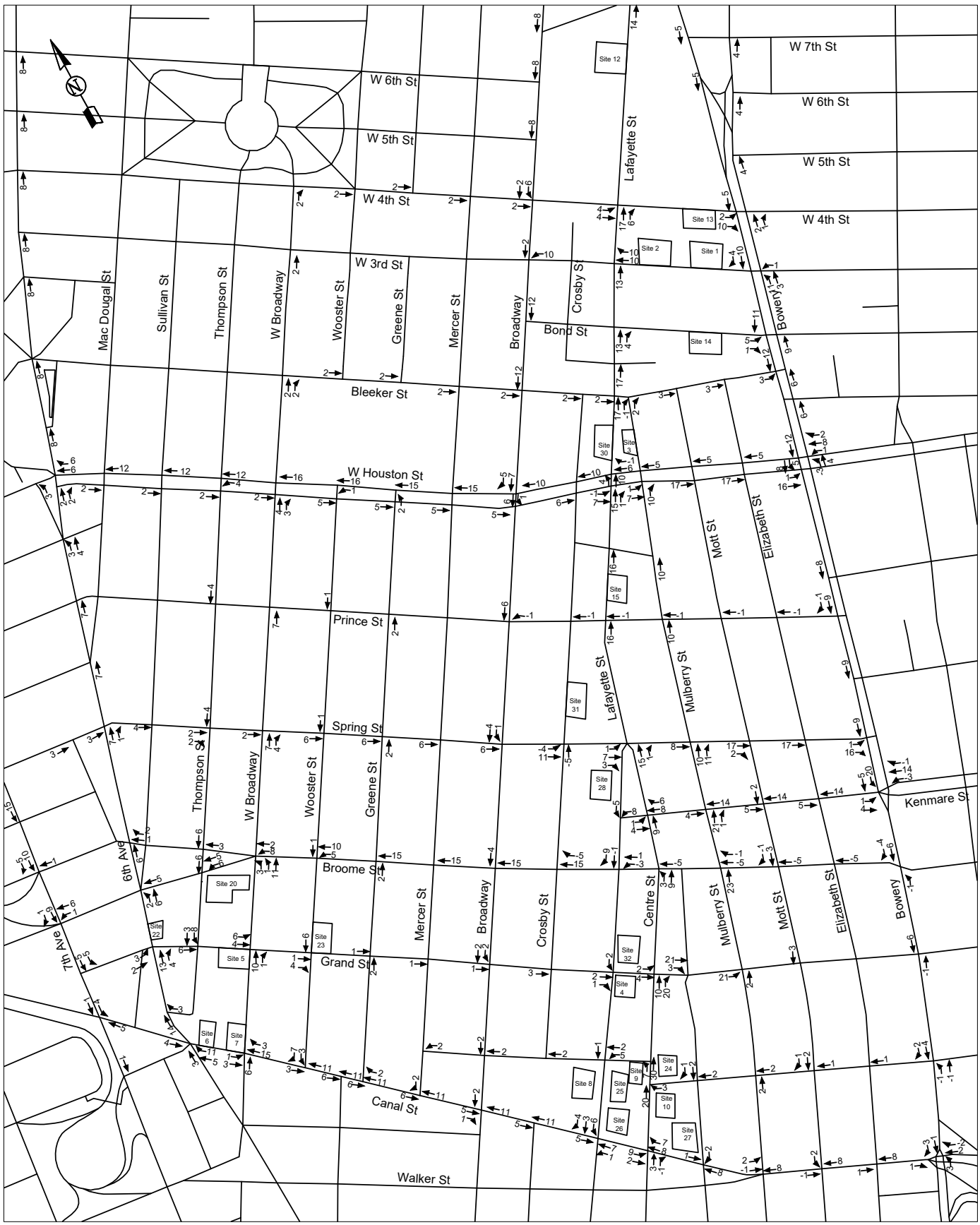
TRANSIT

According to the general thresholds used by the MTA and specified in the *CEQR Technical Manual*, detailed transit analyses are generally not required if a proposed action is projected to result in fewer than 200 peak hour rail or bus transit riders. If a proposed action would result in 50 or more bus passengers being assigned to a single bus route (in one direction), or if it would result in an increase of 200 or more passengers at a single subway station or on a single subway route, a detailed bus or subway analysis would be warranted. Transit analyses typically focus on the weekday AM and PM commuter peak hours, as it is during these weekday periods that overall demand on the subway and bus systems is usually highest. Transit analyses typically do not include a Saturday peak hour as overall demand on the subway and bus systems on Saturdays is generally lower than during the weekday peak hours. (As an example, New York City Transit (NYCT) estimates that typical Saturday peak hour station entries at the Canal Street subway station complex only total about 60 percent of weekday peak hour entries.)

SUBWAY

Subway Stations

There are a total of nine NYCT subway stations or station complexes in proximity to projected development sites that are expected to experience new demand due to the Proposed Actions. These stations, which are all below-grade, are shown in **Figure 14-5** and **Table 14-8**, along with the subway routes serving each facility. As shown in **Figure 14-5**, No. 6 trains operating in local service on the Lexington Avenue Line serve four stations along the east side of the Project Area. These include the Canal Street, Spring Street, Bleeker Street and Astor Place stations, all of which are located beneath Lafayette Street. Four trains—B and D (express) and F and M (local)—operating along the Sixth Avenue Line serve the Project Area via the Broadway-Lafayette Street station located beneath East Houston Street. This station is connected to the Bleeker Street (6) station, and together they comprise the Broadway-Lafayette Street/Bleeker Street station complex. R and W local trains operating on the Broadway Line serve three stations within the



10.1.21

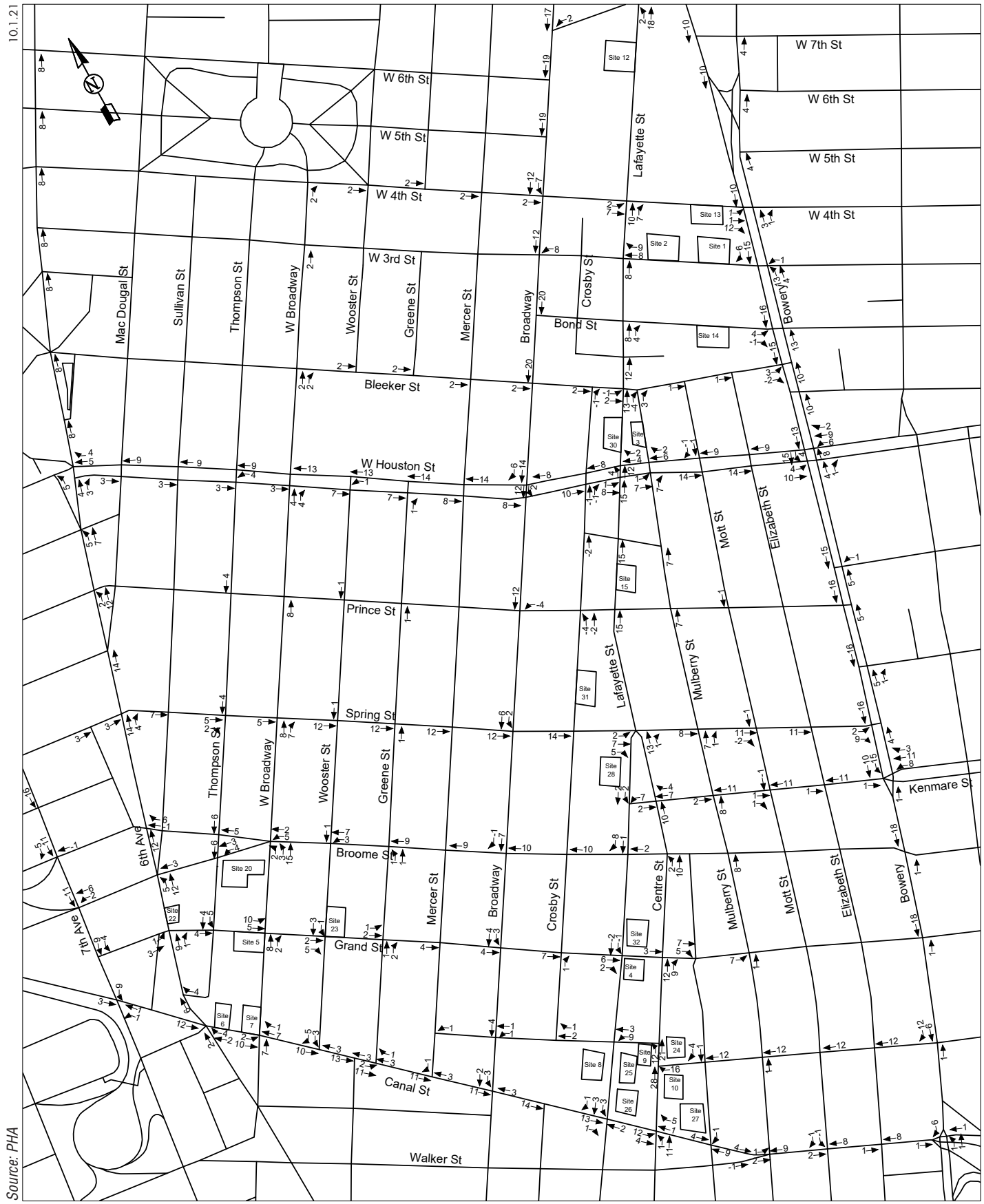
Source: PHA

AM Peak Hour Project Increment Traffic Volumes

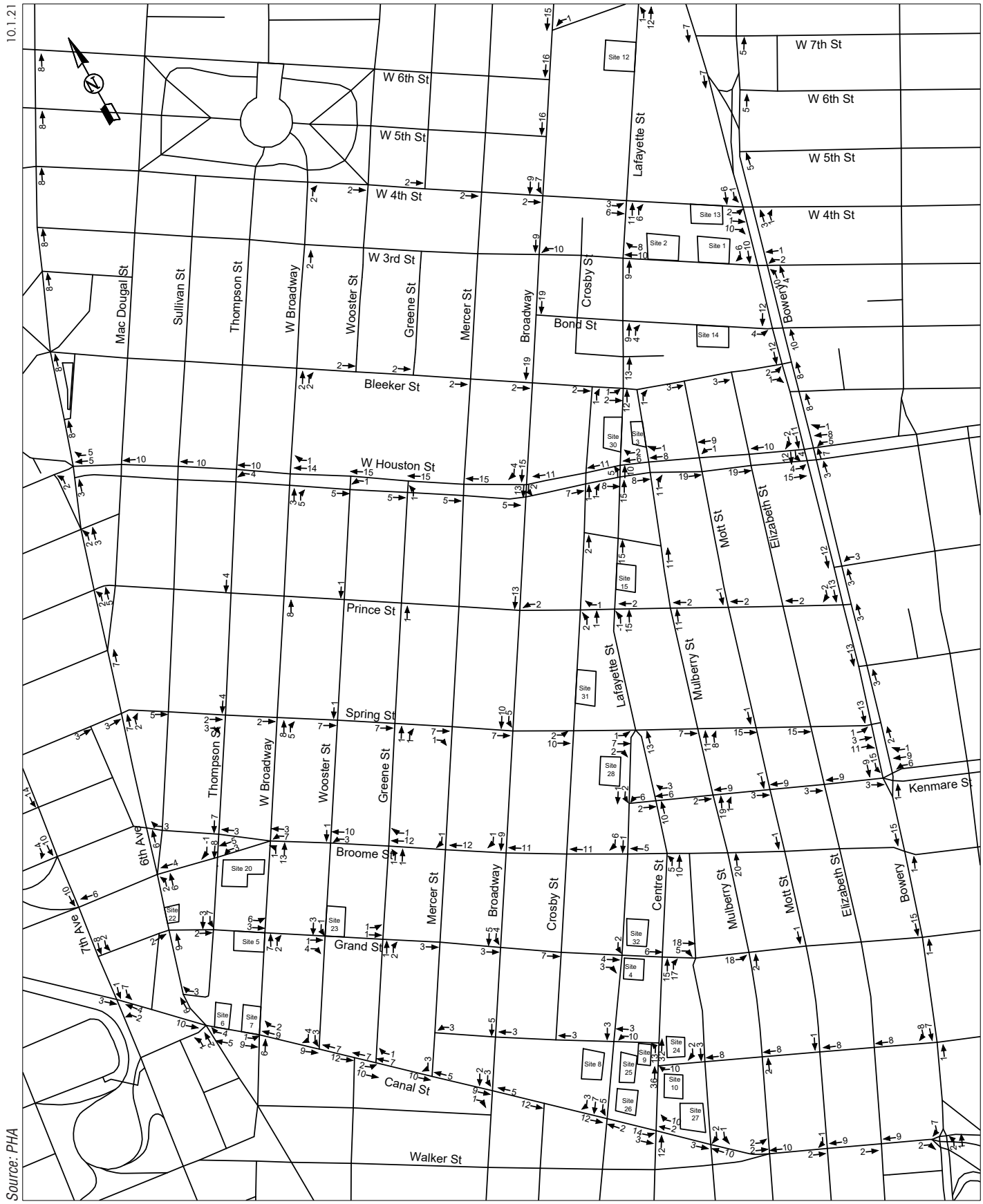
10.1.21

Source: PHA

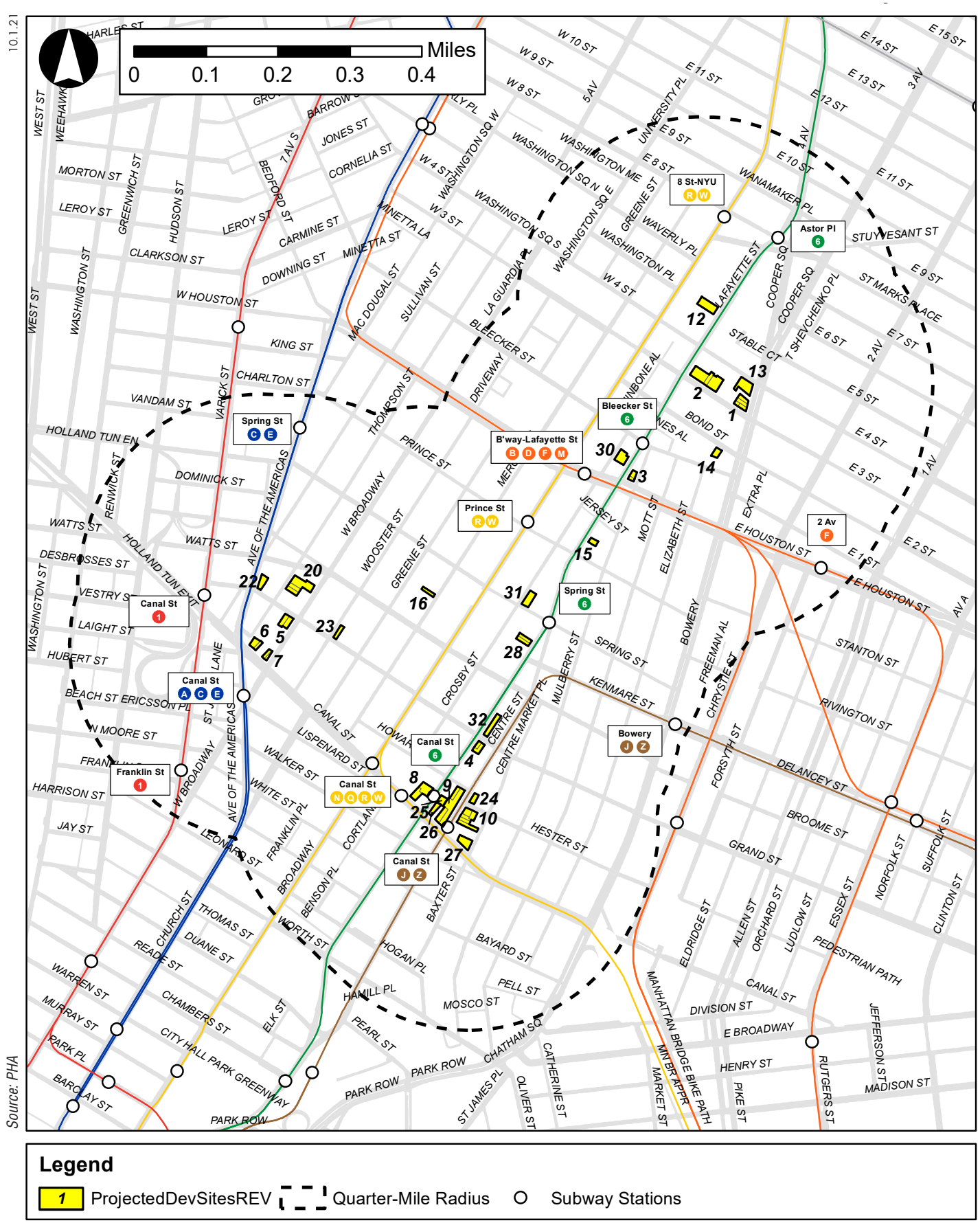
MD Peak Hour Project Increment Traffic Volumes



PM Peak Hour Project Increment Traffic Volumes



Saturday Peak Hour Project Increment Traffic Volumes



Subway Stations

Figure 14-5

Project Area—Canal Street, Prince Street and 8th Street-NYU—all of which are located beneath Broadway. N and Q trains provide express service along the Broadway Line as far south as Canal Street where they branch off from the Broadway Line en route to the Manhattan Bridge. N and Q trains serve a separate level of the Canal Street station located beneath Canal Street. J and Z trains operating on the Nassau Street Line serve two stations in proximity to the Project Area—the Canal Street station located beneath Centre Street, and the Bowery station which is located beneath Delancey Street. Both J and Z trains provide local service in Manhattan, however Z trains only operate during the weekday AM and PM peak periods. The Canal Street stations on the Broadway (N/Q/R/W), Lexington Avenue (6) and Nassau Street (J/Z) Lines are all linked, and together they comprise an interconnected station complex.

