

9

Transportation

This chapter assesses the potential for the Proposed Project to result in significant adverse impacts on traffic operations and mobility, public transportation facilities and services, pedestrian elements and flow, safety of all roadway users (pedestrians, cyclists, transit users, and motorists), and on- and off- street parking.

Introduction

The Proposed Project is located at the northwest corner of Lexington Avenue and East 42nd Street in Midtown Manhattan. **Figure 9-1** shows the location of the Development Site. The Proposed Project would redevelop the Development Site with approximately 2,992,161 gsf (2,246,515 zsf) of mixed-use development space, including a hotel, office, and public space (the Proposed Project). The Development Site would contain approximately 2,108,820 gross square feet (gsf)¹ of office space; an approximately 452,950-gsf, 500-room hotel; public space; and retail space on the cellar, ground, and second floors of the proposed building. The Proposed Project would also include significant public realm improvements, as well as subway and mass transit improvements to enhance circulation and reduce congestion at Grand Central Terminal (GCT, or the Terminal) and the Grand Central – 42nd Street subway station.

¹ Development may also occur under an All Office Scenario. Under this scenario, the overall building square footage and building massing would be the same as under the Proposed Project but would be comprised of approximately 2,561,770 gsf of office space, retail, and no hotel.

Absent the Proposed Project (the No-Action condition), the Development Site would be redeveloped with 1,682,336 sf of office space, 18,300 sf of retail space, and 5,896 sf of publicly accessible open space.

Table 9-1 summarizes the No-Action condition, With-Action condition, and the net change of component sizes by land use. The Proposed Project consists of an increase of 426,484 sf of office space, 500 hotel rooms (452,950 sf), 25,070 sf of local retail space, and approximately 0.44 acres (19,525 sf) of publicly accessible open space, compared to the No-Action condition.

Use	No-Action Condition	With-Action Condition	Analysis Increment
Office	1,682,336 sf	2,108,820 sf	+426,484 sf
Hotal	0 sf	452,950 sf	+452,950 sf
Hoter	(0 rooms)	(500 rooms)	(500 rooms)
Local Retail	18,300 sf	43,370 sf	+25,070 sf
Publicly Accessible Open	5,896 sf	25,421 sf	+19,525 sf
Space (Passive Open Space)	(0.13 acres)	(0.57 acres)	(0.44 acres)

Table 9-1 Development Increment for Analysis

Figure 9-1 Project Location



Project Area

Principal Conclusions

Traffic

The Proposed Project would generate a total of 217 vehicles per hour (vph) (138 "ins" and 79 "outs") in the AM peak hour, 251 vph (126 "in" and 125 "outs") in the midday peak hour, and 274 (104 "ins" and 170 "outs") in the PM peak hour. Of the 15 intersections analyzed, the Proposed Project would result in significant adverse traffic impacts at 14 intersections during the AM and the midday peak hours, and at all 15 intersections during the <u>AM and PM peak hours, and at 14 intersections during the midday peak hours</u>. The identification and evaluation of traffic capacity improvements available to mitigate these impacts are presented in **Chapter 16, Mitigation**.

Parking

Only a very small percentage of trips made to the major uses proposed for the Development Site (office and hotel space) would be made by auto; the Proposed Project would not include a parking garage. The Proposed Project is expected to generate a need for approximately 125 parking spaces during the area's midday parking peak. The area within a quarter-mile (five minute) walk currently contains 3,166 off-street parking spaces, about 165 spaces of which will be lost to other new developments. Overall, under the With-Action condition parking demand would exceed the off-street parking capacity within a quarter mile of the Development Site. As a result, some of those who choose to drive to the Proposed Project may need to park at facilities just beyond a five-minute walk. As the Proposed Project is located in a transit-rich area, this is not considered to be a significant impact.

Transit

As part of the Proposed Project, a number of transit and public realm improvements would be introduced to enhance passenger circulation conditions at the 42nd Street – Grand Central subway station. These changes include:

- Redesign and expansion of Fare Control Areas (FCA) R238 and R238A, including a new surface to station mezzanine stair (M1) and new subway entrance, which would provide direct connection from East 42nd Street to the subway station.
- A new transit hall, which would contain retail, information screens and booths, and connections to the Terminal, would be constructed on the western side of the Development Site and would expand pedestrian circulation space in the area of GCT's 42nd Street passage.
- > Redesign of the FCA R240 area.
- Removal of girders from the subway mezzanine level to improve circulation and enhance sightlines.
- > A "Short Loop connection" would be constructed to provide direct access to and from the subway for MNR and LIRR riders.

An analysis was conducted for the 42nd Street – Grand Central subway station elements (stairways, escalators, fare control areas, and passageways) during the AM and PM commuter peak hours. The analysis concluded that significant adverse transit impacts would be

expected at five stairs along the northbound and southbound Lexington line platform during the AM peak hour and one stair along the northbound Lexington line platform during the PM peak hour. Two escalators (ES208 and ES210) located at the west end of the Flushing platform would have significant adverse impacts during both the AM and PM peak hours. The identification and evaluation of measures that could mitigate these impacts are discussed in **Chapter 16, Mitigation**.

An assessment of the incremental subway riders for each subway line by direction was also conducted. According to the *2020 CEQR Technical Manual*, subway line-haul impacts are not expected if the increase in subway ridership is less than five riders per subway car. Since the projected peak ridership increase would be below this threshold, a detailed subway line-haul analysis was not needed, and subway line-haul impacts are not expected.

Pedestrians

Pedestrian analyses were performed for four sidewalk elements, six crosswalk elements, and five corner elements for the AM, midday, and PM peak hours. The Proposed Project would include widening of the sidewalks along the Lexington Avenue and East 42nd Street frontages. Of the 15 pedestrian elements analyzed, the Proposed Project would result in significant adverse impacts at one pedestrian element during the AM and PM peak hours, and five pedestrian elements during the midday peak hour. Mitigation measures that could be implemented to mitigate the potential significant adverse pedestrian impacts are discussed in **Chapter 16, Mitigation**.

Vehicular and Pedestrian Safety

Four of the 15 traffic analysis locations have been identified as high crash locations according to New York City Department of Transportation (NYCDOT) criteria since five or more bicycle and/or pedestrian crashes have been recorded at those locations—all along 42nd Street—within a consecutive 12-month period. Many of the crashes reported at these locations involve vehicles crashing into turning vehicles at intersections as well as crashes between vehicles with pedestrians or bicyclists in the intersection. NYCDOT implemented the 42nd Street Transit Improvement Program in late 2019, which included the elimination of one general travel lane and installation of an exclusive bus lane in each direction along 42nd Street, the prohibition of left and right turns at key intersections, and other improvements that are expected to improve bus travel reliability and improve vehicular and pedestrian safety.

Methodology

As discussed in **Chapter 1, Project Description**, for conservative analysis purposes the EIS considers the two building program options to determine the With-Action reasonable worst case development scenario (RWCDS) for each density-based technical area: the Proposed Project with a mix of hotel, commercial office, local retail, and publicly accessible space; and the All Office Scenario, based on the same overall building square footage and building massing as the Proposed Project but comprised of approximately 2,561,770 gsf of office space, retail, and no hotel. In each chapter, where applicable, the EIS analyzes the scenario with the greater potential for impacts. The Proposed Project is expected to generate a higher

volume of vehicular traffic during the weekday midday and PM peak hours as compared to the All Office Scenario, while the All Office Scenario would generate a higher volume of transit and pedestrian trips than the Proposed Project during the analysis peak hours. Since the higher vehicular volume generated by the Proposed Project has the potential to result in greater traffic, parking, noise and air quality impacts than the All Office Scenario, while any transit and pedestrian impacts in the All Office Scenario are expected to be similar to those under the Proposed Project, it was determined that the Proposed Project would be analyzed as the worst case condition for the purposes of Transportation analysis.