Two additional subway stations located along the Canal Street corridor at the southwest corner of the Project Area are also expected to experience increased demand due to the Proposed Actions. The Canal Street station on the Eighth Avenue Line is located beneath Sixth Avenue and is served by A (express) and C and E (local) trains. Lastly, the Canal Street station on the Broadway-Seventh Avenue Line is located beneath Varick Street and is served by No. 1 local trains.

As shown in **Table 14-5**, under the RWCDS, the Proposed Actions would generate a net increment of approximately 835 and 978 subway trips during the weekday AM and PM commuter peak hours, respectively. Trips from each projected development site were assigned to the individual stations serving the Project Area based on their proximity. **Table 14-8** shows the estimated net incremental subway trips generated by the Proposed Actions during the weekday AM and PM peak hours at each of the subway stations/station complexes serving the Project Area. As shown in **Table 14-8**, the highest number of incremental subway trips is expected to occur at the Canal Street (J/N/Q/R/W/Z/6) station complex, which would experience approximately 301 incremental trips in the AM peak hour and 360 in the PM peak hour. The next highest number would occur at the Canal Street (A/C/E) subway station on the Eighth Avenue Line, which would experience approximately 182 incremental trips in the AM peak hour and 216 in the PM peak hour. All other subway stations serving the Project Area are expected to experience fewer than 200 incremental trips in the AM and PM peak hours.

Table 14-8
RWCDS Net Incremental Peak Hour Subway Trips by Station

Subway Station	AM Peak Hour Trips			PM Peak Hour Trips		
	Into Project	Out of Project	Total	Into Project	Out of Project	Total
Project Summary						
Peak Hour Project Increment Person Trips:	447	1,343	1,820	1,433	999	2,432
Peak Hour Project Increment Subway Trips:	173	662	835	617	361	978
Subway Station Summary						
Astor Place (6)	46	25	71	30	58	88
Bowery (J/Z)	-6	2	-4	1	-6	-5
Broadway-Lafayette/Bleeker Street (B/D/F/M/6)	-1	158	157	130	33	163
Canal Street (1)	72	49	121	55	88	143
Canal Street (A/C/E)	108	74	182	83	133	216
Canal Street (J/N/Q/R/W/Z/6)	-11	312	301	284	76	360
8th Street-NYU (R/W)	28	7	35	11	33	44
Prince Street (R/W)	-17	14	-3	10	-13	-3
Spring Street (6)	-46	21	-25	13	-41	-28
Total	**173**	**662**	**835**	**617**	**361**	**978**

As incremental peak hour demand from the Proposed Actions is expected to exceed the 200-trip *CEQR Technical Manual* analysis threshold at the Canal Street (J/N/Q/R/W/Z/6) station complex and the Canal Street (A/C/E) station, these facilities are analyzed in the EIS. Key circulation elements (e.g., stairs and fare arrays) at these stations that would be used by concentrations of new demand from the Proposed Actions are analyzed.

Subway Line Haul

The Project Area is served by fifteen NYCT subway routes, including the A, B, C, D, E, F, J, M, N, Q, R, W, Z, No. 1 and No. 6. As the Proposed Actions may potentially generate 200 or more new subway trips in one direction on one or more of these routes, an analysis of subway line haul conditions is included in the EIS. The analysis uses existing maximum load point subway service and ridership data provided by NYCT to assess existing, future No Action, and future With Action conditions at the peak load points of the respective subway lines during the weekday AM and PM peak hours.

BUS

The Proposed Actions are expected to generate 47 incremental trips by transit bus in the weekday AM peak hour and 75 trips in the PM peak hour. Approximately seven NYCT bus routes operate within ¼-mile of projected development sites (the M1, M15, M15 SBS, M20, M21, M55 and M103), and the number of incremental trips in one direction on any one of these routes is not expected to reach the 50-trip CEQR Technical Manual analysis threshold for a detailed bus analysis. Therefore, a detailed analysis of bus conditions under the Proposed Actions is not warranted.

PEDESTRIANS

Under *CEQR Technical Manual* guidance, detailed pedestrian analyses are generally warranted if a proposed action is projected to add 200 or more peak hour pedestrians at any sidewalk, corner area, or crosswalk. As shown in **Table 14-5**, the Proposed Actions are expected to generate approximately 807 walk-only trips (in and out combined) in the weekday AM peak hour, 679 in the midday peak hour, 1,190 in the PM peak hour, and 1,276 in the Saturday peak hour. Persons en route to and from subway station entrances, bus stops, and off-site parking would add approximately 954, 718, 1,166 and 1,163 additional pedestrian trips to Project Area sidewalks and crosswalks during these same periods, respectively. In the weekday AM and PM peak hours, new pedestrian trips would be most concentrated on sidewalks and crosswalks adjacent to projected development sites as well as along corridors connecting these sites to subway station entrances. In the midday and Saturday periods, pedestrian trips would tend to be more dispersed, as people travel throughout the area for lunch, shopping, and/or errands.

An assignment of net incremental pedestrian trips was prepared to identify those pedestrian elements potentially warranting analysis. Subway trips were assigned to the most direct paths between projected development sites and the nearest stations and station entrances, whereas bus and walk-only trips and trips to/from off-site parking were more widely distributed throughout the local street network. Based on the preliminary assignment, a total of 16 pedestrian elements (five sidewalks, nine corner areas and two crosswalks) where net incremental demand would potentially reach the 200 trips/hour *CEQR Technical Manual* analysis threshold in one or more peak periods were selected for analysis. (To be conservative, any element with 190 trips/hour or more was included.) As shown in **Figure 14-6**, these pedestrian elements are located in proximity

Analyzed Pedestrian Elements

to the Canal Street (J/N/Q/R/W/Z/6) subway station complex and the cluster of projected development sites at Canal, Lafayette and Centre streets; along Lafayette and Great Jones streets in proximity to projected development sites 1 and 2; and in proximity to the Canal Street (A/C/E) subway station.

PARKING

As the Proposed Actions' RWCDS does not include any on-site parking on projected development sites, nor any new off-street public parking, a parking demand forecast is provided to document the amount of new parking demand that would be introduced to the Project Area under the Proposed Actions' RWCDS. The amount of demand that would be displaced from existing public parking facilities on projected development sites is also estimated. The potential for the Proposed Actions to result in a significant adverse parking shortfall is then assessed.

F. TRANSPORTATION ANALYSES METHODOLOGIES

TRANSIT

ANALYSIS METHODOLOGY

Subway Stations

To establish the existing baseline conditions for the analysis of subway station elements, subway ridership data were collected at the Canal Street (J/N/Q/R/W/Z/6) subway station complex in November 2020 and at the Canal Street (A/C/E) subway station in March 2021. These count data were supplemented by 2019 data for elements at both of these facilities provided by NYCT. To develop the 2019 volumes at the Canal Street station complex, NYCT utilized 2017 count data and applied conservative growth factors of four percent and 13 percent (depending on direction and peak hour) for the 2017 to 2019 period. For volumes at the Canal Street (A/C/E) station, NYCT utilized 2016 count data and applied very conservative growth factors of 20 percent and 32 percent for the 2016 to 2019 period. The data provided by NYCT were used in combination with the November 2020 and March 2021 count data to develop existing baseline volumes reflecting conditions prior to the on-set of the Covid-19 pandemic.

The methodology for assessing subway station pedestrian circulation elements (stairs, escalators, and passageways), and fare control elements (regular turnstiles, high entry/exit turnstiles [HEETs], and high exit turnstiles [HXTs]) compares existing and projected pedestrian volumes with the element's design capacity to yield a volume-to-capacity (v/c) ratio. All analyses reflect pedestrian flow volumes over a 15-minute interval during each peak hour. Based on existing pedestrian volumes at area subway stations, the peak hours selected for the analysis of subway station conditions are 8:15-9:15 a.m. and 4:45-5:45 p.m.[2] (As noted previously, transit analyses typically focus on the weekday AM and PM commuter peak hours as it is during these periods that overall demand on the subway and bus systems is usually highest.)

Under *CEQR Technical Manual* guidance, the capacity of a stairway or passageway is determined based on four factors: the NYCT guideline capacity, the effective width, and surging and counter-

[2] It should be noted that based on data from NYCT, 4:45-5:45 p.m. is up to an hour earlier than what would be expected as the PM peak hour for this station. This potential shift in the PM peak hour is likely due to changes in commuting patterns related to the Covid-19 Pandemic.

flow factors, if applicable. NYCT guideline capacity is ten passengers per minute per foot-width (pmf) for stairs and 15 pmf for passageways. The effective width of a stair or passageway is the actual width adjusted to reflect pedestrian avoidance of sidewalls and for center handrails, if present. A surging factor is applied to existing pedestrian volumes to reflect conditions where pedestrian flows tend to be concentrated (or surged) during shorter periods within the 15-minute analysis interval. This factor, which is based on the size of the station and the proximity of the pedestrian element to the station platforms, can reduce the calculated capacity by up to 25 percent. Lastly, a friction (or counter-flow) factor reducing calculated capacity by 10 percent is applied where opposing pedestrian flows use the same stair or passageway. No friction factor is applied if the flow is all or predominantly in one direction.

By contrast with stairways and passageways, under *CEQR Technical Manual* guidance the capacity of an escalator or turnstile is determined based on only two factors: the NYCT guideline capacity for a 15-minute interval and a surging factor of up to 25 percent. **Table 14-9** shows the *CEQR Technical Manual* level of service criteria for all subway station elements. As shown in **Table 14-9**, six levels of service are defined with letters A through F. LOS A is representative of free flow conditions without pedestrian conflicts and LOS F depicts severe congestion and queuing.

Table 14-9
Level of Service Criteria for Subway Station Elements

LOS	Description	V/C Ratio
A	Free Flow	0.00 to 0.45
B	Fluid Flow	0.45 to 0.70
C	Fluid, somewhat restricted	0.70 to 1.00
D	Crowded, walking speed restricted	1.00 to 1.33
E	Congested, some shuffling and queuing	1.33 to 1.67
F	Severely congested, queued	> 1.67

Source: 2020 *CEQR Technical Manual*

Subway Line Haul

Line haul capacity is based on the guideline capacity per subway car multiplied by the number of subway cars crossing the maximum load point in the peak hour. Maximum guideline capacities established by NYCT for each car class are 110 passengers/car for a 51-foot subway car, 145 passengers/car for a 60-foot car, and 175 passengers/car for a 75-foot car. The v/c ratio is determined by dividing the number of peak-hour passengers traveling through the maximum load point by the line haul capacity. Pre-pandemic maximum load point subway service and ridership data were provided by NYCT. The subway line haul analysis focuses on the weekday AM and PM commuter peak hours, as it is during these periods that overall demand on the subway system is usually highest.

SIGNIFICANT IMPACT CRITERIA

Subway Stations

The *CEQR Technical Manual* identifies a significant impact for stairways and passageways in terms of the minimum width increment threshold (WIT) based on the minimum amount of additional capacity that would be required to restore conditions to either their No Action v/c ratio or to a v/c ratio of 1.00 (LOS C/D), whichever is greater. Stairways that are substantially degraded

in level of service, or which experience the formation of extensive queues, are classified as significantly impacted. Significant adverse stairway or passageway impacts are typically considered to have occurred once the thresholds shown in **Table 14-10** are reached or exceeded.

For turnstiles, escalators, and high-wheel exit gates, the *CEQR Technical Manual* defines a significant impact as an increase from a No Action v/c ratio of below 1.00 to a v/c ratio of 1.00 or greater. Where a facility is already at a v/c ratio of 1.00 or greater, a 0.01 change in v/c ratio is also considered significant.

Table 14-10
Significant Impact Thresholds for Stairways and Passageways

With Action V/C Ratio	WIT for Significant Impact (inches)	
	Stairway	Passageway
1.00-1.09	8	13
1.10-1.19	7	11.5
1.20-1.29	6	10
1.30-1.39	5	8.5
1.40-1.49	4	6
1.50-1.59	3	4.5
>1.6	2	3

Source: 2020 *CEQR Technical Manual*

Subway Line Haul

For subway line haul conditions, *CEQR Technical Manual* criteria specify that any increases in load levels that remain within practical capacity limits are generally not considered significant. However, significant adverse subway line haul impacts can occur if a proposed action is expected to generate an incremental increase averaging five or more riders per subway car on lines projected to carry loads exceeding guideline capacity. This is based on the general assumption that when subways are at or above practical capacity, the addition of even five or more riders per car is perceptible.

PEDESTRIANS

ANALYSIS METHODOLOGY

Counts of peak period pedestrian flow volumes were conducted along analyzed sidewalks, corner areas, and crosswalks in March 2021. Data collected prior to the Covid-19 pandemic were also obtained from DOT and from previous studies for projects in the vicinity of the pedestrian analysis study area. These earlier data were used to develop factors that were then applied to the March 2021 count data to reflect pre-pandemic conditions. Peak hours were determined by comparing rolling hourly averages, and the highest 15-minute volumes within the selected peak hours were used for analysis. Based on existing peak pedestrian volumes along major corridors in the study area, the peak hours selected for analysis include the weekday 8:30–9:30 a.m., 1:00–2:00 p.m. (midday), and 5:00–6:00 p.m. periods, and the Saturday 1:45–2:45 p.m. period.

Peak 15-minute pedestrian flow conditions during the weekday AM, midday, and PM peak hours and the Saturday peak hour are analyzed using *2000 Highway Capacity Manual* methodology and procedures outlined in the *CEQR Technical Manual*. Using this methodology, the congestion level of pedestrian facilities is determined by considering pedestrian volume, measuring the

sidewalk or crosswalk width, determining the available pedestrian capacity, and developing a ratio of volume flows to capacity conditions. The resulting ratio is then compared with LOS standards for pedestrian flow, which define a qualitative relationship at a certain pedestrian traffic concentration level. The evaluation of street crosswalks and corners is more complicated as these spaces cannot be treated as corridors due to the time incurred waiting for traffic lights. To effectively evaluate these facilities, a "time-space" analysis methodology is employed which takes into consideration the traffic light cycle at intersections.

LOS standards are based on the average area available per pedestrian during the analysis period, typically expressed as a 15-minute peak period. LOS grades from A to F are assigned, with LOS A representative of free flow conditions without pedestrian conflicts and LOS F depicting significant capacity limitations and inconvenience. **Table 14-11** defines the LOS criteria for pedestrian crosswalk/corner area and sidewalk conditions, as based on *Highway Capacity Manual* methodology.

Table 14-11
Pedestrian Crosswalk/Corner Area and Sidewalk Levels of Service Descriptions

LOS	Crosswalk/Corner	Crosswalk/Corner Area Criteria (sf/ped)	Non-Platoon Sidewalk Criteria (sf/ped)	Platoon Sidewalk Criteria (sf/ped)
A	(Unrestricted)	> 60	> 60	> 530
B	(Slightly Restricted)	> 40 to 60	> 40 to 60	> 90 to 530
C	(Restricted but fluid)	> 24 to 40	> 24 to 40	> 40 to 90
D	(Restricted, necessary to continuously alter walking stride and direction)	> 15 to 24	> 15 to 24	> 23 to 40
E	(Severely restricted)	> 8 to 15	> 8 to 15	> 11 to 23
F	(Forward progress only by shuffling; no reverse movement possible)	< 8	< 8	< 11

Notes:
Based on average conditions for 15 minutes
sf/ped—square feet of area per pedestrian
Source: 2020 *CEQR Technical Manual*

The analysis of sidewalk conditions includes a "platoon" factor in the calculation of pedestrian flow to more accurately estimate the dynamics of walking. "Platooning" is the tendency of pedestrians to move in bunched groups or "platoons" once they cross a street where cross traffic required them to wait. Platooning generally results in a level of service one level poorer than that determined for average flow rates.

SIGNIFICANT IMPACT CRITERIA

Sidewalks

The *CEQR Technical Manual* impact criteria for a CBD location are used to identify significant adverse impacts due to the proposed rezoning. These criteria define a significant adverse sidewalk impact to have occurred under platoon conditions if the average pedestrian space under the No Action condition is greater than 39.2 square feet/pedestrian (ft^2/ped), and the average pedestrian space under the With Action condition is 31.5 ft^2/ped or less (LOS D or worse). If the average pedestrian space under the With Action condition is greater than 31.5 ft^2/ped (mid-LOS D or

better), the impact should not be considered significant. If the No Action pedestrian space is between 6.4 and 39.2 ft^2/ped, a reduction in pedestrian space under the With Action condition should be considered significant based on **Table 14-12**, which shows a sliding scale that identifies what decrease in pedestrian space is considered a significant impact for a given pedestrian space value in the No Action condition. If the reduction in pedestrian space is less than the value in **Table 14-12**, the impact is not considered significant. If the average pedestrian space under the No Action condition is less than 6.4 ft^2/ped, then a reduction in pedestrian space greater than or equal to 0.3 ft^2/ped, under the With Action condition, should be considered significant.

Table 14-12
Significant Impact Criteria for Sidewalks with Platooned Flow in a CBD Location

No Action Condition Pedestrian Flow (ft^2/ped)			With Action Condition Pedestrian Flow Increment to be Considered a Significant Impact (ft^2/ped)
> 39.2			With Action Condition < 31.5
38.7	to	39.2	Reduction ≥ 3.8
37.8	to	38.6	Reduction ≥ 3.7
36.8	to	37.7	Reduction ≥ 3.6
35.9	to	36.7	Reduction ≥ 3.5
34.9	to	35.8	Reduction ≥ 3.4
34.0	to	34.8	Reduction ≥ 3.3
33.0	to	33.9	Reduction ≥ 3.2
32.1	to	32.9	Reduction ≥ 3.1
31.1	to	32.0	Reduction ≥ 3.0
30.2	to	31.0	Reduction ≥ 2.9
29.2	to	30.1	Reduction ≥ 2.8
28.3	to	29.1	Reduction ≥ 2.7
27.3	to	28.2	Reduction ≥ 2.6
26.4	to	27.2	Reduction ≥ 2.5
25.4	to	26.3	Reduction ≥ 2.4
24.5	to	25.3	Reduction ≥ 2.3
23.5	to	24.4	Reduction ≥ 2.2
22.6	to	23.4	Reduction ≥ 2.1
21.6	to	22.5	Reduction ≥ 2.0
20.7	to	21.5	Reduction ≥ 1.9
19.7	to	20.6	Reduction ≥ 1.8
18.8	to	19.6	Reduction ≥ 1.7
17.8	to	18.7	Reduction ≥ 1.6
16.9	to	17.7	Reduction ≥ 1.5
15.9	to	16.8	Reduction ≥ 1.4
15.0	to	15.8	Reduction ≥ 1.3
14.0	to	14.9	Reduction ≥ 1.2
13.1	to	13.9	Reduction ≥ 1.1
12.1	to	13.0	Reduction ≥ 1.0
11.2	to	12.0	Reduction ≥ 0.9
10.2	to	11.1	Reduction ≥ 0.8
9.3	to	10.1	Reduction ≥ 0.7
8.3	to	9.2	Reduction ≥ 0.6
7.4	to	8.2	Reduction ≥ 0.5
6.4	to	7.3	Reduction ≥ 0.4
<6.4			Reduction ≥ 0.3

Source: 2020 *CEQR Technical Manual*

Corner Areas and Crosswalks

For CBD areas, *CEQR Technical Manual* criteria define a significant adverse corner area or crosswalk impact to have occurred if the average pedestrian space under the No Action condition is greater than 21.5 ft^2/ped and, under the With Action condition, the average pedestrian space decreases to 19.5 ft^2/ped or less (mid-LOS D or worse). If the pedestrian space under the With Action condition is greater than 19.5 ft^2/ped (mid-LOS C or better), the impact should not be considered significant. If the average pedestrian space under the No Action condition is between 5.1 and 21.5 ft^2/ped, a decrease in pedestrian space under the With Action condition should be considered significant based on **Table 14-13** which shows a sliding scale that identifies what decrease in pedestrian space is considered a significant impact for a given amount of pedestrian space in the No Action condition. If the decrease in pedestrian space is less than the value in **Table 14-13**, the impact is not considered significant. If the average pedestrian space under the No Action condition is less than 5.1 ft^2/ped, then a decrease in pedestrian space greater than or equal to 0.2 ft^2/ped should be considered significant.

Table 14-13
Significant Impact Criteria for Corners and Crosswalks in a CBD Location

No Action Condition Pedestrian Space (ft^2/ped)			With Action Condition Pedestrian Space Reduction to be Considered a Significant Impact (ft^2/ped)
> 21.5			With Action Condition < 19.5
21.3	to	22.1	Reduction ≥ 2.1
20.4	to	21.2	Reduction ≥ 2.0
19.5	to	20.3	Reduction ≥ 1.9
18.6	to	19.4	Reduction ≥ 1.8
17.7	to	18.5	Reduction ≥ 1.7
16.8	to	17.6	Reduction ≥ 1.6
15.9	to	16.7	Reduction ≥ 1.5
15	to	15.8	Reduction ≥ 1.4
14.1	to	14.9	Reduction ≥ 1.3
13.2	to	14	Reduction ≥ 1.2
12.3	to	13.1	Reduction ≥ 1.1
11.4	to	12.2	Reduction ≥ 1.0
10.5	to	11.3	Reduction ≥ 0.9
9.6	to	10.4	Reduction ≥ 0.8
8.7	to	9.5	Reduction ≥ 0.7
7.8	to	8.6	Reduction ≥ 0.6
6.9	to	7.7	Reduction ≥ 0.5
6	to	6.8	Reduction ≥ 0.4
5.1	to	5.9	Reduction ≥ 0.3
< 5.1			Reduction ≥ 0.2

Source: 2020 *CEQR Technical Manual*

VEHICULAR AND PEDESTRIAN SAFETY EVALUATION

Under *CEQR Technical Manual* guidelines, an evaluation of vehicular and pedestrian safety is needed for locations within traffic and pedestrian study areas that have been identified as high crash locations. These are defined as a Vision Zero intersection or locations along a Vision Zero

corridor as identified in the *Vision Zero Manhattan Pedestrian Safety Action Plan*, or intersections with 48 or more total reportable and non-reportable crashes or where five or more pedestrian/bicyclist injury crashes have occurred in any consecutive 12 months of the most recent three-year period for which data are available. For these locations, crash trends would be identified to determine whether projected vehicular and pedestrian traffic would further impact safety, or whether existing unsafe conditions could adversely impact the flow of the projected new trips. The determination of potential significant safety impacts depends on the type of area where the project site is located, traffic and pedestrian volumes, crash types and severity, and other contributing factors. Where appropriate, measures to improve traffic and pedestrian safety should be identified and coordinated with DOT.

PARKING

ANALYSIS METHODOLOGY

The Proposed Actions would generate new incremental parking demand. As no on-site parking would be provided on projected development sites under the RWCDS, this demand would be accommodated at nearby off-street public parking facilities or on street. Some existing off-street public parking capacity would also be displaced by new development on projected development sites under the RWCDS.

Under *CEQR Technical Manual* guidance, detailed on- and off-street parking analyses are typically not needed if a quantified traffic analysis is not warranted. However, the EIS includes a forecast of the incremental hourly parking demand generated by the Proposed Actions, and the amount of existing off-street public parking capacity expected to be displaced from projected development sites. The potential for the Proposed Actions to result in a significant adverse parking shortfall will be assessed based on *CEQR Technical Manual* guidance for projects located in Manhattan.

SIGNIFICANT IMPACT CRITERIA

Should a proposed action generate the need for more parking than it provides, a shortfall of spaces may be considered significant. The availability of off-street and on-street parking spaces within a convenient walking distance (about ¼-mile)—as well as the availability of alternative modes of transportation—is considered in making this determination.

Under *CEQR Technical Manual* guidelines, different criteria for determining significance are applied based on whether or not a proposed project is located in residential or commercial areas designated as Parking Zones 1 and 2 as shown in Map 16-2 (CEQR Parking Zones) in the *CEQR Technical Manual*. As the Project Area is located within Zone 1 as shown in Map 16-2, the inability of the Proposed Actions or the surrounding area to accommodate future parking demands would be considered a parking shortfall, but would generally not be considered significant due to the magnitude of available alternative modes of transportation.

G. TRANSIT

EXISTING CONDITIONS

SUBWAY STATIONS

As discussed above in Section E, "Level 2 Screening Assessment," project-generated subway trips at the Canal Street (J/N/Q/R/W/Z/6) station complex and the Canal Street (A/C/E) station

are expected to exceed the 200-trip *CEQR Technical Manual* analysis threshold in the weekday AM and/or PM peak hours. As shown in **Figure 14-7**, the Canal Street subway station complex includes the Canal Street local (R/W) and express (N/Q) stations on the Broadway Line, the Canal Street (6) station on the Lexington Avenue Line, and the Canal Street (J/Z) station on the Nassau Street Line, all of which are located below-grade.

Canal Street Subway Station (N/Q/R/W)

Local trains and express trains operating on the Broadway Line serve two separate but connected stations at Canal Street. The local station, served by R and W trains, is located beneath Broadway at Canal Street. It consists of two side platforms, each with an adjacent fare control area. Entrance stairs to the uptown platform are located at the northeast and southeast corners of the Broadway/Canal Street intersection, and entrance stairs to the downtown platform are located at the northwest and southwest corners of the intersection. A 24-hour fare booth is located at the uptown platform fare array, and an underpass within the paid zone connects the two platforms.

The express station, which is served by N and Q trains en route to and from Brooklyn via the Manhattan Bridge, consists of two side platforms located beneath Canal Street at Lafayette and Centre streets. A stair at the west end of each platform connects to a passageway providing access to the fare control area for uptown local service as well as to the underpass to the downtown local platform. Two additional stairs located in the middle of each platform provide access to the uptown and downtown platforms at the Lexington Avenue Line (6) station.

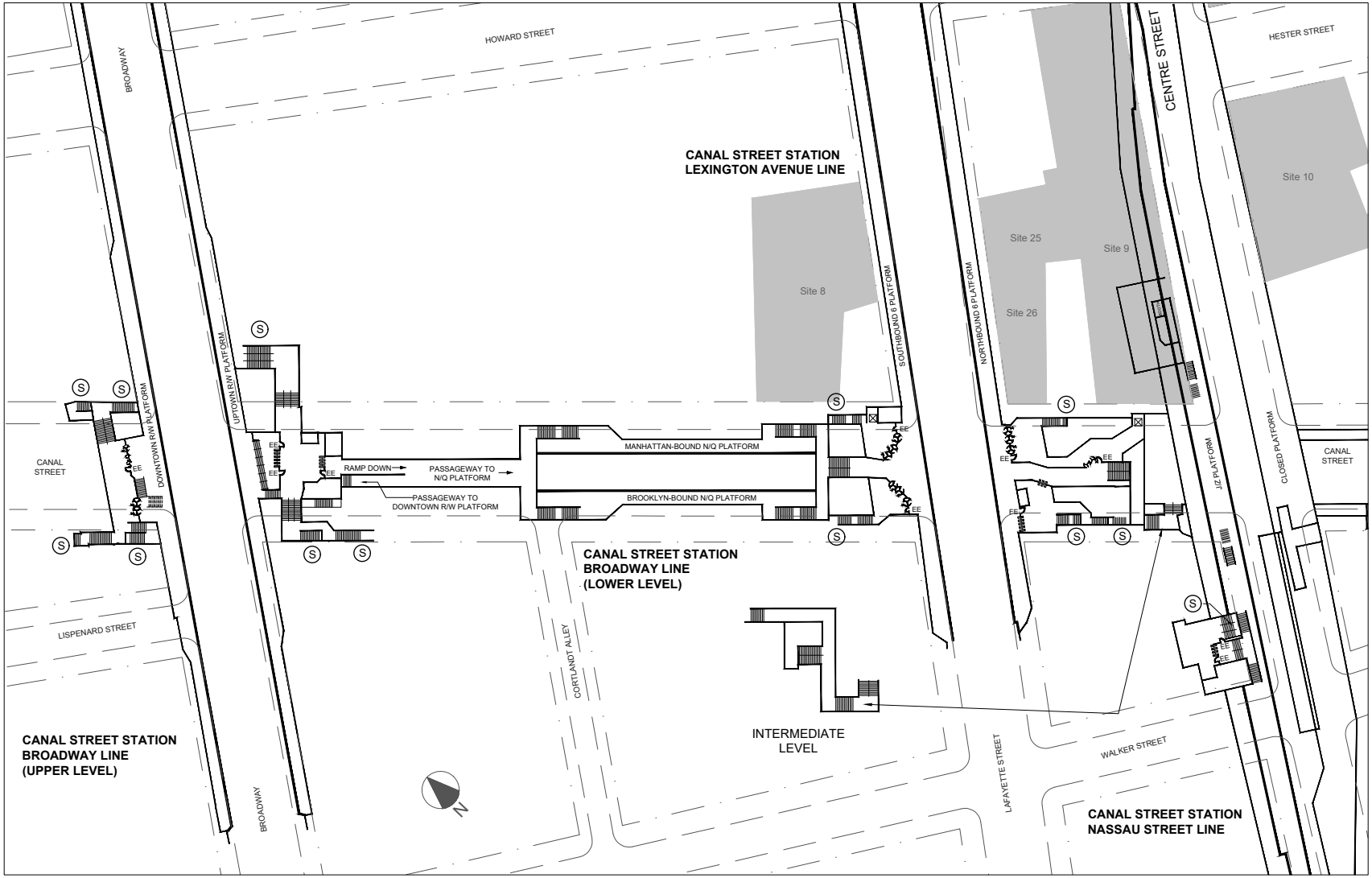
Canal Street Subway Station (6)

No. 6 local trains operating on the Lexington Avenue Line serve a station beneath Lafayette Street at Canal Street. The station consists of two side platforms, each with two adjacent fare control areas. Two stairs located at the northeast and southeast corners of the Lafayette Street/Canal Street intersection each provide access to a dedicated fare array adjacent to the uptown platform. Two stairs located at the northwest and southwest corners of the intersection similarly provide access to dedicated fare arrays adjacent to the downtown platform. A 24-hour fare booth is located adjacent to the uptown platform at the southeast corner entrance. From each of the two platforms, a single stair within the paid zone provides access to a cross-passage that in turn connects to two stairs down to the Manhattan-bound and Brooklyn-bound platforms of the Canal Street express (N/Q) station on the Broadway Line.

Canal Street Subway Station (J/Z)

J and Z local trains operating on the Nassau Street Line serve a station beneath Centre Street at Canal Street. The station consists of two island platforms, only one of which is in service. A stair at the northwest corner of Centre and Walker Streets provides access to a fare array on a mezzanine level. A single stair within the mezzanine's paid zone connects to two additional stairs that provide access down to the platform. A stair on each of the two side platforms at the Broadway Line (N/Q) station also connect to the J/Z platform.