According to the 2020 CEQR Technical Manual procedures for transportation analysis, a twotiered screening process is undertaken to determine whether a quantified analysis is necessary. The first step, the Level 1 (Trip Generation) screening, determines whether the volume of peak hour person and vehicle trips generated by the Proposed Project would remain below the minimum thresholds for further study. These thresholds are:

- > 50 peak hour vehicle trip ends;
- > 200 peak hour subway/rail or bus transit riders; and
- > 200 peak hour pedestrian trips.

If the Proposed Project results in increments that would exceed any of these thresholds, a Level 2 (Trip Assignment) screening assessment is performed. Under this assessment, project-generated trips that exceed Level 1 thresholds are assigned to and from the site through their respective networks (streets, bus and subway lines, sidewalks, etc.) based on expected origin-destination patterns and travel routes.

Level 1 Screening Assessment

The travel demand factors used to calculate the projected number of trips were obtained primarily from the 2020 CEQR Technical Manual, US census journey-to-work data, information from recently-certified New York City environmental impact studies such as the Greater East Midtown Rezoning FEIS (2017) and M1 Hotel Zoning Text Amendment FEIS (2018), and other sources. **Table 9-2** provides the travel demand assumptions used for the weekday AM, midday, and PM peak hours.

Table 9-2 Travel Demand Characteristics

		Hotel	Local Retail	Space			
Weekday Person Trip Gen Rate	18.0 ¹	9.4 ¹	205 ¹	44 ¹			
, i	per 1,000 SF	per Room	per 1,000 SF	per acre			
Linked Trip Credit	0%	0%	25%	0%			
	Tempora	al Distribution					
AM Peak Hour	12% ¹	8% ¹	3% ¹	3% ¹			
Midday Peak Hour	15% ¹	14% ¹	19% ¹	5% ¹			
PM Peak Hour	14% ¹	13% ¹	10% ¹	6% ¹			
	Modal Split (AM, PM / Midday)					
Auto	8.4%/2% ^{2,3}	6% ⁴	6% ⁵	5% ⁶			
Тахі	2.0%/2% ^{2,3}	32%4	1% ⁵	1% ⁶			
Bus	13.8%/6% ^{2,3}	2%4	1% ⁵	3% ⁶			
Subway	47.1%/6% ^{2,3}	18%4	1% ⁵	4% ⁶			
Rail	19.3%/0% ^{2,3}	2%4	0% ⁵	0% ⁶			
Walk	9.4%/83% ^{2,3}	40%4	91% ⁵	87% ⁶			
	Vehicle	e Occupancy					
Auto	1.13 ²	1.80 ⁴	1.654	2.90 ⁷			
Тахі	1.40 ³	2.00 ⁴	1.40 ⁴	3.00 ⁷			
	Directiona	al Split (In/Out)					
AM Peak Hour	96%/4% ³	39%/61% ⁴	50% ⁴	55%/45% ⁷			
Midday Peak Hour	48%/52% ³	54%/46% ⁴	50% ⁴	50%/50% ⁷			
PM Peak Hour	5%/95% ³	65%/35% ⁴	50% ⁴	45%/55% ⁷			
Wookday Doliyony Trin Con Pata	0.32 ¹	0.064	0.35 ¹	0.01 ⁷			
Weekday Delivery hip Gen Kate	per 1,000 SF	per Room	per 1,000 SF	per acre			
Delivery Temporal Distribution							
AM Peak Hour	10% ¹	12%4	8% ¹	6%7			
Midday Peak Hour	11% ¹	9% ⁴	11% ¹	6% ⁷			
PM Peak Hour	2% ¹	1%4	2% ¹	1% ⁷			

Delivery trip directional distribution: 50% in / 50% out Source:

¹ 2020 CEQR Technical Manual

² 2012-2016 American Community Survey reverse journey-to-work data for Manhattan Census Tracts 78, 80, 82, 88, 90, 94, 98, 100, and 102

³ Greater East Midtown Rezoning FEIS (2017)

⁴ M1 Hotel Zoning Text Amendment FEIS (2018) – Manhattan below 59th Street site

⁵ NYCDOT survey of local retail in Manhattan transit zone

⁶ Special West Chelsea District Rezoning and High Line Open Space EIS (2005)

⁷ Brooklyn Bridge Park FEIS (2005)

Office

A trip generation rate of 18.0 daily person trips per 1,000 sf for weekday was used for the office use and was obtained from the *2020 CEQR Technical Manual*. Temporal distributions of 12 percent, 15 percent, and 14 percent for the AM, midday, and PM peak hours, respectively, were also obtained from the *2020 CEQR Manual*. The AM, and PM peak hour modal splits of 8.4 percent by auto, 2.0 percent by taxi, 13.8 percent by bus, 47.1 percent by subway, 19.3 percent by rail, and 9.4 percent by walk were obtained from 2012-2016 American Community Survey (ACS) reverse journey-to-work data for Manhattan Census Tracts 78, 80, 82, 88, 90, 92, 94, 98, 100, and 102. The midday peak hour modal split used was 2 percent by auto, 3 percent by taxi, 6 percent by bus, 6 percent by subway, and 83 percent by walk. Vehicle occupancies of 1.13 persons by auto and 1.40 by taxi were obtained from the 2012-2016 ACS reverse journey-to-work data and the *Greater East Midtown Rezoning FEIS (2017)*, respectively. The directional distributions of 96 percent "in", 48 percent "in", and 5 percent "in" were used for the AM, midday, and PM peak hours, respectively, and were based on the *Greater East Midtown Rezoning FEIS (2017)*.

For office delivery trips, a trip generation rate of 0.32 daily truck trips per 1,000 sf and temporal distributions of 10 percent, 11 percent, and 2 percent for the weekday AM, midday, and PM peak hours, respectively, were based on the *2020 CEQR Technical Manual*.

Hotel

Trip generation rates and temporal distributions for the hotel use were obtained from the *2020 CEQR Technical Manual.* The trip generation rate of 9.4 person trips per room for the weekday and temporal distributions of 8 percent, 14 percent, and 13 percent during the AM, midday, and PM peak hours were also obtained from the *2020 CEQR Technical Manual.* Modal splits, vehicle occupancies, and directional distributions were obtained from the *M1 Hotel Zoning Text Amendment FEIS (2018)* for the Manhattan below 59th Street site. The weekday modal splits used were 6 percent by auto, 32 percent by taxi, 2 percent by bus, 18 percent by subway, 2 percent by rail, and 40 percent by walk with vehicle occupancies of 1.80 persons per auto and 2.00 persons per taxi, from the same source. The directional distributions used were 39 percent "in", 54 percent "in", and 65 percent "in" for the AM, midday, and PM peak hours, respectively.

For hotel delivery trips, daily trip generation rates of 0.06 per room and a temporal distribution of 12 percent, 9 percent, and 2 percent for the weekday AM, midday, and PM peak hours, respectively, were obtained from the *M1 Hotel Zoning Text Amendment FEIS (2018)* for the Manhattan below 59th Street site.