Based on the locations of projected development sites and anticipated travel patterns, incremental demand from the Proposed Actions is expected to be most concentrated at the downtown Lexington Avenue Line (6) station entrance at the northwest corner of Canal and Lafayette Streets (stair S5/P5 and fare array R214A), and the uptown entrance at the northeast corner of Canal and Lafayette Streets (stair S6/P6 and fare array A046A). These station elements, shown in **Figure 14-8**, have therefore been selected for analysis, along with the stairs connecting the uptown and

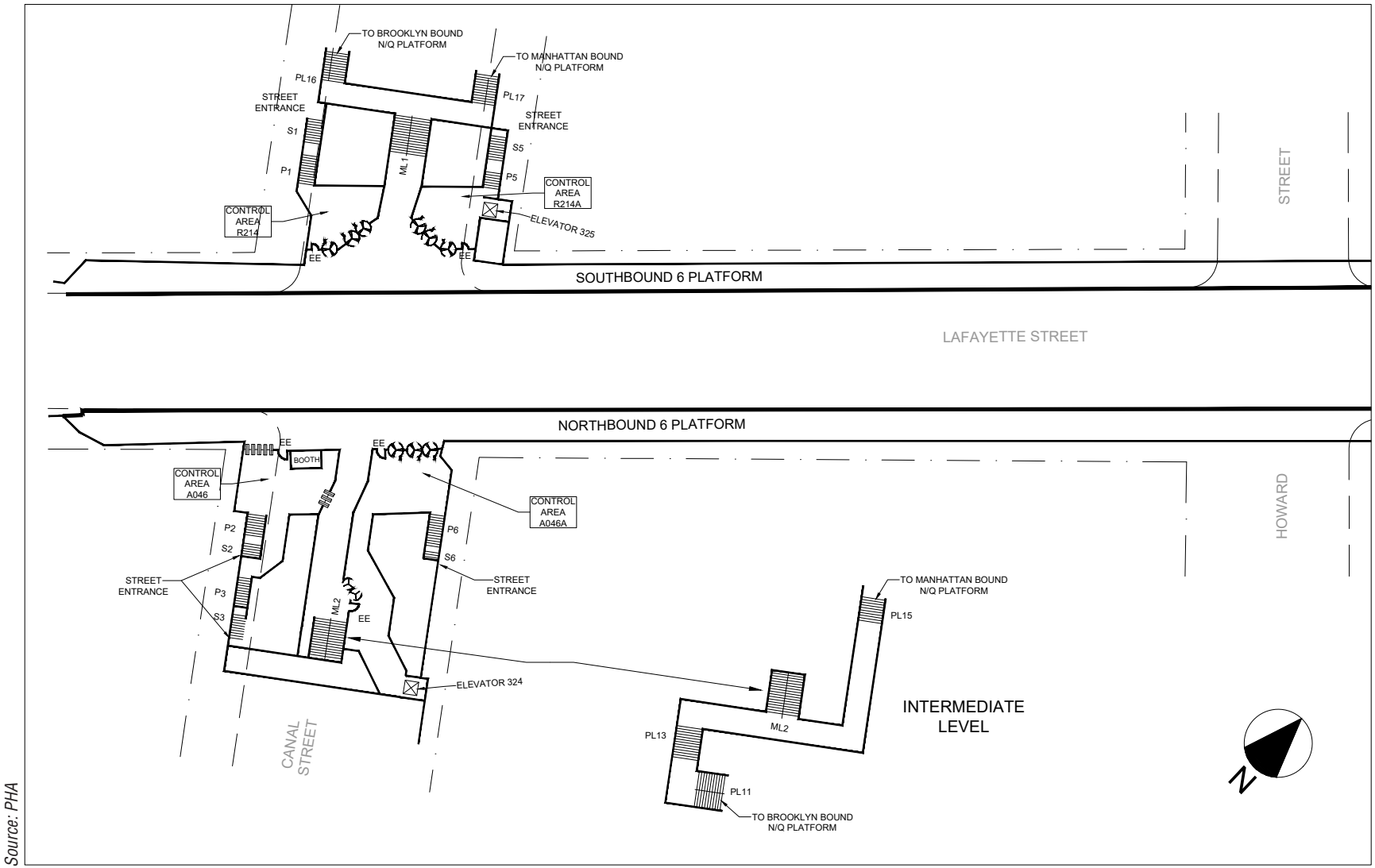


Source: PHA

Legend

- Projected Development Sites
- (S) Street Entrance
- EE = Emergency Exit
- Elevator
- High Entry/Exit Turnstile (HEET)
- High Exit Only Turnstile (HXT)
- Turnstile

Canal Street (J/N/Q/R/W/Z/6) Subway Station Complex



Source: PHA

Legend

High Entry/Exit Turnstile (HEET)

High Exit Only Turnstile (HXT)

Turnstile

EE = Emergency Exit

Analyzed Elements at the Canal Street (6) Subway Station

downtown platforms to the platforms at the Broadway Line (N/Q) station—stairs ML1/PL16/PL17 at the downtown No. 6 platform and stairs ML2/PL11/PL13/PL15 at the uptown No. 6 platform. In addition, after consultation with NYCT, station elements at the Canal Street Broadway Line (R/W) station were also included for analysis. These elements, shown in **Figure 14-9**, include street stair S12/M3 at the northeast corner of Canal Street and Broadway along with adjoining uptown fare array A043; and street stair S10 and downtown platform stair P14 at the northwest corner of Canal Street and Broadway along with the elements of fare array A044 adjoining these stairs (i.e., the elements at the north end of the fare array).

As shown in **Table 14-14**, all analyzed stairs at the Canal Street subway station complex currently operate at an acceptable LOS C or better in both the AM and PM peak hours with the exception of two stairs which operate at LOS D—platform stair PL15 to the Manhattan-bound N/Q platform in the AM peak hour, and street stair S6/P6 at the northeast corner of Canal and Lafayette Streets in the PM peak hour. As shown in **Table 14-15**, all analyzed fare arrays at the Canal Street subway station complex currently operate at an acceptable LOS A or B in both the AM and PM peak hours.

Canal Street Subway Station (A/C/E)

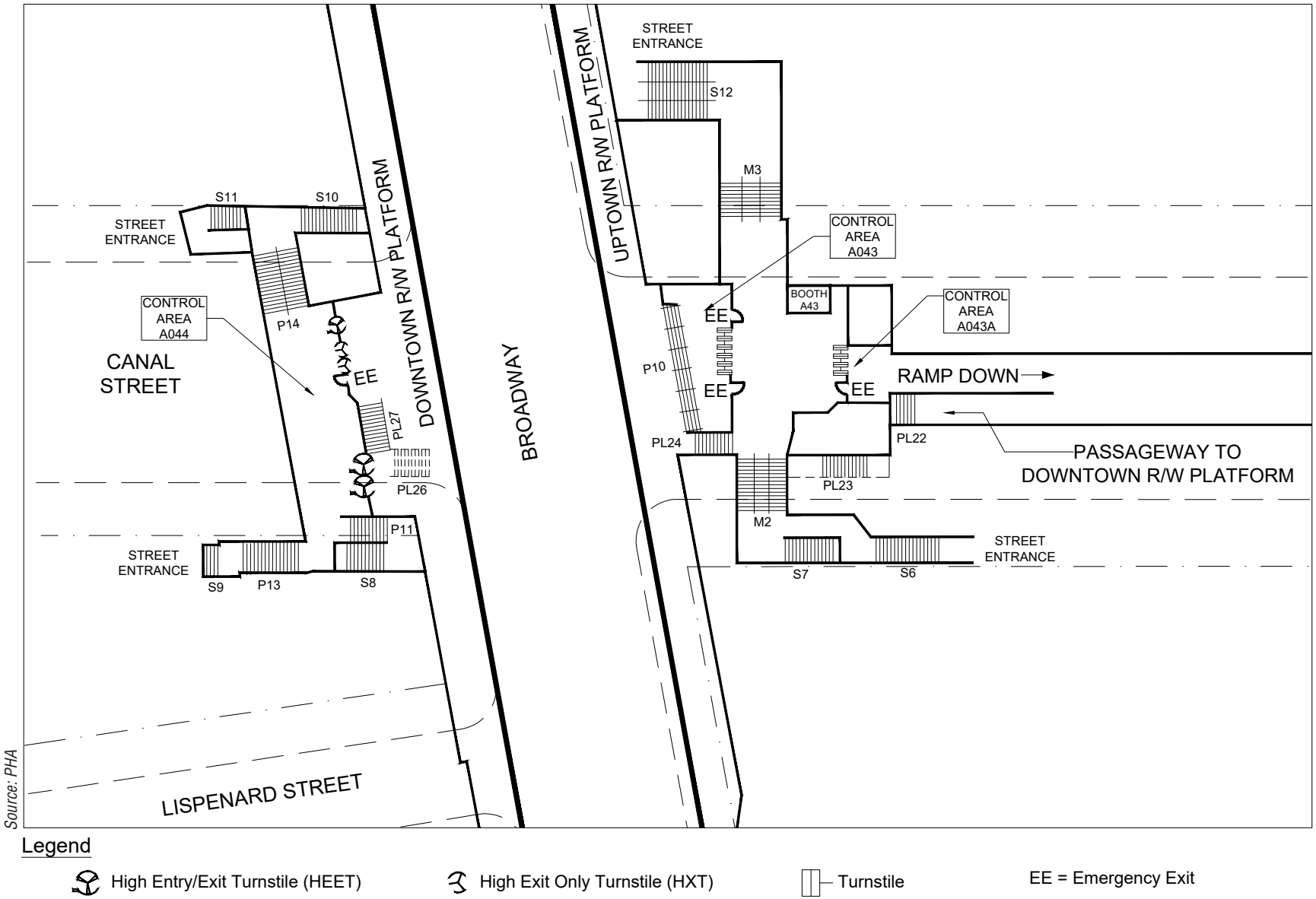
The Canal Street subway station on the Eighth Avenue Line extends from Walker Street to Canal Street beneath Sixth Avenue. The station consists of a mezzanine level below which is a platform level with two island platforms served by A express trains and C and E local trains. Access from the street to the mezzanine level is provided by a total of six stairs, two at Walker Street at the south end of the station (one of which is within an adjacent building lobby), two at West Broadway, and one each at Canal/Laight streets and Canal/Thompson streets at the north end of the station. Entry to the paid zone is controlled by five fare arrays, one at Walker Street, and two each at West Broadway and Canal Street. A 24-hour fare booth is located adjacent to the two fare arrays at West Broadway. Lastly, eight stairs provide access to the platform level, four each to the northbound and southbound platforms.

Based on the locations of projected development sites, most if not all incremental demand generated by the Proposed Actions would likely enter and exit at street stair S6/M8 located at the Canal Street/Thompson Street intersection, and utilize fare array N088 and platform stair P7 to access the uptown platform, and fare array N088A and platform stairs P6 and P8 to access the downtown platform (See **Figure 14-10**). These stairs and fare arrays have therefore been selected for analysis in the EIS.

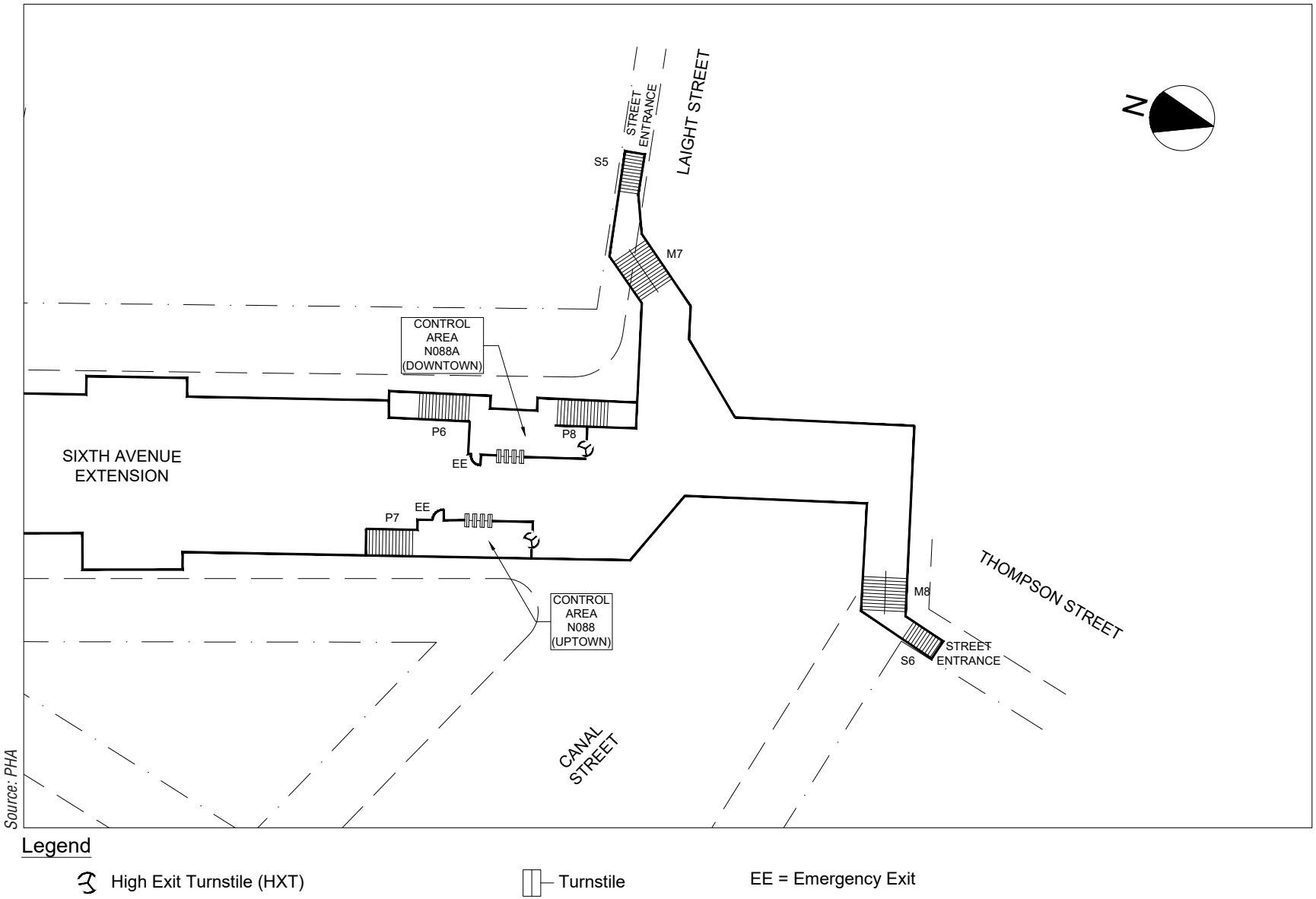
As shown in **Tables 14-14 and 14-15**, all analyzed stairs and fare arrays at the Canal Street (A/C/E) subway station currently operate at an uncongested LOS A or B in both the AM and PM peak hours with the exception of street stair S6/M8 which currently operates at LOS D in both periods.

SUBWAY LINE HAUL

Line haul is the volume of transit riders passing a defined point on a given transit route. For subway routes to and from the Manhattan CBD, line haul is typically measured at East River bridge and tunnel crossings, 60th Street (considered the northern boundary of the Manhattan CBD), or at the actual maximum load point on each subway route (the point where the trains carry the greatest number of passengers during the peak hour). As discussed previously, a total of fifteen NYCT subway routes operate in proximity to the Project Area, including the A, B, C, D, E, F, J, M, N, Q, R, W, Z, No. 1 and No. 6. All of these routes cross the East River and/or the 60th Street cordon. The peak direction of travel is typically into the CBD from the north or from



Analyzed Elements at the Canal Street (R/W) Subway Station



Analyzed Elements at the Canal Street (A/C/E) Subway Station

Brooklyn and Queens in the AM peak hour, and outbound from the CBD to the north or to Brooklyn and Queens in the PM peak hour.

The analysis of existing subway line haul conditions is based on maximum load point capacity and ridership data for 2017-2018 provided by NYCT. The ridership data were grown by 0.25 percent per year to account for any increases in demand during the 2018 to 2021 period and conservatively do not reflect the reductions in ridership that have occurred due to the Covid-19 pandemic.

Table 14-14
Existing Conditions Subway Station Stair Analysis

Peak Hour	Station	Stair	Total Width (ft.)	Effective Width (ft.)	Peak Hour Volumes		Surging Factor		Friction Factor	V/C Ratio	LOS
					Up	Down	Up	Down			
AM	Canal Street (J/N/Q/R/W/Z/6)	S5/P5	4.50	3.50	1,140	41	0.75	1.00	1.00	0.93	C
		S6/P6	4.67	3.67	555	268	0.75	1.00	0.90	0.64	B
		S10	5.58	4.58	196	16	0.75	1.00	0.90	0.14	A
		S12/M3	14.17	12.67	1,348	111	0.75	1.00	0.90	0.35	A
		ML1	12.17	10.92	1,089	154	0.80	0.80	0.90	0.33	A
		ML2	11.50	10.25	2,067	215	0.80	0.80	0.90	0.64	B
		PL11/PL13	8.17	7.17	595	2	0.75	0.90	1.00	0.23	A
		P14	11.00	9.75	325	33	0.75	1.00	0.90	0.11	A
		PL15	5.67	4.67	1,472	221	0.75	0.90	0.90	1.10	D
		PL16/PL18	6.33	5.33	373	92	0.75	0.90	0.90	0.26	A
		PL17/PL19	7.67	6.67	717	61	0.75	0.90	0.90	0.36	A
	Canal Street (A/C/E)	S6/M8	4.67	3.67	1,304	120	0.75	1.00	0.90	1.18	D
		P6	5.83	4.83	973	37	0.75	1.00	1.00	0.58	B
		P7	6.58	5.58	657	161	0.75	1.00	0.90	0.43	A
		P8	5.83	4.83	732	23	0.75	1.00	1.00	0.43	A
PM	Canal Street (J/N/Q/R/W/Z/6)	S5/P5	4.50	3.50	672	364	0.75	1.00	0.90	0.83	C
		S6/P6	4.67	3.67	284	1,437	0.75	1.00	0.90	1.15	D
		S10	5.58	4.58	221	178	0.75	1.00	0.90	0.24	A
		S12/M3	14.17	12.67	474	1,305	0.75	1.00	0.90	0.35	A
		ML1	12.17	10.92	392	958	0.80	0.80	0.90	0.36	A
		ML2	11.50	10.25	577	1,126	0.80	0.80	0.90	0.48	B
		PL11/PL13	8.17	7.17	290	520	0.75	0.90	0.90	0.31	A
		P14	11.00	9.75	351	309	0.75	1.00	0.90	0.19	A
		PL15	5.67	4.67	288	605	0.75	0.90	0.90	0.52	B
		PL16/PL18	6.33	5.33	263	605	0.75	0.90	0.90	0.44	A
		PL17/PL19	7.67	6.67	129	353	0.75	0.90	0.90	0.20	A
	Canal Street (A/C/E)	S6/M8	4.67	3.67	197	1,378	0.75	1.00	0.90	1.04	D
		P6	5.83	4.83	164	502	0.75	1.00	0.90	0.34	A
		P7	6.58	5.58	119	1,385	0.75	1.00	0.90	0.64	B
		P8	5.83	4.83	98	483	0.75	1.00	0.90	0.29	A

Table 14-15
Existing Conditions Subway Station Fare Array Analysis

Peak Hour	Station	Control Area	Control Elements			Peak Hour Volumes		Surging Factor		Friction Factor	V/C Ratio	LOS
			Turnstile	HEET	HXT	System Entries	System Exits	System Entries	System Exits			
AM	Canal Street (J/N/Q/R/W/Z/6)	R214A	0	3	0	41	1,140	1.00	0.75	1.00	0.31	A
		A043	5	0	0	132	721	1.00	0.75	0.90	0.13	A
		A044 (North side)	0	1	2	33	325	1.00	0.75	0.90	0.14	A
		A046A	0	3	2	268	555	1.00	0.75	0.90	0.22	A
	Canal Street (A/C/E)	N088	3	0	1	161	657	1.00	0.75	0.90	0.17	A
		N088A	3	0	1	60	1,705	1.00	0.75	1.00	0.30	A
PM	Canal Street (J/N/Q/R/W/Z/6)	R214A	0	3	0	364	672	1.00	0.75	0.90	0.36	A
		A043	5	0	0	1,257	398	1.00	0.75	0.90	0.26	A
		A044 (North side)	0	1	2	309	351	1.00	0.75	0.90	0.52	B
		A046A	0	3	2	1,437	284	1.00	0.75	0.90	0.70	B
	Canal Street (A/C/E)	N088	3	0	1	1,385	119	1.00	0.75	0.90	0.40	A
		N088A	3	0	1	985	262	1.00	0.75	0.90	0.32	A

Table 14-16 shows existing line haul conditions in the peak direction at the maximum load points for each subway route during the AM and PM peak hours. As shown in **Table 14-16**, four routes operate over capacity in the AM peak hour and one route in the PM peak hour under existing conditions. These include northbound F and M trains which both operate at a v/c ratio of 1.03 in the AM, combined southbound E/F service which operates at a v/c ratio of 1.08 in the AM, southbound Q trains which operate at a 1.11 v/c ratio in the AM, and northbound No. 1 trains which operate at a v/c ratio of 1.02 in the PM. In addition, combined southbound N/W service operates essentially at capacity in the AM peak hour with a v/c ratio of 0.99.

Table 14-16
Existing Conditions Subway Line Haul Analysis

Peak Period	Route	Direction	Maximum Load Point (leaving station)	Average Trains Per Hour (1)	Average Cars Per Hour	Average Passengers Per Hour (2)	Average Passengers Per Car	Guideline Passengers Per Car (3)	V/C Ratio (4)
AM	A/C	NB	Hoyt - Schermerhorn Sts	23.5	188	23,097	123	169	0.73
	D/N	NB	36 St	19.4	173	19,149	111	140	0.79
	F	NB	2 Av	13.5	135	18,770	139	135	1.03
	M	NB	Marcy Av	9.3	74	8,733	118	115	1.03
	B/Q	NB	7 Av	19.7	176	20,915	119	160	0.74
	R	NB	Union St	10.8	86	7,484	87	155	0.56
	1	SB	103 St	19.0	191	16,162	85	110	0.77
	6	SB	3 Av - 138 St	20.5	204	18,326	90	110	0.82
	A/D	SB	125 St	19.2	154	21,226	138	175	0.79
	B/C	SB	72 St	13.8	110	13,446	122	160	0.76
	E/F	SB	Jackson Hts - Roosevelt Av	25.8	258	40,296	156	145	1.08
	J/Z	SB	Marcy Av	12.7	102	10,033	98	135	0.73
	M/R	SB	Elmhurst Av	18.4	148	13,832	93	164	0.57
	N/W	SB	Queensboro Plaza*	15.1	150	21,519	143	145	0.99
	Q	SB	72 St	11.0	110	15,302	139	125	1.11
PM	1	NB	59 St - Columbus Circle	16.1	161	17,980	112	110	1.02
	6	NB	59 St	17.9	179	15,829	88	110	0.80
	A/D	NB	59 St - Columbus Circle	17.7	149	17,543	118	175	0.67
	B/C	NB	59 St - Columbus Circle	12.9	103	9,160	89	160	0.56
	E	NB	Lexington Av - 53 St	14.6	146	18,957	130	145	0.90
	F	NB	Lexington Av - 63 St	15.4	147	17,007	116	145	0.80
	J/Z	NB	Essex St	11.0	88	10,794	123	135	0.91
	M/R	NB	Jackson Hts - Roosevelt Av	16.3	131	11,205	86	161	0.53
	N/W	NB	Lexington Av - 59 St*	14.3	144	15,342	107	145	0.73
	Q	NB	Lexington Av - 63 St	10.1	118	11,410	97	125	0.77
	A/C	SB	Jay St - MetroTech	21.3	181	22,442	124	160	0.77
	D/N	SB	Atlantic Av - Barclays Ctr	17.6	156	16,066	103	140	0.74
	F	SB	Broadway - Lafayette St	13.0	134	14,560	109	135	0.80
	M	SB	Essex St	9.0	72	7,184	100	115	0.87
	B/Q	SB	Atlantic Av - Barclays Ctr	17.6	156	18,410	118	160	0.74
	R	SB	Jay St - MetroTech	10.5	84	8,441	100	155	0.65

Notes:

(1) Based on 2017-2018 ridership and train throughput data from NYCT, except where noted.

(2) Based on 2017-2018 ridership data from NYCT. Passenger volumes grown by 0.25 percent/year to account for growth in demand during the 2018 to 2021 period.

(3) Guideline capacities are based on NYCT rush hour loading guidelines, which vary by car type, line, and location based on frequency and type of service.

(4) Volume to guideline capacity ratio.

*Based on 2016-2017 values, due to temporary construction during 2018.

THE FUTURE WITHOUT THE PROPOSED ACTIONS (NO ACTION CONDITION)

Between 2021 and 2031, it is expected that subway demand in the vicinity of the Project Area will increase due to long-term background growth as well as development that could occur pursuant to existing zoning. In order to forecast future transit conditions without the Proposed Actions (the No Action condition), the developments listed in Table 2-10 in Chapter 2, "Land Use, Zoning, and Public Policy," were considered. (No new development is anticipated on projected development sites under the Proposed Actions' RWCDS.) The Future No Action subway station and line haul volumes reflect annual background growth rates of 0.25 percent per year for the 2021 through 2026 period and 0.125 percent per year for the 2026 through 2031 period. These background growth rates, recommended in the *CEQR Technical Manual* for projects in Manhattan, are applied to account for smaller projects and as-of-right developments not reflected in Table 2-10, and general increases in travel demand not attributable to specific development projects.

SUBWAY STATIONS

Under 2031 No Action conditions, demand at the analyzed subway stations is expected to increase due to new development and/or background growth. The results of the analysis of No Action AM and PM peak hour conditions at the Canal Street (J/N/Q/R/W/Z/6) station complex and the Canal Street (A/C/E) station are shown in **Table 14-17** and **Table 14-18** and discussed below.

Table 14-17
No Action Subway Station Stair Analysis

Peak Hour	Station	Stair	Total Width (ft.)	Effective Width (ft.)	Peak Hour Volumes		Surging Factor		Friction Factor	V/C Ratio	LOS
					Up	Down	Up	Down			
AM	Canal Street (J/N/Q/R/W/Z/6)	S5/P5	4.50	3.50	1,162	42	0.75	1.00	1.00	0.95	C
		S6/P6	4.67	3.67	565	274	0.75	1.00	0.90	0.65	B
		S10	5.58	4.58	200	16	0.75	1.00	0.90	0.14	A
		S12/M3	14.17	12.67	1,373	113	0.75	1.00	0.90	0.35	A
		ML1	12.17	10.92	1,110	157	0.80	0.80	0.90	0.34	A
		ML2	11.50	10.25	2,106	219	0.80	0.80	0.90	0.66	B
		PL11/PL13	8.17	7.17	606	2	0.75	0.90	1.00	0.24	A
		P14	11.00	9.75	331	34	0.75	1.00	0.90	0.11	A
		PL15	5.67	4.67	1,500	225	0.75	0.90	0.90	1.12	D
		PL16/PL18	6.33	5.33	380	94	0.75	0.90	0.90	0.27	A
		PL17/PL19	7.67	6.67	731	62	0.75	0.90	0.90	0.36	A
	Canal Street (A/C/E)	S6/M8	4.67	3.67	1,490	166	0.75	1.00	0.90	1.36	E
		P6	5.83	4.83	1,072	48	0.75	1.00	1.00	0.64	B
		P7	6.58	5.58	828	227	0.75	1.00	0.90	0.55	B
		P8	5.83	4.83	827	33	0.75	1.00	1.00	0.49	B
PM	Canal Street (J/N/Q/R/W/Z/6)	S5/P5	4.50	3.50	686	371	0.75	1.00	0.90	0.85	C
		S6/P6	4.67	3.67	289	1,465	0.75	1.00	0.90	1.17	D
		S10	5.58	4.58	225	181	0.75	1.00	0.90	0.24	A
		S12/M3	14.17	12.67	483	1,330	0.75	1.00	0.90	0.36	A
		ML1	12.17	10.92	399	976	0.80	0.80	0.90	0.36	A
		ML2	11.50	10.25	588	1,147	0.80	0.80	0.90	0.49	B
		PL11/PL13	8.17	7.17	295	530	0.75	0.90	0.90	0.32	A
		P14	11.00	9.75	358	315	0.75	1.00	0.90	0.19	A
		PL15	5.67	4.67	293	616	0.75	0.90	0.90	0.54	B
		PL16/PL18	6.33	5.33	268	616	0.75	0.90	0.90	0.45	A
		PL17/PL19	7.67	6.67	131	360	0.75	0.90	0.90	0.20	A
	Canal Street (A/C/E)	S6/M8	4.67	3.67	251	1,564	0.75	1.00	0.90	1.20	D
		P6	5.83	4.83	197	586	0.75	1.00	0.90	0.41	A
		P7	6.58	5.58	155	1,577	0.75	1.00	0.90	0.74	C
		P8	5.83	4.83	130	567	0.75	1.00	0.90	0.36	A

Table 14-18
No Action Subway Station Fare Array Analysis

Peak Hour	Station	Fare Array	Control Elements			Peak Hour Volumes		Surging Factor		Friction Factor	V/C Ratio	LOS
			Turnstile	HEET	HXT	System Entries	System Exits	System Entries	System Exits			
AM	Canal Street (J/N/Q/R/W/Z/6)	R214A	0	3	0	42	1,162	1.00	0.75	1.00	0.32	A
		A043	5	0	0	134	735	1.00	0.75	0.90	0.13	A
		A044 (North side)	0	1	2	34	331	1.00	0.75	0.90	0.14	A
		A046A	0	3	2	274	565	1.00	0.75	0.90	0.22	A
	Canal Street (A/C/E)	N088	3	0	1	227	828	1.00	0.75	0.90	0.22	A
		N088A	3	0	1	81	1,899	1.00	0.75	1.00	0.34	A
PM	Canal Street (J/N/Q/R/W/Z/6)	R214A	0	3	0	371	686	1.00	0.75	0.90	0.36	A
		A043	5	0	0	1,281	406	1.00	0.75	0.90	0.27	A
		A044 (North side)	0	1	2	315	358	1.00	0.75	0.90	0.53	B
		A046A	0	3	2	1,465	289	1.00	0.75	0.90	0.71	C
	Canal Street (A/C/E)	N088	3	0	1	1,577	155	1.00	0.75	0.90	0.46	B
		N088A	3	0	1	1,154	327	1.00	0.75	0.90	0.38	A

Canal Street (J/N/Q/R/W/Z/6) Subway Station Complex

As shown in **Table 14-17**, in the No Action condition, all analyzed stairs at the Canal Street subway station complex are expected to operate at an acceptable LOS C or better in both the AM and PM peak hours with the exception of platform stair PL15 which will continue to operate at LOS D in the AM, and street stair S6/P6 which will continue to operate at LOS D in the PM. As shown in **Table 14-18**, all analyzed fare arrays at the Canal Street subway station complex are expected to operate at an acceptable LOS C or better in both the AM and PM peak hours in the No Action condition.

Canal Street (A/C/E) Station

As shown in **Tables 14-17 and 14-18**, all analyzed stairs and fare arrays at the Canal Street (A/C/E) subway station are expected to operate at an acceptable LOS C or better in both the AM and PM peak hours in the No Action condition with the exception of street stair S6/M8. Conditions at this stair would degrade from LOS D to LOS E in the AM peak hour and remain at LOS D in the PM peak hour.

SUBWAY LINE HAUL

Table 14-19 shows anticipated 2031 No Action line haul conditions in the peak direction at the maximum load points on the fifteen subway routes operating in proximity to the Project Area. The data in **Table 14-19** reflect both background growth for the 2021 through 2031 period and the addition of demand from new development within the Project Area and its proximity.

As shown in **Table 14-19**, the existing over-capacity conditions in the AM peak hour on northbound F and M trains, the combined southbound E/F service, and southbound Q trains, are expected to worsen in the No-Action condition. The combined southbound N/W service would also experience over-capacity conditions in the AM with a v/c ratio of 1.03 compared with 0.99 under existing conditions. The over-capacity condition on northbound No. 1 trains in the PM peak hour is also expected to worsen in the No-Action condition.