Local Retail

For the local retail use, trip generation rates and temporal distributions were obtained from the *2020 CEQR Technical Manual*. The trip generation rate of 205 person trips per 1,000 sf for the weekday and temporal distributions of 3 percent, 19 percent, and 10 percent during the AM, midday, and PM peak hours were assumed. It is anticipated that a portion of these trips would be "linked" trips (e.g., a trip with multiple purposes, such as stopping at a retail store while commuting to or from work, or at lunch time); a credit of 25 percent was assumed as a linked trip credit. Modal splits were obtained from NYCDOT surveys of local retail in Manhattan transit zones; the modal splits used were 6 percent by auto, 1 percent by

taxi, 1 percent by bus, 1 percent by subway, and 91 percent by walk. Vehicle occupancies, and directional distributions were obtained from the *M1 Hotel Zoning Text Amendment FEIS (2018)* for the Manhattan below 59th Street site. Vehicle occupancies of 1.65 persons per auto and 1.40 persons per taxi were used. The directional split was 50 percent "in" for all peaks and the temporal distributions used were 3 percent, 19 percent, and 10 percent for the AM, midday, and PM peak hours, respectively.

For retail delivery trips, daily trip generation rates of 0.35 daily truck trips per 1,000 sf and a temporal distribution of 8 percent, 11 percent, and 2 percent for the weekday AM, midday, and PM peak hours, respectively, were obtained from the *2020 CEQR Technical Manual*.

Passive Open Space

Trip generation rates and temporal distributions for the passive open space were obtained from the *2020 CEQR Technical Manual*. The trip generation rate of 44 person trips per acre for the weekday and temporal distributions of 3 percent, 5 percent, and 6 percent during the AM, midday, and PM peak hours were assumed. Modal splits were obtained from the *Special West Chelsea District Rezoning and High Line Open Space (2009)*. The modal splits used were 5 percent by auto, 1 percent by taxi, 3 percent by bus, 4 percent by subway, and 87 percent by walk. Vehicle occupancies, and directional distributions were obtained from the *Brooklyn Bridge Park FEIS (2005)*. The vehicle occupancies of 2.90 persons per auto and 3.00 persons per taxi were used. The directional distributions used were 55 percent "in", 50 percent "in", and 45 percent "in" for the AM, midday, and PM peak hours, respectively.

For passive open space delivery trips, daily trip generation rates of 0.01 per acre and a temporal distribution of 6 percent, 6 percent, and 1 percent for the weekday AM, midday, and PM peak hours, respectively, were obtained from the *Brooklyn Bridge Park FEIS (2005)*.

Level 1 Screening Results

Transit and Pedestrians

The increased number of person trips generated by the Proposed Project are provided in **Table 9-3** and would exceed the *2020 CEQR Technical Manual* Level 1 screening thresholds for subway and pedestrian trips during analysis peak hours, and for rail trips during only the PM peak hour. Bus trips would not exceed the Level 1 screening thresholds and further analyses are not needed for those modes.

- During the AM peak hour, the project would generate 137 bus trips, 502 subway trips, 186 rail trips, and 1,168 pedestrian trips (walk plus bus, subway and rail).
- During the midday peak hour, the project would generate 90 bus trips, 195 subway trips, 13 rail trips, and 2,182 pedestrian trips (walk plus bus, subway and rail).
- > During the PM peak hour, the project would generate 164 bus trips, 619 subway trips, 219 rail trips, and 1,699 pedestrian trips (walk plus bus, subway and rail).

Since the number of peak hour subway and rail trips, and the number of combined peak hour pedestrian trips expected to be generated by the Proposed Project exceed the CEQR thresholds of 200 pedestrian trips per hour, a Level 2 trip assignment was conducted to determine the scope of the detailed pedestrian, subway, and rail transit analyses.

	AN	AM Peak Hour Midday Peak Ho			Midday Peak Hour		PM Peak Hour		
Mode	In	Out	Total	In	Out	Total	In	Out	Total
Auto	86	20	106	54	52	106	41	111	152
Taxi	66	75	141	135	119	254	130	90	220
Bus	126	11	137	44	46	90	17	147	164
Subway	444	58	502	101	94	195	98	521	619
Rail	174	12	186	7	6	13	18	201	219
Walk	195	148	343	933	951	1,884	339	358	697
Total	1,091	324	1,415	1,274	1,268	2,542	643	1,428	2,071

Table 9-3 Trip Generation Summary – Person Trips

Traffic and Parking

Table 9-4 summarizes the total peak hour vehicular volumes ("ins" plus "outs") for the Proposed Project. The Proposed Project would result in an hourly trip increment of 217 vehicles per hour (vph) during the AM peak hour, 251 vph in the midday peak hour, and 274 vph in PM peak hour. Since the volume of vehicle trips generated by the Proposed Project would exceed the 50-vehicle trip threshold during all peak hours, a Level 2 trip assignment was conducted to determine the scope of the detailed traffic analysis.

Table 9-4 Trip Generation Summary – Vehicle Trips

	A	M Peak H	our	Midday Peak Hour		PM Peak Hour			
Mode	In	Out	Total	In	Out	Total	In	Out	Total
Auto	72	13	85	35	34	69	24	90	114
Тахі	57	57	114	83	83	166	79	79	158
Truck	9	9	18	8	8	16	1	1	2
Total	138	79	217	126	125	251	104	170	274

Level 2 Screening Assessment

As shown above, the number of trips generated by the Proposed Project would exceed the 2020 CEQR Technical Manual Level 1 screening thresholds for vehicle, subway, and pedestrian trips during the peak hours analyzed. Project–generated trips were assigned through the surrounding street network based on expected routes to and from the Development Site.

Traffic

Project-generated vehicle trips were assigned through the surrounding street network based on expected routes to and from the Development Site, the configuration of the street network, and parking facilities within the Development Site vicinity. Since the Proposed Project would not provide parking on-site, auto trips were assigned to park at nearby offstreet parking facilities.

Office

Office auto trip distributions were based upon 2012-2016 ACS reverse journey-to-work data for Manhattan census tracts 78, 80, 82, 88, 90, 92, 94, 98, 100, and 102. Within New York City, approximately 8 percent of the auto trips are assumed to originate from Manhattan, 15 percent from Queens, 7 percent from Brooklyn, 5 percent from the Bronx, and 3 percent from Staten Island. New York counties to the north of New York City (Westchester, Yonkers, and Upstate New York) make up approximately 14 percent of office trips while trips from Long Island are approximately 14 percent of office trips. Approximately 30 percent of office trips are assumed to originate from out of state areas to the west (New Jersey and Pennsylvania) and approximately 4 percent from Connecticut.

Most office auto trips were distributed to use East River and Hudson River crossings. Approximately 34 percent of trips (Queens, Long Island, Brooklyn, and Connecticut trips) were assigned to the Queens-Midtown Tunnel (24 percent) and the Ed Koch Queensboro Bridge (10 percent) crossing the East River to access the study area. Approximately 27 percent of the trips (New Jersey and Staten Island trips) were assigned to the study area using the Lincoln Tunnel. Trips using the highways from the north, such as the Franklin D. Roosevelt (FDR) Drive and Henry Hudson Parkway (Route 9A), account for approximately 29 percent of office trips. FDR Drive office trips from the south account for approximately 5 percent of the trips. The remaining trips would use local north-south streets including Lexington Avenue, Park Avenue, and Second Avenue.