Table 14-19
No Action Subway Line Haul Analysis

Peak Period	Route	Direction	Maximum Load Point (leaving station)	Average Trains Per Hour (1)	Average Cars Per Hour	Average Passengers Per Hour (2)	Average Passengers Per Car	Guideline Passengers Per Car (3)	V/C Ratio (4)
AM	A/C	NB	Hoyt - Schermerhorn Sts	23.5	188	24,222	129	169	0.76
	D/N	NB	36 St	19.4	173	19,709	114	140	0.81
	F	NB	2 Av	13.5	135	19,135	142	135	1.05
	M	NB	Marcy Av	9.3	74	8,907	120	115	1.05
	B/Q	NB	7 Av	19.7	176	21,440	122	160	0.76
	R	NB	Union St	10.8	86	7,710	90	155	0.58
	1	SB	103 St	19.0	191	16,762	88	110	0.80
	6	SB	3 Av - 138 St	20.5	204	19,179	94	110	0.85
	A/D	SB	125 St	19.2	154	22,665	147	175	0.84
	B/C	SB	72 St	13.8	110	14,254	130	160	0.81
	E/F	SB	Jackson Hts - Roosevelt Av	25.8	258	41,830	162	145	1.12
	J/Z	SB	Marcy Av	12.7	102	10,251	101	135	0.74
	M/R	SB	Elmhurst Av	18.4	148	14,522	98	164	0.60
	N/W	SB	Queensboro Plaza	15.1	150	22,342	149	145	1.03
	Q	SB	72 St	11.0	110	15,664	142	125	1.14
PM	1	NB	59 St - Columbus Circle	16.1	161	18,766	117	110	1.06
	6	NB	59 St	17.9	179	16,725	93	110	0.85
	A/D	NB	59 St - Columbus Circle	17.7	149	19,096	128	175	0.73
	B/C	NB	59 St - Columbus Circle	12.9	103	9,980	97	160	0.61
	E	NB	Lexington Av - 53 St	14.6	146	19,683	135	145	0.93
	F	NB	Lexington Av - 63 St	15.4	147	17,470	119	145	0.82
	J/Z	NB	Essex St	11.0	88	11,022	125	135	0.93
	M/R	NB	Jackson Hts - Roosevelt Av	16.3	131	11,772	90	161	0.56
	N/W	NB	Lexington Av - 59 St	14.3	144	15,920	111	145	0.76
	Q	NB	Lexington Av - 63 St	10.1	118	11,712	99	125	0.79
	A/C	SB	Jay St - MetroTech	21.3	181	23,669	131	160	0.82
	D/N	SB	Atlantic Av - Barclays Ctr	17.6	156	16,658	107	140	0.76
	F	SB	Broadway - Lafayette St	13.0	134	14,913	111	135	0.82
	M	SB	Essex St	9.0	72	7,388	103	115	0.89
	B/Q	SB	Atlantic Av - Barclays Ctr	17.6	156	18,995	122	160	0.76
	R	SB	Jay St - MetroTech	10.5	84	8,752	104	155	0.67

Notes:

(1) Trains per hour based on 2018 scheduled trains per hour.

(2) No Action passenger volumes reflect demand from No Action development plus background growth rates of 0.25 percent/year for the 2021-2026 period and 0.125 percent/year for the 2026-2031 period as per *CEQR Technical Manual* guidance.

(3) Guideline capacities are based on NYCT rush hour loading guidelines, which vary by car type, line, and location based on frequency and type of service.

(4) Volume to guideline capacity ratio.

THE FUTURE WITH THE PROPOSED ACTIONS (WITH ACTION CONDITION)

SUBWAY STATIONS

As shown in **Table 14-8**, the Proposed Actions are expected to generate a net total of approximately 835 and 978 new subway trips in the weekday AM and PM peak hours, respectively. Based on proximity to projected development sites, the highest number of incremental subway trips is expected to occur at the Canal Street (J/N/Q/R/W/Z/6) station complex, which would experience approximately 301 incremental trips in the AM peak hour and

360 in the PM peak hour. The next highest number would occur at the Canal Street (A/C/E) subway station on the Eighth Avenue Line, which would experience approximately 182 incremental trips in the AM peak hour and 216 in the PM peak hour. All other subway stations serving the Project Area are expected to experience fewer than 200 incremental trips in both the AM and PM peak hours.

AM and PM peak hour conditions at the Canal Street (J/N/Q/R/W/Z/6) station complex and the Canal Street (A/C/E) station in the With Action condition are shown in **Table 14-20** and **Table 14-21** and discussed below.

Table 14-20
With Action Subway Station Stair Analysis

Peak Hour	Station	Stair	Total Width (ft.)	Effective Width (ft.)	Project Increment Up	Project Increment Down	Peak Hour Volumes Up	Peak Hour Volumes Down	Surging Factor Up	Surging Factor Down	Friction Factor	V/C Ratio	LOS	WIT	Impact Threshold
AM	Canal Street (J/N/Q/R/W/Z/6)	S5/P5	4.50	3.50	39	27	1,201	69	0.75	1.00	0.90	1.10	D	4.40	7.00
		S6/P6	4.67	3.67	-59	184	506	458	0.75	1.00	0.90	0.71	C	- - -	- - -
		S10	5.58	4.58	1	48	201	64	0.75	1.00	0.90	0.17	A	- - -	- - -
		S12/M3	14.17	12.67	9	33	1,382	146	0.75	1.00	0.90	0.36	A	- - -	- - -
		ML1	12.17	10.92	4	14	1,114	171	0.80	0.80	0.90	0.34	A	- - -	- - -
		ML2	11.50	10.25	-68	96	2,038	315	0.80	0.80	0.90	0.66	B	- - -	- - -
		PL11/PL13	8.17	7.17	-43	23	563	25	0.75	0.90	1.00	0.23	A	- - -	- - -
		P14	11.00	9.75	1	48	332	82	0.75	1.00	0.90	0.13	A	- - -	- - -
		PL15	5.67	4.67	-25	73	1,475	298	0.75	0.90	0.90	1.14	D	1.56	7.00
		PL16/PL18	6.33	5.33	4	2	384	96	0.75	0.90	0.90	0.27	A	- - -	- - -
		PL17/PL19	7.67	6.67	0	12	731	74	0.75	0.90	0.90	0.37	A	- - -	- - -
	Canal Street (A/C/E)	S6/M8	4.67	3.67	108	74	1,598	240	0.75	1.00	0.90	1.50	E *	4.76	3.00
		P6	5.83	4.83	28	5	1,100	53	0.75	1.00	1.00	0.66	B	- - -	- - -
		P7	6.58	5.58	53	64	881	291	0.75	1.00	0.90	0.61	B	- - -	- - -
		P8	5.83	4.83	28	5	855	38	0.75	1.00	1.00	0.51	B	- - -	- - -
PM	Canal Street (J/N/Q/R/W/Z/6)	S5/P5	4.50	3.50	100	20	786	391	0.75	1.00	0.90	0.95	C	- - -	- - -
		S6/P6	4.67	3.67	94	20	383	1,485	0.75	1.00	0.90	1.26	D	2.89	6.00
		S10	5.58	4.58	29	21	254	202	0.75	1.00	0.90	0.27	A	- - -	- - -
		S12/M3	14.17	12.67	42	10	525	1,340	0.75	1.00	0.90	0.37	A	- - -	- - -
		ML1	12.17	10.92	13	7	412	983	0.80	0.80	0.90	0.37	A	- - -	- - -
		ML2	11.50	10.25	80	-41	668	1,106	0.80	0.80	0.90	0.50	B	- - -	- - -
		PL11/PL13	8.17	7.17	57	-17	352	513	0.75	0.90	0.90	0.34	A	- - -	- - -
		P14	11.00	9.75	29	21	387	336	0.75	1.00	0.90	0.20	A	- - -	- - -
		PL15	5.67	4.67	23	-24	316	592	0.75	0.90	0.90	0.54	B	- - -	- - -
		PL16/PL18	6.33	5.33	11	1	279	617	0.75	0.90	0.90	0.46	B	- - -	- - -
		PL17/PL19	7.67	6.67	2	6	133	366	0.75	0.90	0.90	0.20	A	- - -	- - -
	Canal Street (A/C/E)	S6/M8	4.67	3.67	83	133	334	1,697	0.75	1.00	0.90	1.35	E *	5.20	5.00
		P6	5.83	4.83	33	29	230	615	0.75	1.00	0.90	0.44	A	- - -	- - -
		P7	6.58	5.58	18	75	173	1,652	0.75	1.00	0.90	0.78	C	- - -	- - -
		P8	5.83	4.83	32	29	162	596	0.75	1.00	0.90	0.39	A	- - -	- - -

Notes:
WIT - Width Increment Threshold

* - Denotes a significant adverse impact per 2020 CEQR Technical Manual criteria.

Table 14-21
With Action Subway Station Fare Array Analysis

Peak Hour	Station	Fare Array	Control Elements			Project Increment		Peak Hour Volumes		Surging Factor		Friction Factor	V/C Ratio	LOS
			Turnstile	HEET	HXT	System Entries	System Exits	System Entries	System Exits	System Entries	System Exits			
AM	Canal Street (J/N/Q/R/W/Z/6)	R214A	0	3	0	27	39	69	1,201	1.00	0.75	0.90	0.37	A
		A043	5	0	0	33	9	167	744	1.00	0.75	0.90	0.13	A
		A044 (North side)	0	1	2	48	1	82	332	1.00	0.75	0.90	0.21	A
		A046A	0	3	2	184	-59	458	506	1.00	0.75	0.90	0.29	A
	Canal Street (A/C/E)	N088	3	0	1	64	53	291	881	1.00	0.75	0.90	0.24	A
		N088A	3	0	1	10	56	91	1,955	1.00	0.75	1.00	0.35	A
PM	Canal Street (J/N/Q/R/W/Z/6)	R214A	0	3	0	20	100	391	786	1.00	0.75	0.90	0.40	A
		A043	5	0	0	10	42	1,291	448	1.00	0.75	0.90	0.28	A
		A044 (North side)	0	1	2	21	29	336	387	1.00	0.75	0.90	0.57	B
		A046A	0	3	2	20	94	1,485	383	1.00	0.75	0.90	0.74	C
	Canal Street (A/C/E)	N088	3	0	1	75	18	1,652	173	1.00	0.75	0.90	0.49	B
		N088A	3	0	1	58	65	1,212	392	1.00	0.75	0.90	0.41	A

Notes:
* - Denotes a significant adverse impact per 2020 *CEQR Technical Manual* criteria.

Canal Street (J/N/Q/R/W/Z/6) Subway Station Complex

In the With Action condition, street stair S5/P5 and platform stair PL15 would operate at a marginal LOS D in the AM peak hour, as would street stair S6/P6 in the PM peak hour. However, none of these stairs would be considered significantly adversely impacted based on the *CEQR Technical Manual* impact criteria previously described in Section F, "Transportation Analyses Methodologies." As all remaining analyzed stairs and all analyzed fare arrays would continue to operate at an acceptable LOS C or better in both the AM and PM peak hours under the Proposed Actions, no significant adverse impacts are anticipated to occur at the Canal Street (J/N/Q/R/W/Z/6) subway station complex.

Canal Street (A/C/E) Subway Station

In the With Action condition, all analyzed stairs and fare arrays at the Canal Street (A/C/E) station are projected to operate at an acceptable LOS C or better in both the AM and PM peak hours with the exception of street stair S6/M8. This stair would operate at LOS E in both the AM and PM peak hours versus LOS E and D during these periods, respectively, in the No-Action condition. As shown in **Table 14-20**, street stair S6/M8 would be considered significantly adversely impacted by the Proposed Actions in both the AM and PM based on the *CEQR Technical Manual* impact criteria previously described in Section F, "Transportation Analyses Methodologies." Potential mitigation for the significant adverse impacts to this stair is discussed in Chapter 21, "Mitigation."

SUBWAY LINE HAUL

Table 14-22 shows line haul conditions in the peak direction on the subway routes serving the Project Area in the With Action condition. As shown in **Table 14-22**, many analyzed subway routes would actually experience net decreases in the average number of peak hour passengers per car through the maximum load point under the Proposed Actions. This would be because the Proposed Actions' RWCDS would result in a net reduction in office, light industrial and warehouse space.

Given that the projected development sites are located within the Manhattan CBD, much of the net reduction in subway trips generated by these uses would occur in the peak direction (i.e., inbound to the CBD) and pass through the maximum load points on each route. By contrast, the new subway trips generated by the residential uses proposed under the RWCDS would typically not occur in the peak direction and/or would not pass through the maximum load points.

As shown in **Table 14-22**, northbound F and M trains, the combined southbound E/F service, the combined southbound N/W service, and southbound Q trains, would all continue to experience over-capacity conditions in the AM peak hour in the With Action condition, as would northbound No. 1 trains in the PM peak hour. However, as also shown in **Table 14-22**, under the Proposed Actions, the number of passengers per subway car on each of these routes would either decrease, or increase by an average of less than one passenger/car. As no subway route operating over capacity would experience a net increase of five or more passengers/car in either peak hour, the Proposed Actions are not expected to result in a significant adverse impact to subway line haul conditions based on the *CEQR Technical Manual* impact criteria previously described in Section F, "Transportation Analyses Methodologies."

Table 14-22
With Action Subway Line Haul Analysis

Peak Period	Route	Direction	Maximum Load Point (leaving station)	Average Trains Per Hour (1)	Average Cars Per Hour	Project Increment	Average Passengers Per Hour	Average Passengers Per Car	Guideline Passengers Per Car (2)	V/C Ratio (3)	Average Additional Passengers per Car
AM	A/C	NB	Hoyt - Schermerhorn Sts	23.5	188	24	24,246	129	169	0.76	0.13
	D/N	NB	36 St	19.4	173	-29	19,680	114	140	0.81	-0.17
	F	NB	2 Av	13.5	135	-10	19,125	142	135	1.05	-0.07
	M	NB	Marcy Av	9.3	74	-4	8,903	120	115	1.05	-0.05
	B/Q	NB	7 Av	19.7	176	-21	21,419	122	160	0.76	-0.12
	R	NB	Union St	10.8	86	-1	7,709	90	155	0.58	-0.01
	1	SB	103 St	19.0	191	11	16,773	88	110	0.80	0.06
	6	SB	3 Av - 138 St	20.5	204	-6	19,173	94	110	0.85	-0.03
	A/D	SB	125 St	19.2	154	23	22,688	147	175	0.84	0.15
	B/C	SB	72 St	13.8	110	9	14,263	130	160	0.81	0.08
	E/F	SB	Jackson Hts - Roosevelt Av	25.8	258	8	41,838	162	145	1.12	0.03
	J/Z	SB	Marcy Av	12.7	102	-11	10,240	100	135	0.74	-0.11
	M/R	SB	Elmhurst Av	18.4	148	-2	14,520	98	164	0.60	-0.01
	N/W	SB	Queensboro Plaza	15.1	150	-3	22,339	149	145	1.03	-0.02
	Q	SB	72 St	11.0	110	0	15,664	142	125	1.14	0.00
PM	1	NB	59 St - Columbus Circle	16.1	161	15	18,781	117	110	1.06	0.09
	6	NB	59 St	17.9	179	-6	16,719	93	110	0.85	-0.03
	A/D	NB	59 St - Columbus Circle	17.7	149	31	19,127	128	175	0.73	0.21
	B/C	NB	59 St - Columbus Circle	12.9	103	14	9,994	97	160	0.61	0.14
	E	NB	Lexington Av - 53 St	14.6	146	11	19,694	135	145	0.93	0.08
	F	NB	Lexington Av - 63 St	15.4	147	-2	17,468	119	145	0.82	-0.01
	J/Z	NB	Essex St	11.0	88	-6	11,016	125	135	0.93	-0.07
	M/R	NB	Jackson Hts - Roosevelt Av	16.3	131	-1	11,771	90	161	0.56	-0.01
	N/W	NB	Lexington Av - 59 St	14.3	144	2	15,922	111	145	0.76	0.01
	Q	NB	Lexington Av - 63 St	10.1	118	-3	11,709	99	125	0.79	-0.03
	A/C	SB	Jay St - MetroTech	21.3	181	28	23,697	131	160	0.82	0.15
	D/N	SB	Atlantic Av - Barclays Ctr	17.6	156	-20	16,638	107	140	0.76	-0.13
	F	SB	Broadway - Lafayette St	13.0	134	-10	14,903	111	135	0.82	-0.07
	M	SB	Essex St	9.0	72	-4	7,384	103	115	0.89	-0.06
	B/Q	SB	Atlantic Av - Barclays Ctr	17.6	156	-23	18,972	122	160	0.76	-0.15
	R	SB	Jay St - MetroTech	10.5	84	1	8,753	104	155	0.67	0.01

Notes:

(1) Trains per hour based on 2018 scheduled trains per hour.

(2) Guideline capacities are based on NYCT rush hour loading guidelines, which vary by car type, line, and location based on frequency and type of service.

(4) Volume to guideline capacity ratio.

Shading denotes a significant adverse impact based on *CEQR Technical Manual* criteria.