Hotel/Local Retail

The distribution of auto trips that would be generated by hotel and local retail were based on the distributions identified in the *Greater East Midtown Rezoning FEIS (2017)*. Hotel trips were assigned to the regional airports (JFK Airport, LaGuardia Airport, and Newark Airport) and local attractions. Approximately 10 percent of hotel auto trips would originate from the north, 25 percent from the south, 45 percent from the east, and 20 percent from the west. The local retail use is expected to serve the immediate surrounding area; these trips were assigned along local streets in the study area.

Taxi pick-ups and drop-offs were assigned along the 42nd Street and Park Avenue viaduct frontages. Delivery trips were assigned along NYCDOT designated truck routes such as 42nd Street, Lexington Avenue, and Third Avenue. Delivery trips were assigned along truck routes as long as possible until reaching the Development Site's loading area, which is accessed from East 45th Street under the northbound Park Avenue viaduct.

Traffic volume increment maps for the AM, midday, and PM peak hours are shown in **Figure 9-2** through **Figure 9-4**.







Figure 9-3 Traffic Volume Increment – Midday Peak Hour



Figure 9-4 Traffic Volume Increment – PM Peak Hour

Transit and Pedestrians

Transit and pedestrian trips were assigned through the pedestrian network based on logical and direct travel routes to and from the Development Site from neighborhood attractions, GCT, subway stations and/or bus stops, to determine if the number of additional pedestrian trips generated by the Proposed Project would exceed 200 peak hour pedestrian trips at key pedestrian elements (e.g. crosswalks, sidewalks, corner reservoir areas) approaching the site – the threshold for detailed pedestrian analysis. The Development Site is bordered by the Park Avenue viaduct to the west, Lexington Avenue to the east, East 42nd Avenue to the south, and the Graybar Building to the north.

The Development Site is well served by MTA local and express bus service and by commuter bus service such as the North Fork Express, Bee-Line Bus, and Monsey Trails. Bus transit options within the Development Site vicinity include Manhattan buses such as the M1, M2, M3, M4, M42, M101, M102, Queens buses such as the Q32, and express bus services such as the QM21, QM31, QM32, QM34, QM35, QM36, QM40, QM42, QM44, SIM6, SIM11, X27, X28, X37, X38, X63, X64, and X68. Based on 2006-2010 ACS reverse journey-to-work data for commuters using buses to travel to workplaces in the study area, it is estimated that approximately 46 percent of bus trips originate from New Jersey and were assigned to the M42 bus route to travel to and from the Port Authority Bus Terminal, 20 percent originate from within Manhattan and were assigned to the M1, M2, M3, M4 bus routes, 13 percent originate from Staten Island and were assigned to either of the two Staten Island express bus routes, 5 percent originate from Brooklyn and were assigned to the M101 and M102 bus routes, and 5 percent originate from Brooklyn and were assigned to the express bus routes.

The Grand Central-42nd Street station is the City's major commuter hub, providing access to subways and commuter rail service in the heart of Midtown Manhattan. The No. 4, 5 and 6 subway lines serve riders to and from the Bronx and Brooklyn as well as Upper and Lower Manhattan. The No. 7 Flushing line provides service between Flushing, Queens and West Midtown (Times Square and Hudson Yards) after stopping at GCT. The Times Square Shuttle operates between GCT and Times Square. The Proposed Project would generate an increase of 502 and 619 new subway trips during the weekday AM and PM peak hours, respectively. The project would provide direct internal access to the 42nd Street-Grand Central subway station; it is assumed that all subway trips would use these internal connections and not need to use the street network. A detailed analysis will be conducted at this subway station.

GCT is the busiest Metro-North station and is in the process of expanding. As part of the Long Island Rail Road's (LIRR) East Side Access (ESA) project, a new commuter rail connection will be constructed for the LIRR at GCT—providing LIRR commuters with direct train service to GCT as well as to Penn Station—with an expected opening date in late 2022. It's assumed that all rail trips generated by the Proposed Project would use the internal connection provided and would not need to use the street network. With rail trips distributed to the different rail options, it is not expected that rail trips would exceed thresholds for further analyses.

Walk-only pedestrian trips were distributed evenly in all directions due to the centrality of the Development Site and the number of attractions in the Development Site vicinity and then assigned throughout the network.

Pedestrian volume increment maps for the AM, midday, and PM peak hours are shown in **Figure 9-5** through **Figure 9-7**.







Figure 9-6 Pedestrian Volume Increment – Midday Peak Hour





Level 2 Screening Results

Traffic

Based on the vehicular traffic assignments described above, detailed level of service analyses were performed at 15 intersections for the AM, midday, and PM peak hours as shown in **Figure 9-8** and listed below.

- > Second Avenue and East 40th Street
- > Second Avenue and East 42nd Street
- > Third Avenue and East 40th Street
- > Third Avenue and East 42nd Street
- > Lexington Avenue and East 40th Street
- > Lexington Avenue and East 42nd Street
- > Lexington Avenue and East 43rd Street
- > Lexington Avenue and East 44th Street
- > Lexington Avenue and East 45th Street
- > Lexington Avenue and East 46th Street
- > Park Avenue and East 40th Street
- > Madison Avenue and East 42nd Street
- > Fifth Avenue and 42nd Street
- > Sixth Avenue and West 42nd Street
- > Broadway and West 42nd Street

Subway

A detailed transit analysis was conducted for Grand Central-42nd Street station elements. **Figure 9-9** shows the subway and bus options within the vicinity of the Development Site.

An assessment of the incremental subway riders for each subway line (4, 5, 7, and S lines) by direction was conducted and is shown in **Table 9-5** below. According to the *2020 CEQR Technical Manual*, subway line-hail impacts are not expected if the increase in subway ridership is less than five riders per subway car. Since the projected peak ridership increase would be below this threshold (less than one additional rider per car during the commuter peak hours), a detailed subway line-haul analysis is not needed while a detailed analysis of station elements will be needed.

	AM Peak Hour			PM Peak Hour		
Subway Line	Projected Riders	Cars per Hour	Riders Per Car Per Hour	Projected Riders	Cars per Hour	Riders Per Car Per Hour
4/5/6 – Northbound	128	441	0.3	159	447	0.4
4/5/6 – Southbound	148	470	0.3	181	438	0.4
7- Eastbound	117	286	0.4	140	272	0.5
7- Westbound	59	301	0.2	77	268	0.3
Shuttle - Eastbound	44	98	0.4	10	75	0.1
Shuttle – Westbound	6	96	0.1	52	82	0.6

Table 9-5 Subway Line-Haul Screening

Source: Number of cars during the peak hours obtained from NYCT

Pedestrians

Based on the pedestrian assignments described above, detailed pedestrian level of service analyses were performed at the 15 pedestrian elements (crosswalk, corners, and sidewalks) listed below and shown in **Figure 9-10**.

Crosswalks and Corners

- > Lexington Avenue and East 42nd Street north, east, south, and west crosswalks and northwest, northeast, southeast, and southwest corners
- > Madison Avenue and East 42nd Street northeast corner and north and east crosswalks

Sidewalks

- > West sidewalk of Lexington Avenue between East 42nd and 43rd Streets
- > North sidewalk of East 42nd Street between Park and Lexington Avenues
- > North sidewalk of East 42nd Street between Vanderbilt and Park Avenues
- > North sidewalk of East 42nd Street between Madison and Vanderbilt Avenues





Project Area

• Traffic Analysis Location









Detailed Analysis Methodology

This section describes the methodology used for the detailed traffic, subway, and pedestrian analyses.

Traffic

The operation of all signalized and unsignalized intersection analysis locations were assessed using Synchro software which are based on methodologies presented in the *Highway Capacity Manual (HCM)*. The HCM procedures evaluate the levels of service (LOS) for signalized and unsignalized intersections using average stop control delay, in seconds per vehicle, as described below.

- LOS A describes operations with very low delays, i.e., 10.0 seconds or less per vehicle. This occurs when signal progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all.
- LOS B describes operations with delays in excess of 10.0 seconds up to 20.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. Again, most vehicles do not stop at the intersection.
- LOS C describes operations with delays in excess of 20.0 seconds up to 35.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. The number of vehicles stopping is noticeable at this level, although many still pass through the intersection without stopping.
- LOS D describes operations with delays in excess of 35.0 seconds up to 55.0 seconds per vehicle. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity (v/c) ratios. Many vehicles stop, and the proportion of vehicles not stopping declines.
- LOS E describes operations with delays in excess of 55.0 seconds up to 80.0 seconds per vehicle. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios.
- LOS F describes operations with delays in excess of 80.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios with cycle failures. Poor progression and long cycle lengths may also contribute to such delays. Often, vehicles do not pass through the intersection in one signal cycle.

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

For unsignalized intersections, delay is defined as the total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line: LOS A describes

operations with very low delay, i.e., 10.0 seconds or less per vehicle; LOS B describes operations with delays in excess of 10.0 seconds up to 15.0 seconds; LOS C has delays in excess of 15.0 seconds up to 25.0 seconds; LOS D, excess of 25.0 seconds up to 35.0 seconds per vehicle (mid-LOS D is considered to be the limit of acceptable delay); and LOS E, excess of 35.0 seconds up to 50.0 seconds per vehicle. LOS F describes operation with delays in excess of 50.0 seconds per vehicle, which is considered unacceptable to most drivers. This condition exists when there are insufficient gaps of suitable size in a major vehicular traffic stream to allow side street traffic to cross safely.

Significant Impact Criteria

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

For future No-Action LOS A, B, or C conditions that deteriorate to unacceptable LOS D, mitigation to mid-LOS D (45.0 seconds of delay for signalized intersections and 30.0 seconds of delay for unsignalized intersections) is needed to fully mitigate the impact.

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

Parking

The parking analysis identifies the extent to which off-street parking is available and utilized under existing and future conditions. It takes into consideration anticipated changes in area parking supply and provides a comparison of parking needs versus availability to determine if a parking shortfall is likely to result from additional demand generated by the proposed project. This analysis typically encompasses a study area within a quarter mile of the Development Site. If the analysis concludes that there would be a shortfall in parking within the quarter-mile study area, the study area may be extended to a half-mile to identify additional parking supply.

For proposed projects located in Manhattan or other CBD areas², the inability of the proposed project or the surrounding area (on-street and off-street) to accommodate the project's future parking demand is considered a parking shortfall but is generally not considered significant due to the magnitude of available alternative modes of transportation in the area.

² Parking shortfalls in Zone 1 and Zone 2, as identified in the CEQR Technical Manual, are generally not considered to be significant. The Development Site is located within Zone 1.

Transit

The *CEQR Technical Manual* provides methodologies to assess several components of transit operations including the line-haul capacities of bus and subways lines, and the capacity of subway station circulation elements including stairways, escalators, passageway, and fare controls (turnstiles, high entry/exit turnstiles [HEETs], and high exit turnstiles [HXTs]).

Subway Station Elements

Subway station elements are assessed based on the ratio of passenger volume and the capacity of the element (the v/c ratio). The v/c ratio criteria are used to determine the levels of service which are shown in **Table 9-6**. LOS A and LOS B depict free flow and fluid flow conditions, respectively, at a subway station element. Station elements operating at LOS C still exhibit fluid flow but pedestrian activities begin to become somewhat restricted. When conditions become crowded and there is restriction to walking speeds, the station element is considered to be operating at LOS D. At LOS E the station element is considered to be congested. There is shuffling and frequent interactions between pedestrians which result in some queueing. Severe congestion with constant queuing signifies that a station element is operating at LOS F.

LOS	v/c Ratio
А	0.00 to 0.45
В	0.45 to 0.70
С	0.70 to 1.00
D	1.00 to 1.33
E	1.33 to 1.67
F	Above 1.67

Table 9-6 Level of Service Criteria for Subway Station Elements

Source: CEQR Technical Manual

Stairways and passageways are analyzed based on the width of the station element and the 15-minute pedestrian flow passing through. These analyses also take into account pedestrian surging resulting from an arriving train or platooning volumes from a major attraction such as a stadium or school (the effect of surging can reduce capacity by up to 25 percent) and friction from pedestrian interactions (the effect of friction can reduce capacity by up to 10 percent). Other station elements including escalators and turnstiles are measured against the operational capacities designated by New York City Transit (NYCT).

Significant Impact Criteria

Significant impacts to stairs and passageways are determined by the width increment threshold (WIT) between the No-Action and With-Action conditions for elements operating at v/c ratios greater than 1.0 in the With-Action condition. The WIT for significant impacts is detailed in **Table 9-7** below. If a stairway or passageway is significantly impacted, mitigation measures identified would need to restore the levels of service back to the No-Action levels of service or to a v/c ratio of 1.0. For escalators and turnstile elements, a With-Action v/c ratio of 1.0 or greater when the No-Action v/c ratio was less than 1.0 is considered a

significant impact. For these elements where the No-Action v/c ratio is already in excess of 1.0, an incremental change in the v/c ratio of 0.01 would be considered a significant impact.

No-Action	Width Increment Threshold (WIT) for Significant Impacts (Inches)				
v/c Ratio	Stairway	Passageway			
1.00 to 1.09	8.0	13.0			
1.10 to 1.19	7.0	11.5			
1.20 to 1.29	6.0	10.0			
1.30 to 1.39	5.0	8.5			
1.40 to 1.49	4.0	6.0			
1.50 to 1.59	3.0	4.5			
1.60 and up	2.0	3.0			

Table 9-7 Significant Impact Guidance for Stairs and Passageways

Source: CEQR Technical Manual

Pedestrians

Pedestrian level of service standards are determined on the basis of walking speed, pedestrian spacing, and probabilities of pedestrian and vehicular conflict, and are assessed based on the methodologies presented in the *2010 Highway Capacity Manual* and the *CEQR Technical Manual*. These standards are primarily based on the space needs of people involved in various activities and are widely used for planning and design of facilities for pedestrians. Analysis of crosswalks, street corners, and sidewalks along key walking paths to and from the Development Site will be performed to assess the adequacy of these pedestrian elements.

To evaluate sidewalks, the pedestrian flow per unit width (p/ft/min) is calculated based on the pedestrian flow and the effective walkway width³. The analysis of sidewalk conditions should also consider if pedestrian flow is a "non-platoon" flow (pedestrian flow within the peak 15-minute period is relatively uniform) or "platoon" flow. Platooning occurs when pedestrians move in groups or "platoons" as a result of pedestrian metering from a traffic signal, or from attractions such as subway stations or bus stops. The ratio of the walking speed⁴ over the pedestrian flow per unit width determines the average pedestrian space (sf/p).

Crosswalk conditions are expressed as a measurement of the area available (the area consists of the crosswalk width multiplied by the crossing distance) and available pedestrian crossing time. The pedestrian flow is compared to the "time-space" available to determine the crosswalk level of service which is expressed as square feet per pedestrian (sf/p). This analysis also takes account of pedestrian conflicts in the crosswalk with turning vehicles.