H. PEDESTRIANS

EXISTING CONDITIONS

During peak periods, the Project Area experiences relatively high volumes of pedestrians, including residents, workers and tourists, along major commercial and retail corridors such as Broadway and Canal Street, as well as along corridors providing access to area subway stations and bus routes. Light to moderate pedestrian flows are more the norm along streets with less commercial activity. As discussed previously in Section E, "Level 2 Screening Assessment," the analysis of pedestrian conditions focuses on a total of 16 pedestrian elements (five sidewalks, nine corner areas and two crosswalks) where net incremental demand would potentially reach the 200 trips/hour *CEQR Technical Manual* analysis threshold in one or more peak periods. As shown in **Figure 14-6**, these elements are located in proximity to the Canal Street (J/N/Q/R/W/Z/6) subway station complex and the cluster of projected development sites at Canal, Lafayette and Centre streets; in proximity to the Canal Street (A/C/E) subway station; and along Lafayette and Great Jones streets adjacent to projected development sites 1 and 2.

SIDEWALKS

The analyzed sidewalks along the north side of Canal Street are relatively wide (approximately 18.7 feet in width to the east of Lafayette Street and 16.8 feet to the west), as is the analyzed sidewalk along the north side of Great Jones Street (15.8 feet). The analyzed sidewalks along the east side of Centre and Thompson Streets are somewhat narrower (10.1 feet and 12.8 feet, respectively). Features typically present along these sidewalks that can reduce the effective width available for pedestrian flow include street furniture such as sign posts, traffic signal and lamp posts, fire hydrants and tree pits, as well as larger installations such as subway stairs and elevators.

Table 14-23 shows the existing effective widths, peak hour pedestrian volumes, average pedestrian space in square feet per pedestrian (ft^2/ped), and platoon-adjusted levels of service at analyzed sidewalks. As shown in **Table 14-23**, the two analyzed sidewalks on Canal Street currently operate at LOS D in the Saturday peak hour. (In both instances, the LOS D conditions would occur at locations where pedestrian flow is constrained by the presence of a subway station elevator within the sidewalk.) Otherwise, these and all other analyzed sidewalks currently operate at an acceptable LOS C or better in all peak hours.

Table 14-23
Existing Sidewalk Conditions

	Location	Sidewalk	Effective Width	Peak Hour Volume				Average Pedestrian Space (ft^2/ped)				Platoon-Adjusted Level of Service			
				AM	MD	PM	SAT	AM	MD	PM	SAT	AM	MD	PM	SAT
S1	Canal St Btwn Lafayette St & Centre St	North	5.3	338	512	586	2,091	215.0	121.8	120.8	32.4	B	B	B	D
S2	Canal St Btwn Lafayette St & Broadway	North	4.8	673	1,038	1,398	2,590	92.2	65.1	47.9	23.8	B	C	C	D
S3	Centre St Btwn Canal St & Hester St	East	6.1	249	524	603	419	309.2	148.5	143.4	202.0	B	B	B	B
S4	Thompson St Btwn Canal St & Grand St	East	6.1	285	166	341	379	297.2	522.0	237.0	200.5	B	B	B	B
S5	Great Jones St Btwn Lafayette St & Bowery	North	7.7	60	183	140	221	1,356.6	471.3	503.2	269.2	A	B	B	B

CORNER AREAS

Table 14-24 shows the average pedestrian space (in ft^2/ped) and levels of service at analyzed corner areas. As shown in **Table 14-24**, all of the analyzed corner areas currently operate at an acceptable LOS C or better in all analyzed peak hours.

CROSSWALKS

The two analyzed crosswalks on Lafayette Street at Canal Street and on Great Jones Street at Lafayette Street are approximately 15 and 12 feet in width, respectively, and both feature high visibility striping. **Table 14-25** shows the peak hour volumes, average pedestrian space (in ft^2/ped), and levels of service at the analyzed crosswalks. As shown in **Table 14-25**, the north crosswalk on Lafayette Street at Canal Street currently operates at a marginal LOS D in the Saturday peak hour; otherwise, both analyzed crosswalks currently operate at an acceptable LOS C or better in all analyzed peak hours.

Table 14-24
Existing Corner Conditions

	Location	Corner	Average Pedestrian Space (ft^2/ped)				Level of Service			
			AM	MD	PM	SAT	AM	MD	PM	SAT
C1	Lafayette St & Great Jones St	NE	467.0	212.1	242.7	103.4	A	A	A	A
C2		SE	195.3	76.6	106.9	40.0	A	A	A	C
C3	Lafayette St & Canal St	NE	117.2	91.7	68.7	36.4	A	A	A	C
C4		NW	83.8	65.7	47.7	24.5	A	A	B	C
C5	Centre St & Canal St	NE	178.8	150.8	128.6	62.9	A	A	A	A
C6		NW	121.3	123.8	96.1	44.6	A	A	A	B
C7	Centre St & Hester St	SE	130.9	95.1	67.6	40.4	A	A	A	B
C8	Lafayette St & Howard St	SE	286.7	260.7	199.6	112.9	A	A	A	A
C9	Bowery & Great Jones St	NW	261.1	133.6	161.1	96.0	A	A	A	A

Table 14-25
Existing Crosswalk Conditions

	Location	Crosswalk	Peak Hour Volume				Average Pedestrian Space (ft^2/ped)				Level of Service			
			AM	MD	PM	SAT	AM	MD	PM	SAT	AM	MD	PM	SAT
X1	Lafayette St & Great Jones St	East	268	707	628	1,433	173.7	67.1	74.7	29.8	A	A	A	C
X2	Lafayette St & Canal St	North	723	902	1,240	2,279	75.6	63.7	46.4	23.1	A	A	B	D

THE FUTURE WITHOUT THE PROPOSED ACTIONS (NO ACTION CONDITION)

Pedestrian volumes along analyzed sidewalks, corner areas and crosswalks are expected to increase during the 2021 through 2031 period due to background growth as well as demand from development projects in the vicinity of the Project Area (see Table 2-10 in Chapter 2, "Land Use,

Zoning, and Public Policy"). Conditions on analyzed sidewalks, corner areas and crosswalks in the No Action condition are discussed below.

SIDEWALKS

Table 14-26 shows the No Action peak hour pedestrian volumes, average pedestrian space, and platoon-adjusted levels of service at analyzed sidewalks. As shown in **Table 14-26**, in the Saturday peak hour the north sidewalk on Canal Street east of Lafayette Street is expected to continue to operate at a marginal LOS D, while the north sidewalk on Canal Street west of Lafayette Street would operate at a congested LOS E compared to LOS D in the existing condition. Otherwise, these and all other analyzed sidewalks are expected to operate at an acceptable LOS C or better in all peak hours.

Table 14-26
No Action Sidewalk Conditions

				Peak Hour Volume				Average Pedestrian Space (ft^2/ped)				Platoon-Adjusted Level of Service			
	Location	Sidewalk	Effective Width	AM	MD	PM	SAT	AM	MD	PM	SAT	AM	MD	PM	SAT
S1	Canal St Btwn Lafayette St & Centre St	North	5.3	410	783	706	2,233	177.1	79.3	100.1	30.1	B	C	B	D
S2	Canal St Btwn Lafayette St & Broadway	North	4.8	751	1,321	1,535	2,743	82.5	50.8	43.4	22.2	C	C	C	E
S3	Centre St Btwn Canal St & Hester St	East	6.1	259	564	633	446	297.3	137.9	136.5	189.7	B	B	B	B
S4	Thompson St Btwn Canal St & Grand St	East	6.1	291	169	347	386	291.1	512.8	323.9	196.8	B	B	B	B
S5	Great Jones St Btwn Lafayette St & Bowery	North	7.7	61	187	142	225	1,334.4	461.2	496.1	264.4	A	B	B	B

CORNER AREAS

Table 14-27 shows the average pedestrian space and levels of service at analyzed corner areas in the No Action condition. As shown in **Table 14-27**, all of the analyzed corner areas are expected to operate at an acceptable LOS C or better in all analyzed peak hours with the exception of the northwest corner at Lafayette and Canal Streets, which is expected to operate at a marginal LOS D in the Saturday peak hour.

Table 14-27
No Action Corner Conditions

			Average Pedestrian Space (ft^2/ped)				Level of Service			
	Location	Corner	AM	MD	PM	SAT	AM	MD	PM	SAT
C1	Lafayette St & Great Jones St	NE	459.3	208.1	238.0	101.3	A	A	A	A
C2		SE	191.3	75.0	104.9	39.0	A	A	A	C
C3	Lafayette St & Canal St	NE	107.5	74.2	63.2	34.2	A	A	A	C
C4		NW	78.0	54.6	44.1	23.0	A	B	B	D
C5	Centre St & Canal St	NE	165.2	123.5	116.4	59.0	A	A	A	B
C6		NW	113.2	102.2	88.3	42.1	A	A	A	B
C7	Centre St & Hester St	SE	127.4	89.6	64.6	38.9	A	A	A	C
C8	Lafayette St & Howard St	SE	282.1	244.5	192.1	109.1	A	A	A	A
C9	Bowery & Great Jones St	NW	256.6	128.6	156.8	93.5	A	A	A	A

CROSSWALKS

Table 14-28 shows the peak hour volumes, average pedestrian space, and levels of service at analyzed crosswalks in the No Action condition. As shown in **Table 14-28**, the north crosswalk on Lafayette Street at Canal Street is expected to remain at a marginal LOS D in the Saturday peak hour; otherwise, both analyzed crosswalks are expected to operate at an acceptable LOS C or better in all analyzed peak hours.

Table 14-28
No Action Crosswalk Conditions

			Peak Hour Volume				Average Pedestrian Space (ft^2/ped)				Level of Service			
	Location	Crosswalk	AM	MD	PM	SAT	AM	MD	PM	SAT	AM	MD	PM	SAT
X1	Lafayette St & Great Jones St	East	273	720	640	1,460	170.4	65.8	73.2	29.1	A	A	A	C
X2	Lafayette St & Canal St	North	796	1,150	1,353	2,405	68.1	49.3	42.2	21.8	A	B	B	D

THE FUTURE WITH THE PROPOSED ACTIONS (WITH ACTION CONDITION)

Incremental pedestrian demand generated by the Proposed Actions by 2031 would include trips made solely by walking, as well as pedestrian trips en route to and from subway station entrances, bus stops and off-site parking. Pedestrian trips generated by the Proposed Actions are expected to be most concentrated in proximity to projected development sites and along corridors connecting these sites to area transit services.

As shown in **Table 14-5**, the Proposed Actions are expected to generate a net total of approximately 807 walk-only trips (in + out combined) in the weekday AM peak hour, 679 in the weekday midday peak hour, 1,190 in the weekday PM peak hour and 1,276 in the Saturday peak hour. Persons en route to and from subway station entrances, bus stops and off-site parking would add approximately 954, 718, 1,166 and 1,163 additional pedestrian trips to Project Area sidewalks and crosswalks during these same periods, respectively. These pedestrian volumes were added to the projected No Action volumes to generate the With Action pedestrian volumes for analysis.

Anticipated conditions and significant adverse impacts at analyzed sidewalks, corner areas and crosswalks in the With Action condition are shown in **Tables 14-29 through 14-31**. As discussed below, one analyzed sidewalk would be impacted in one peak hour, and there would be no impacts to any analyzed corner areas or crosswalks. Potential mitigation for the significant adverse impact to the north sidewalk on Canal Street between Lafayette and Centre Streets during the Saturday peak hour is discussed in Chapter 21, "Mitigation."

SIDEWALKS

Table 14-29 shows the incremental change in peak hour pedestrian volumes attributable to the Proposed Actions and the total With Action pedestrian volumes, average pedestrian space, and platoon-adjusted levels of service at analyzed sidewalks. As shown in **Table 14-29**, under the Proposed Actions, the north sidewalk on Canal Street between Lafayette and Centre Streets, which would continue to operate at LOS D in the Saturday peak hour, would be considered significantly adversely impacted in this period based on the *CEQR Technical Manual* impact

criteria shown in **Table 14-12**. This impact would occur at a point where pedestrian flow is constrained by the presence of a subway station elevator within the sidewalk. Potential mitigation for the significant adverse impact to this stair is discussed in Chapter 21, "Mitigation."

Table 14-29
With Action Sidewalk Conditions

	Location	Sidewalk	Effective Width	Project Increment				Peak Hour Volume				Average Pedestrian Space (ft^2/ped)				Platoon-Adjusted Level of Service			
				AM	MD	PM	SAT	AM	MD	PM	SAT	AM	MD	PM	SAT	AM	MD	PM	SAT
S1	Canal St Btwn Lafayette St & Centre St	North	5.3	246	191	292	347	656	974	998	2,580	110.4	63.4	70.4	25.6	B	C	C	D
S2	Canal St Btwn Lafayette St & Broadway	North	4.8	143	103	204	146	894	1,424	1,739	2,889	69.1	47.0	38.0	20.8	C	C	D	E
S3	Centre St Btwn Canal St & Hester St	East	6.1	153	118	212	233	412	682	845	679	186.7	113.9	102.0	124.4	B	B	B	B
S4	Thompson St Btwn Canal St & Grand St	East	6.1	162	58	190	124	453	227	537	510	186.8	381.7	150.3	148.8	B	B	B	B
S5	Great Jones St Btwn Lafayette St & Bowery	North	7.7	128	189	198	184	189	376	340	409	430.6	229.2	207.0	145.2	B	B	B	B

- shading denotes a significant adverse impact based on *CEQR Technical Manual* criteria.

The north sidewalk on Canal Street between Lafayette Street and Broadway would operate at LOS D in the PM peak hour (versus LOS C in the No Action condition), and LOS E in the Saturday peak hour (unchanged from the No Action). However, this sidewalk would not be considered significantly adversely impacted in either period based on the *CEQR Technical Manual* impact criteria. These two sidewalks would continue to operate an acceptable LOS C or better in the other analyzed peak hours, as would all other analyzed sidewalks in all periods.

CORNER AREAS

Table 14-30 shows the With Action average pedestrian space and levels of service at analyzed corner areas. As shown in **Table 14-30**, under the Proposed Actions, all of the analyzed corner areas are expected to operate at an acceptable LOS C or better in all analyzed peak hours with the exception of the northwest corner at Lafayette and Canal Streets, which is expected to remain at a marginal LOS D in the Saturday peak hour. Based on the *CEQR Technical Manual* impact criteria shown in **Table 14-13**, there would be no significant adverse impacts to any analyzed corner area in any peak hour due to the Proposed Actions.

CROSSWALKS

Table 14-31 shows the incremental change in peak hour pedestrian volumes attributable to the Proposed Actions and the total With Action pedestrian volumes, average pedestrian space, and levels of service at analyzed crosswalks. As shown in **Table 14-31**, under the Proposed Actions, the north crosswalk on Lafayette Street at Canal Street would remain at a marginal LOS D in the Saturday peak hour; otherwise, both analyzed crosswalks are expected to operate at an acceptable LOS C or better in all analyzed peak hours. Based on the *CEQR Technical Manual* criteria shown in **Table 14-13**, there would be significant adverse impacts to either analyzed crosswalk in any peak hour due to the Proposed Actions.

Table 14-30
With Action Corner Conditions

	Location	Corner	Average Pedestrian Space (ft^2/ped)				Level of Service			
			AM	MD	PM	SAT	AM	MD	PM	SAT
C1	Lafayette St & Great Jones St	NE	324.3	167.1	181.2	89.1	A	A	A	A
C2		SE	133.7	58.4	75.7	33.3	A	B	A	C
C3	Lafayette St & Canal St	NE	91.1	71.3	57.1	31.3	A	A	B	C
C4		NW	67.0	50.1	38.8	21.3	A	B	C	D
C5	Centre St & Canal St	NE	135.8	112.7	95.7	51.5	A	A	A	B
C6		NW	93.3	90.8	72.8	36.5	A	A	A	C
C7	Centre St & Hester St	SE	94.1	74.2	48.0	30.8	A	A	B	C
C8	Lafayette St & Howard St	SE	226.9	232.8	154.0	88.0	A	A	A	A
C9	Bowery & Great Jones St	NW	185.9	108.0	125.7	81.0	A	A	A	A

Table 14-31
With Action Crosswalk Conditions

	Location	Crosswalk	Project Increment				Peak Hour Volume				Average Pedestrian Space (ft^2/ped)				Level of Service			
			AM	MD	PM	SAT	AM	MD	PM	SAT	AM	MD	PM	SAT	AM	MD	PM	SAT
X1	Lafayette St & Great Jones St	East	165	221	237	218	438	941	877	1,678	105.0	49.5	52.4	24.9	A	B	B	C
X2	Lafayette St & Canal St	North	143	107	199	145	939	1,257	1,552	2,550	57.0	44.7	36.5	20.4	B	B	C	D

I. STREET USER SAFETY

RECENT DOT INITIATIVES

VISION ZERO MANHATTAN PEDESTRIAN SAFETY ACTION PLAN

The City's Vision Zero initiative seeks to eliminate all deaths from traffic crashes regardless of whether on foot, bicycle, or inside a motor vehicle. In an effort to drive these fatalities down, DOT and the New York City Police Department (NYPD) developed a set of five plans, each of which analyzes the unique conditions of one New York City borough and recommends actions to address the borough's specific challenges to pedestrian safety. These plans pinpoint the conditions and characteristics of pedestrian fatalities and severe injuries; they also identify priority corridors, intersections, and areas that disproportionately account for pedestrian fatalities and severe injuries, prioritizing them for safety interventions. The plans outline a series of recommended actions comprised of engineering, enforcement, and education measures that intend to alter the physical and behavioral conditions on City streets that lead to pedestrian fatality and injury.