³ The effective walkway width is the space along the walkway that pedestrians could use that is free of obstruction. This width also takes account of the "shy distance" (the space between pedestrians and the obstacle such as a wall or building façade).

⁴ The typical average pedestrian walking speed specified in the *CEQR Technical Manual* is 3.5 feet per second (ft/s). For intersections with school crosswalks or that are located within the Senior Pedestrian Focus Areas, an average pedestrian walking speed of 3.0 ft/s is used.

Similar to crosswalks, street corners must provide sufficient space for a mix of standing pedestrians (queued to cross a street) and circulating pedestrians (crossing the other street or passing around the corner). The analysis applies a measure of time and space availability based on the area of the corner reservoir, pedestrian crossing time available, and the estimated time used by circulating pedestrians.

The level of service standards for pedestrian elements are based on the time and space available per pedestrian during the analysis period. Level of service 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 9-8** defines the level of service criteria for crosswalks, corner area, and sidewalk conditions, as per the *2010 HCM*. The *CEQR Technical Manual* identifies acceptable levels of service in Central Business District (CBD) areas (such as the area in this study) as mid-LOS D or better.

The Proposed Project is located in a CBD area, and the pedestrian analysis were analyzed assuming platoon pedestrian flow.

	Side	Corner Reservoirs and	
LOS	Non-Platoon Flow	Platoon Flow	Crosswalks
Α	> 60 sf/p	> 530 sf/p	> 60 sf/p
В	> 40 and \leq 60 sf/p	> 90 and \leq 530 sf/p	> 40 and \leq 60 sf/p
С	> 24 and \leq 40 sf/p	> 40 and \leq 90 sf/p	> 24 and \leq 40 sf/p
D	> 15 and \leq 24 sf/p	> 23 and \leq 40 sf/p	> 15 and \leq 24 sf/p
Е	> 8 and \leq 15 sf/p	> 11 and \leq 23 sf/p	> 8 and \leq 15 sf/p
F	≤ 8 sf/p	≤ 11 sf/p	≤ 8 sf/p

Table 9-8 Level of Service Criteria for Pedestrian Elements

Source: CEQR Technical Manual

Significant Impact Criteria

The identification of significant pedestrian impacts is dependent on the area type (CBD or non-CBD) and is determined by the decrease of time and space available for pedestrians between the No-Action and With-Action conditions. The Project Area and surrounding analysis locations are located in a CBD area. The *CEQR Technical Manual* identifies significant impacts for the pedestrian sidewalk, crosswalk, and corner elements on a sliding scale detailed below. With-Action pedestrian level of service that is considered acceptable (LOS C or better in non-CBD areas, and mid-LOS D or better in CBD areas) would not have a potential for significant impacts.

For sidewalks, the assessment of potential significant impacts is based on a sliding-scale formula provided in the *CEQR Technical Manual*. Consideration as to whether pedestrian flow along the sidewalk is platooning or non-platooning, and whether the sidewalk being analyzed is in a CBD or non-CBD condition is necessary.

For sidewalks with non-platoon pedestrian flow, the formula used to determine the decrease in pedestrian space from the No-Action to With-Action condition that would trigger a significant impact is $Y \ge (X / 9.0) - 0.31$, where Y is the decrease in pedestrian space (sf/p) to be considered a potential significant impact and X is the No-Action pedestrian space (sf/p). If the decrease in pedestrian space is greater than Y and the With-Action level of service is considered to be unacceptable, the sidewalk is considered to be significantly impacted. For sidewalks with platoon pedestrian flow, the formula to determine if the decrease in pedestrian space would trigger a significant impact is $Y \ge X / (9.5 - 0.321)$. **Table 9-9** provides a summary of the sliding-scale guidelines provided in the *CEQR Technical Manual*.

For corners and crosswalks, the assessment of potential significant impacts is also based on a sliding-scale formula provided in the *CEQR Technical Manual*. The formula used to determine the decrease in pedestrian space from the No-Action to With-Action condition that would trigger a significant impact is $Y \ge (X / 9.0) - 0.31$, where Y is the decrease in pedestrian space (sf/p) to be considered a potential significant impact and X is the No-Action pedestrian space (sf/p). If the decrease in pedestrian space is greater than Y and the With-Action level of service is considered to be unacceptable, the corner or crosswalk is considered to be significantly impacted. **Table 9-10** provides a summary of the sliding-scale guidelines provided in the *CEQR Technical Manual*.

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

Table 9-9 Significant Impact Criteria for Sidewalks

Platoon Flow (CBD Areas)

Source: 2020 CEQR Technical Manual

CBD Areas				
No-Action	With-Action			
Ped Space (sf/p)	Ped Space Reduction (sf/p)			
>21.5	With-Action condition <19.5			
21.3 to 21.5	≥ 2.1			
20.4 to 21.2	≥ 2.0			
19.5 to 20.3	≥ 1.9			
18.6 to 19.4	≥ 1.8			
17.7 to 18.5	≥ 1.7			
16.8 to 17.6	≥ 1.6			
15.9 to 16.7	≥ 1.5			
15.0 to 15.8	≥ 1.4			
14.1 to 14.9	≥ 1.3			
13.2 to 14.0	≥ 1.2			
12.3 to 13.1	≥ 1.1			
11.4 to 12.2	≥ 1.0			
10.5 to 11.3	≥ 0.9			
9.6 to 10.4	≥ 0.8			
8.7 to 9.5	≥ 0.7			
7.8 to 8.6	≥ 0.6			
6.9 to 7.7	≥ 0.5			
6.0 to 6.8	≥ 0.4			
5.1 to 5.9	≥ 0.3			
< 5.1	≥ 0.2			

Table 9-10 Significant Impact Criteria for Corners and Crosswalks

Source: 2020 CEQR Technical Manual

Vehicle and Pedestrian Safety

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

Existing Conditions

Traffic

Roadway Network

The roadway network within the study area consists of avenues and streets serving primarily commercial (retail, hotel, and office) space. Forty-second Street, which runs east-west through the study area, is a key roadway traversing Midtown Manhattan with generally two lanes in each direction and curbside parking. Curbside bus lanes are provided in each direction between Third and Lexington Avenues, and Vanderbilt and Sixth Avenues, and in the eastbound direction only between Sixth and Dyer Avenues. Left turn or right turn prohibitions exist along 42nd Street at Lexington, Madison, Fifth, and Sixth Avenues within the traffic study area to facilitate traffic flows along the corridor.

The other east-west roadways in the study area, such as 40th Street, are one-way roadways generally with one travel lane and curb parking/loading on each side.

Lexington Avenue is a one-way southbound avenue located along the east side of the Development Site, and generally consists of three travel lanes with parking along the east curb. The west curbside of Lexington Avenue features a dedicated bus lane north of East 44th Street and south of East 42nd Street. Approaching East 42nd Street, the west curb features a right turn lane, and "No Standing Anytime" regulations between East 43rd and 44th Streets.

Most of the other north-south avenue roadways in the area also feature dedicated bus lanes (with two dual bus lanes along Madison and Fifth Avenues) except for Park Avenue. Park Avenue is a two-way roadway (separated by a median) and generally provides two travel lanes with parking in each direction south of GCT, and three travel lanes with parking in each direction north of GCT. A one-way northbound tunnel exists between East 33rd and 40th Streets under Park Avenue, and Park Avenue is a two-way viaduct between East 40th and 46th Streets that "wraps around" GCT.

Traffic Volumes

To establish the existing conditions traffic network, traffic data for the weekday AM, midday, and PM peak periods were assembled using manual intersection counts and 24-hour Automatic Traffic Recorder (ATR) machine counts from several recent sources. The traffic analysis utilizes recent traffic data conducted in September 2019 and counts conducted by NYCDOT in October 2018, January 2019, October 2019, and November 2019. In addition, due to the Coronavirus pandemic that did not allow for any new counts as of March 2020, count data from the *Greater East Midtown Rezoning FEIS (2017)* were also used to supplement the volume data cited above. The year 2019 was established as the foundation for the existing traffic volume network as the count data assembled were mostly conducted in 2019, specifically the intersections along the 42nd Street and Lexington Avenue corridors. This process was developed in conjunction with New York City Department of City Planning (DCP) and NYCDOT. Physical inventory data from the *Greater East Midtown FEIS* were used and verified for 2019 conditions. Signal timing plans in effect during the time of the counts

were obtained from NYCDOT. The data above were used to determine levels of service for the weekday peak hours of 8 AM to 9 AM, 12 PM to 1 PM, and 5 PM to 6 PM. The peak hours were selected in accordance with the *CEQR Technical Manual* guidance for traffic analyses in Manhattan south of 110th Street.

Travel volumes along eastbound 42nd Street between Second and Sixth Avenues range from approximately 555 vph to 655 vph during the AM and midday peak hours. West of Sixth Avenue, eastbound 42nd Street carries approximately 485 vph during the AM and midday peak hours. During the PM peak hour, eastbound 42nd Street volumes west of Madison Avenue range from approximately 425 vph to 500 vph. Traffic volumes are higher east of Madison Avenue ranging from approximately 600 vph to 660 vph.

Westbound 42nd Street traffic volumes between Second and Seventh Avenues range from approximately 560 vph to 735 vph during the AM and midday peak hours with higher volumes west of Lexington Avenue. Traffic volumes are lower during the PM peak hour; westbound 42nd Street traffic volumes range from approximately 440 vph to 480 vph with an increase in volumes between Lexington and Sixth Avenues (approximately 550 vph to 585 vph).

Traffic volumes along Lexington Avenue range from approximately 945 vph to 1,150 vph during the AM and PM peak hours, and approximately 890 vph to 1,050 vph during the weekday midday peak hour.

Traffic volumes along East 40th Street between Second and Park Avenues range from approximately 265 vph to 400 vph during the peak hours analyzed.

Existing traffic volumes are shown in Figure 9-11 through Figure 9-13.













Levels of Service

Table 9-11 and **Table 9-12** provide an overview of the levels of service that characterize existing "overall" intersection conditions and individual traffic movements, respectively, during the AM, midday, and PM peak hours. Detailed existing traffic levels of service are provided in **Table 9-13**.

Table 9-11 Year 2019 Existing Traffic Level of Service Summary – Overall Intersections

	AM Peak Hour	Midday Peak Hour	PM Peak Hour
Intersections at Overall LOS A/B/C	7	4	6
Intersections at Overall LOS D	6	10	5
Intersections at Overall LOS E	2	1	4
Intersections at Overall LOS F	0	0	0

Note: Includes 15 signalized intersections

Table 9-12 Year 2019 Existing Traffic Level of Service Summary – Traffic Movements

	AM Peak Hour	Midday Peak Hour	PM Peak Hour
Traffic Movements at LOS A/B/C and Acceptable LOS D	37	40	33
Traffic Movements at Unacceptable LOS D	9	4	8
Traffic Movements at LOS E	12	13	15
Traffic Movements at LOS F	0	1	1
Number of Individual Traffic Movements	58	58	57

Note: Number of movements may vary between peak hours due to turn prohibitions, parking regulations, and the presence of de facto left turn movements.
			AM	Peak Hour	r Midday Peak Hour				PM Peak Hour				
Intersection & Approach		Mvt	V/C	Ctrl Delay ¹	LOS	Mvt	V/C	Ctrl Delay ¹	LOS	Mvt	V/C	Ctrl Delay ¹	LOS
Second Avenue and East 40th	Street												
East 40th Street	EB	Т	0.56	30.8	С	Т	0.46	31.3	С	Т	0.70	41.0	D
		R	0.37	29.0	С	R	0.93	71.8	Е	R	0.60	29.4	С
Second Avenue	SB	LT	1.01	29.6	С	LT	1.02	29.1	С	LT	0.89	9.0	А
Overall Intersection ²		-	-	29.8	С	-	-	33.6	С	-	-	12.8	В
Second Avenue and East 42nd	Street												
East 42nd Street	EB	TR	0.89	54.9	D	TR	0.95	34.3	С	TR	0.91	43.9	D
	WB	LT	0.97	62.6	Е	DefL	0.87	71.2	Е	LT	0.90	53.7	D
		-	-	-	-	Т	0.96	54.0	D	-	-	-	-
Second Avenue	SB	LT	0.87	56.4	Е	DefL	0.95	66.2	Е	LT	0.90	72.8	Е
		R	0.73	40.2	D	Т	0.91	35.7	D	R	0.60	31.9	С
		-	-	-	-	R	0.64	36.0	D	-	-	-	-
Overall Intersection ²		-	-	56.0	Е	-	-	42.4	D	-	-	62.6	Е
						•				•			
Third Avenue and East 40th	Street												
East 40th Street	EB	LT	0.67	45.6	D	LT	0.67	20.4	С	LT	0.89	56.8	Е
Third Avenue	NB	Т	0.86	38.3	D	Т	0.91	44.8	D	Т	0.93	66.2	Е
		R	0.54	36.9	D	R	0.74	49.8	D	R	0.78	70.8	Е
Overall Intersection ²		-	-	39.9	D	-	-	39.8	D	-	-	64.3	Ε

		AM Peak Hour			Midday Peak Hour				PM Peak Hour				
Intersection & Approach		Mvt	V/C	Ctrl Delay ¹	LOS	Mvt	V/C	Ctrl Delay ¹	LOS	Mvt	V/C	Ctrl Delay ¹	LOS
Third Avenue and East 42nd	Street												
East 42nd Street	EB	L	0.94	69.7	Е	L	0.80	59.9	Е	L	0.86	69.7	Е
		Т	0.80	22.7	С	Т	1.03	67.1	Е	Т	0.92	48.0	D
	WB	Т	0.74	36.2	D	Т	0.77	55.8	Е	Т	0.52	49.7	D
		R	0.95	77.2	Е	R	0.97	102.5	F	R	1.01	109.5	F
Third Avenue	NB	LT	0.89	27.0	С	LT	0.89	29.9	С	LT	0.82	22.1	С
		R	0.75	30.5	С	R	0.81	44.5	D	R	0.97	65.5	Е
Overall Intersection ²		-	-	33.6	С	-	-	47.2	D	-	-	40.6	D
Lexington Avenue and East 40th	Street									-			
East 40th Street	EB	Т	0.72	34.1	С	Т	0.52	18.6	В	Т	0.49	15.0	В
		R	0.54	42.7	D	R	0.38	35.5	D	R	0.85	51.0	D
Lexington Avenue	SB	LT	0.92	24.7	С	LT	0.89	20.1	С	LT	0.72	5.2	А
Overall Intersection ²		-	-	27.7	С	-	-	20.6	С	-	-	12.1	В
Lexington Avenue and East 42nd	l Street												
East 42nd Street	EB	Т	0.63	43.5	D	TR	1.00	51.2	D	Т	0.92	39.4	D
		R	0.29	49.3	D		-	-	-	R	0.31	23.2	С
	WB	LT	0.75	52.3	D	LT	0.75	14.1	В	LT	0.95	42.0	D
Lexington Avenue	SB	L	0.79	55.5	Е	L	0.82	40.3	D	L	0.90	58.8	Е
		Т	0.81	13.8	В	Т	0.67	13.1	В	Т	0.77	15.6	В
		R	0.86	61.7	Е	R	0.87	44.6	D	R	0.90	50.7	D
Overall Intersection ²	_	-	-	34.9	С	-	-	27.3	С	-	-	31.6	С