The *Vision Zero Manhattan Pedestrian Safety Action Plan* was released on February 18, 2015, and a *Boroughs Pedestrian Safety Action Plan Update* was released in 2019. Based on the 2019 update, much of the Project Area is located within a designated Priority Area where safety issues

were found to occur systematically at an area-wide level. Canal Street between Bowery and Broadway, Houston Street from the FDR Drive to West Street, Second Avenue, and Third Avenue, are all currently identified as Priority Corridors. In addition, the intersections of Canal Street with Bowery, Lafayette Street and Varick Street were identified as Priority Intersections, as was the intersection of Bowery and Hester Street. Actions recommended in the *Vision Zero Manhattan Pedestrian Safety Action Plan* to enhance pedestrian safety in Manhattan are summarized below.

Engineering and Planning

- Implement at least 50 Vision Zero safety engineering improvements at Priority Corridors, Intersections, and Areas citywide, informed by community input
- Expand exclusive pedestrian crossing time, install expanded speed limit signage, and modify signal timing to reduce off-peak speeding on Priority Corridors and Intersections where feasible
- Expand community outreach and engagement with regard to Priority Corridors, Intersections, and Areas
- Consider area-wide policies for Midtown, such as limiting left-turns from major two-way streets, to improve safety and circulation throughout the area.
- Further expand the off-hours delivery program to reduce truck conflicts with pedestrians.
- Coordinate with MTA to ensure bus operations contribute to a safe pedestrian environment
- Expand a bicycle network in Manhattan that improves safety for all road users
- Proactively design for pedestrian safety in high-growth areas in Manhattan

Enforcement

- Deploy speed camera at Priority Corridors, Intersections, and Areas
- Focus enforcement and deploy dedicated resources to Manhattan NYPD precincts that overlap substantially with Priority Areas
- Prioritize targeted enforcement at all Priority Corridors, Intersections, and Areas annually
- Focus failure-to-yield enforcement on nighttime hours (9 p.m. to midnight)
- Initiate a series of targeted truck enforcement blitzes to reduce failure to yield and keep large trucks on truck routes

Education and Awareness Campaigns

- Target child and senior safety education at Priority Corridors and Priority Areas
- Target intensive street-level outreach at Priority Corridors, Intersections, and Areas

SAFE STREETS FOR SENIORS

Safe Streets for Seniors is a pedestrian safety initiative for older New Yorkers. The Safe Streets for Seniors program studies crash data, and then develops and implements mitigation measures to improve the safety of seniors and other pedestrians, as well as all road users in New York City. Under this program, DOT has identified Senior Pedestrian Focus Areas (SPFAs) throughout the city based on the density of senior pedestrian (age 65+) crashes resulting in fatalities or severe injuries in a five-year period, as well as variables such as senior trip generators, concentrations

of senior centers, and senior housing locations. In 2008, DOT designated an SPFA in Chinatown. The northern portion of this SPFA encompasses Canal Street from Bowery to Lafayette Street, and Lafayette and Centre streets as far north as Howard Street. Subsequent improvements implemented along these corridors to address senior concerns have included timing signals for seniors, where feasible, and the installation of new advanced stop bars and new yield to pedestrian signs.

STUDY AREA HIGH CRASH LOCATIONS

Crash data for intersections in the pedestrian study area were obtained from DOT for the three-year period between January 1, 2016, and December 31, 2018 (the most recent three-year period for which data are available). The data quantify the total number of reportable crashes (involving a fatality, injury, or more than $1,000 in property damage) and non-reportable crashes as well as the total number of crashes involving injuries to pedestrians or bicyclists. During the three-year reporting period, a total of 209 reportable and non-reportable crashes, 82 pedestrian/bicyclist-related injury crashes and no fatalities occurred at intersections in the pedestrian study area. **Table 14-32** provides a summary of these crashes by year and location, including a breakdown of pedestrian and bicycle crashes.

Table 14-32
Summary of Motor Vehicle Crash Data 2016-2018

Intersection		Pedestrian Injury Crashes			Bicycle Injury Crashes			Total Pedestrian/Bicyclist Injury Crashes			Total Crashes (Reportable + Non-Reportable)		
		2016	2017	2018	2016	2017	2018	2016	2017	2018	2016	2017	2018
Bowery	E.3rd St/Great Jones St	3	0	1	0	2	0	3	2	1	3	5	5
Broadway	Canal St	5	2	4	0	2	1	5	4	5	10	10	23
Centre St	Canal St	0	3	8	1	4	1	1	7	9	3	11	19
	Hester St	0	1	0	0	0	1	0	1	1	0	1	1
Lafayette St	Canal St	7	6	1	0	1	2	7	7	3	15	14	14
	Howard St	1	1	0	1	0	0	2	1	0	2	3	0
	Great Jones St	0	0	1	2	0	0	2	0	1	2	2	1
Sixth Ave	Canal St/Laight St	4	1	6	2	2	3	6	3	9	13	11	39
Thompson Ave	Grand Ave	0	0	0	0	0	0	0	0	0	1	1	0

5 - denotes a high crash location based on *CEQR Technical Manual* criteria.

According to the *CEQR Technical Manual*, a high crash location is one where there were 48 or more reportable and non-reportable crashes or five or more pedestrian/bicyclist-related crashes in any consecutive 12 months within the most recent three-year period for which data are available. As shown in **Table 14-32**, no study area intersection experienced 48 or more reportable and non-reportable crashes within a consecutive 12-month period during the 2016 to 2018 period. However, four intersections along the Canal Street corridor experienced five or more pedestrian/bicyclist-related crashes in one or more years. These include the intersections of Canal Street at Broadway (in 2016 and 2018), at Centre Street (in 2017 and 2018), at Lafayette Street (in 2016 and 2017), and at Sixth Avenue/Laight Street (in 2016 and 2018). These four intersections are therefore considered high crash locations.

BROADWAY AND CANAL STREET

There were five pedestrian injury crashes and no bicycle injury crashes at this intersection in 2016, two each in 2017, and four pedestrian injury crashes and one bicycle injury crash in 2018. Geometric and operational characteristics affecting safety at this intersection likely include high traffic and pedestrian volumes, including substantial numbers of trucks, and the need for pedestrians to cross six lanes of traffic on Canal Street. A number of measures to enhance pedestrian/bicycle safety have already been implemented at this intersection, including a leading pedestrian interval (LPI) that allows pedestrians to begin crossing Canal Street before vehicles turning from Broadway are permitted to go, high-visibility crosswalks and pedestrian signals with countdown clocks. Sidewalk extensions installed on Canal Street at the northwest and southwest corners of the intersection have shortened the pedestrian crossing distance on the west crosswalk on Canal Street. In addition, NYPD Traffic Enforcement Agents (TEAs) are routinely deployed at this intersection. Deploying additional TEAs and/or extending the times that they are deployed may warrant consideration as a potential safety improvement measure at this intersection.

CENTRE STREET AND CANAL STREET

There were no pedestrian injury crashes and one bicycle injury crash at this intersection in 2016, three pedestrian injury crashes and four bicycle injury crashes in 2017, and eight pedestrian injury crashes and one bicycle injury crash in 2018. Geometric and operational characteristics affecting safety at this intersection likely include high traffic and pedestrian volumes, including substantial numbers of trucks, and the need for pedestrians to cross six lanes of traffic on Canal Street. A number of measures to enhance pedestrian/bicycle safety have already been implemented at this intersection, including high-visibility crosswalks, pedestrian signals with countdown clocks, and the deployment of TEAs.

Improvements to street lighting may warrant consideration as a potential safety improvement measure at this intersection based on the fact that nine of the 17 pedestrian and bicycle crashes occurred during darkness. Modifying the traffic signal timing plan to provide an LPI for pedestrians crossing Canal Street may also warrant consideration.

LAFAYETTE STREET AND CANAL STREET

There were seven pedestrian injury crashes and no bicycle injury crashes at this intersection in 2016, six pedestrian injury crashes and one bicycle injury crash in 2017, and one pedestrian injury crash and two bicycle injury crashes in 2018. Geometric and operational characteristics affecting safety at this intersection likely include high traffic and pedestrian volumes, including substantial numbers of trucks, and the need for pedestrians to cross six lanes of traffic on Canal Street. A number of measures to enhance pedestrian/bicycle safety have already been implemented at this intersection, including high-visibility crosswalks, pedestrian signals with countdown clocks, and the deployment of TEAs.

Improvements to street lighting may warrant consideration as a potential safety improvement measure at this intersection based on the fact that eight of the 17 pedestrian and bicycle crashes occurred during darkness. Modifying the traffic signal timing plan to provide an LPI for pedestrians crossing Canal Street may also warrant consideration.

SIXTH AVENUE AND CANAL STREET/LAIGHT STREET

There were four pedestrian injury crashes and two bicycle injury crashes at this intersection in 2016, one pedestrian injury crash and two bicycle injury crashes in 2017, and six pedestrian injury crashes and three bicycle injury crashes in 2018. Geometric and operational characteristics affecting safety at this intersection likely include high traffic and pedestrian volumes, including substantial numbers of trucks en route to and from the nearby Holland Tunnel, the complex geometry of this five-legged intersection, and long pedestrian crossing distances of up to 105 feet on Canal Street and up to 100 feet on Sixth Avenue. A number of measures that enhance pedestrian/bicycle safety have already been implemented at this intersection, including high-visibility crosswalks, pedestrian signals with countdown clocks, the deployment of TEAs, and left-turn prohibitions on Sixth Avenue and the eastbound Canal Street approach.

Improvements to street lighting may warrant consideration as a potential safety improvement measure at this intersection based on the fact that 10 of the 17 pedestrian and bicycle crashes occurred during darkness. Given the long pedestrian crossing distances on Canal Street, the potential for installing raised medians to provide a pedestrian refuge may also warrant investigation.

J. PARKING

Under the RWCDS for the Proposed Actions, it is assumed that none of the 26 projected development sites would include accessory parking. No new off-street public parking spaces would be provided under the Proposed Actions, and development on five of the projected development sites would displace existing public parking facilities currently located on those sites.

Table 14-33 shows the hourly net incremental change in parking demand for each land use under the Proposed Actions compared to the No Action condition. The forecast of parking demand generated by the Proposed Actions' residential component is based on 2015–2019 five-year ACS data on average vehicles per household for Manhattan Census Tracts 41, 43, 45, 47, 49, 55.01, 55.02, and 57 which encompass the Project Area. Parking demands from all other uses were derived from the forecasts of daily auto trips from these uses.

As shown in **Table 14-33**, parking demand generated by the various commercial, retail, and community facility uses included in the Proposed Actions' RWCDS would typically peak during the midday period, whereas residential parking demand would peak during the overnight period. The net decreases in local retail, office, and light industrial parking demand shown in **Table 14-33** reflect net reductions in these land uses within the Project Area under the With Action condition. Overall, it is estimated that development associated with the Proposed Actions would generate a net incremental parking demand of approximately 286 spaces in the weekday 12 noon—2:00 p.m. midday period (the peak period for commercial and retail demand), and 419 spaces overnight (the peak period for residential demand). As noted previously, it is assumed that none of the 26 projected development sites would include accessory parking. Therefore, this incremental demand would need to be accommodated by on-street curbside parking or in existing off-street public parking facilities.

Table 14-33
RWCDS Net Incremental Weekday Hourly Parking Accumulation by Land Use

	Local Retail	Office	Residential	Destination Retail	Supermarket	Light Industrial	Warehouse	Medical Office	Community Center	Total Demand
12-1 AM	0	0	419	0	0	0	0	0	0	419
1-2	0	0	419	0	0	0	0	0	0	419
2-3	0	0	419	0	0	0	0	0	0	419
3-4	0	0	419	0	0	0	0	0	0	419
4-5	0	0	419	0	0	0	0	0	0	419
5-6	0	0	414	0	0	0	0	0	0	414
6-7	0	0	389	0	0	0	0	0	0	389
7-8	0	-2	353	1	1	-1	0	0	1	353
8-9	0	-12	319	2	1	-4	0	1	1	308
9-10	-3	-19	307	5	1	-6	0	2	1	288
10-11	-3	-19	297	8	1	-7	0	2	1	280
11-12	-2	-16	296	9	2	-6	0	1	1	285
12-1 PM	-2	-14	295	9	2	-6	0	1	1	286
1-2	-2	-14	295	10	1	-6	0	1	1	286
2-3	-2	-18	301	9	1	-7	0	1	2	287
3-4	-2	-18	324	8	1	-7	0	1	3	310
4-5	-2	-12	353	7	1	-6	0	1	3	345
5-6	-2	-6	365	7	1	-3	0	0	2	364
6-7	-1	0	374	7	1	-1	0	0	2	382
7-8	0	0	393	7	0	0	0	0	1	401
8-9	0	0	407	6	0	0	0	0	0	413
9-10	0	0	413	2	0	0	0	0	0	415
10-11	0	0	413	1	0	0	0	0	0	414
11-12	0	0	417	0	0	0	0	0	0	417

In addition to generating new parking demand within the Project Area, new development on five of the projected development sites under the Proposed Actions' RWCDS (Nos. 2, 10, 12, 16 and 20) would displace five existing off-street public parking facilities, all but one of which operates 24-hours daily. As shown in **Table 14-34**, capacity at these five facilities currently totals approximately 474 spaces during daytime hours. As the 53-space parking lot on Projected Development Site 12 closes at 11:00 p.m., capacity during the overnight period currently totals 421 spaces.

Table 14-34
Existing Off-Street Public Parking Facilities on Projected Development Sites

Projected Dev. Site No.	Name	Address	License No.	Hours of Operation	Licensed Capacity
2	Edison Park Fast	375 Lafayette St	926755/ 926760	24Hrs Daily	127
10	Edison Park Fast	174 Centre St	926757	24Hrs Daily	93
12	Park-It	410 Lafayette St	1187631	6:30A-11P, M-F 7A-11P Sa&Su	53
16	Park Soho LLC	81 Mercer St	2089252	24Hrs Daily	21
20	SAM Parking LLC	360 W. Broadway	926039	24Hrs Daily	180
				Total:	**474**

Conservatively assuming that the five parking facilities would be fully utilized in both the midday and overnight periods by the 2031 analysis year, the incremental parking demand attributable to the Proposed Actions would total approximately 760 spaces in the weekday midday (286 spaces of new incremental demand and 474 spaces of displaced capacity), and approximately 840 spaces in the overnight period (419 spaces of new incremental demand and 421 spaces of displaced capacity). As noted previously, under the Proposed Actions' RWCDS, no on-site parking would be provided on projected development sites, and no new off-street public parking would be developed. Therefore, new incremental demand and demand displaced from existing off-street public parking facilities in the 2031 analysis year would need to be accommodated by other off-street public parking facilities, or by on-street parking. Consequently, the Proposed Actions may potentially contribute to, or result in, off-street and on-street parking shortfalls in the weekday midday and overnight periods in the 2031 With Action condition.

As discussed in Section F, "Transportation Analysis Methodologies," in Manhattan, the inability of a proposed project or the surrounding area to accommodate future parking demands would be considered a parking shortfall, but would generally not be considered significant under *CEQR Technical Manual* guidance due to the magnitude of available alternative modes of transportation. Therefore, under the Proposed Actions, any shortfalls in off-street and on-street parking spaces within the Project Area and its vicinity during the weekday midday peak period for commercial and retail demand, and the overnight peak period for residential demand, would not be considered significant. ✷