			AM Peak Hour Midday Peak Hour				PM Peak Hour						
Intersection & Approach		Mvt	V/C	Ctrl Delay ¹	LOS	Mvt	V/C	Ctrl Delay ¹	LOS	Mvt	V/C	Ctrl Delay ¹	LOS
Lexington Avenue and East 43rd	Street												
East 43rd Street	WB	L	0.41	24.2	С	L	0.55	30.0	С	L	0.73	40.0	D
Lexington Avenue	SB	Т	0.82	16.7	В	Т	1.02	40.4	D	Т	1.01	33.6	С
Overall Intersection ²		-	-	18.0	В	-	-	38.7	D	-	-	34.9	С
Lexington Avenue and East 44th	Street												
Lexington Avenue	SB	LT	0.96	38.9	D	LT	1.00	65.1	Е	LT	1.09	70.5	Е
Overall Intersection		-	-	38.9	D	-	-	65.1	Е	-	-	70.5	E
Lexington Avenue and East 45th	Street												
East 45th Street	WB	DefL	0.52	30.7	С	LT	0.69	32.7	С	LT	0.98	67.3	Е
		Т	0.62	30.3	С	-	-	-	-	-	-	-	-
Lexington Avenue	SB	Т	0.89	48.9	D	Т	0.95	40.2	D	Т	0.95	69.9	Е
		R	0.90	49.1	D	R	0.43	15.2	В	R	0.91	55.3	Е
Overall Intersection		-	-	43.9	D	-	-	37.4	D	-	-	68.0	E
Lexington Avenue and East 46th	Street												
East 46th Street	EB	Т	0.69	32.9	С	Т	0.77	38.2	D	Т	0.69	32.7	С
		R	0.62	36.1	D	R	0.10	19.8	В	R	0.53	31.7	С
Lexington Avenue	SB	LT	0.95	53.3	D	LT	0.89	37.0	D	LT	0.95	52.6	D
Overall Intersection		-	-	47.3	D	-	-	37.0	D	-	-	46.6	D

		AM Peak Hour			Midday Peak Hour			PM Peak Hour					
Intersection & Approach		Mvt	V/C	Ctrl Delay ¹	LOS	Mvt	V/C	Ctrl Delay ¹	LOS	Mvt	V/C	Ctrl Delay ¹	LOS
Park Avenue and East 40th	Street												
East 40th Street (West Side)	EB	TR	0.71	34.7	С	TR	0.94	70.9	Е	TR	0.88	52.8	D
Park Avenue (West Side)	SB	Т	0.86	28.5	С	Т	1.04	62.5	Е	Т	0.95	42.3	D
East 40th Street (Tunnel)	EB	LT	0.49	8.5	А	LT	0.67	12.8	В	LT	0.91	30.1	С
Park Avenue (Tunnel)	NB	Т	0.60	16.5	В	Т	0.52	16.8	В	Т	0.46	16.0	В
East 40th Street (East Side)	EB	LT	0.69	22.1	С	LT	0.90	43.3	D	LT	0.81	15.1	В
Park Avenue (East Side)	NB	TR	0.83	38.8	D	TR	0.74	31.1	С	TR	0.93	51.6	D
Overall Intersection		-	-	24.2	С	-	-	42.1	D	-	-	35.7	D
Madison Avenue and East 42nd	Street												
East 42nd Street	EB	LT	1.04	71.1	Е	LT	0.92	38.0	D	LT	0.91	33.6	С
	WB	Т	1.02	57.6	Е	Т	0.92	34.1	С	Т	0.88	27.6	С
		R	0.08	27.8	С	R	0.31	18.4	В	R	0.10	9.9	А
Madison Avenue	NB	LT	1.00	57.1	Е	LT	1.00	57.8	Е	LT	0.99	55.3	Е
		R	0.59	39.8	D	R	0.21	58.5	Е	R	0.50	35.0	С
Overall Intersection		-	-	60.3	Е	-	-	45.1	D	-	-	41.1	D
Fifth Avenue and 42nd	Street												
42nd Street	EB	Т	0.89	59.0	Е	Т	0.58	22.6	С	Т	0.50	43.8	D
		R	0.14	38.7	D	R	0.17	17.8	В	R	0.10	40.4	D
	WB	LT	0.90	58.2	Е	LT	0.93	27.2	С	LT	0.63	33.6	С
Fifth Avenue	SB	LT	1.00	46.3	D	LT	1.04	59.0	Е	LT	1.04	61.5	Е
		R	0.16	17.4	В	R	0.06	15.2	В	R	0.24	17.3	В
Overall Intersection		-	-	51.6	D	-	-	42.7	D	-	-	50.3	D

			AM Peak Hour			Midday Peak Hour				PM Peak Hour			
Intersection & Approach		Mvt	V/C	Ctrl Delay ¹	LOS	Mvt	V/C	Ctrl Delay ¹	LOS	Mvt	V/C	Ctrl Delay ¹	LOS
Sixth Avenue and West 42nd	Street												
West 42nd Street	EB	LT	0.68	44.1	D	LT	0.54	29.4	С	LT	0.47	35.6	D
	WB	Т	0.63	36.3	D	Т	0.50	17.6	В	Т	0.59	35.3	D
		R	0.76	48.2	D	R	0.95	54.9	D	R	0.92	78.8	Е
Sixth Avenue	NB	LT	0.78	24.7	С	LT	0.67	21.0	С	LT	0.64	21.2	С
		R	0.36	21.3	С	R	0.51	24.6	С	R	0.34	20.5	С
Overall Intersection		-	-	31.7	С	-	-	24.7	С	-	-	31.0	С
Broadway and West 42nd	Street												
West 42nd Street	EB	TR	0.54	14.9	В	TR	0.42	12.8	В	TR	0.48	13.7	В
	WB	LT	1.04	60.7	Е	LT	0.95	64.2	Е	LT	1.02	59.8	Е
Overall Intersection		_	-	38.6	D	-	-	38.0	D	-	-	34.9	С
					-								

¹ Control delay is measured in seconds per vehicle.

 2 Overall intersection v/c ratio is the critical lane groups' v/c ratio.

The summary overview of existing conditions indicates that:

- In the AM peak hour, two intersections operate at LOS E. "Overall" LOS E or F means that serious congestion exists either one specific traffic movement has severe delays or two or more of the specific traffic movements at the intersection are at LOS E or F with significant delays (the overall intersection level of service is a weighted average of all individual traffic movements). Twenty-one individual traffic movements out of 58 movements analyzed operate at unacceptable LOS D, LOS E, or LOS F (e.g. left turns from one street to another, through traffic on one street passing through the intersection, etc.).
- > In the midday peak hour, one intersection operates at LOS E, and 18 individual traffic movements operate at unacceptable LOS D, LOS E, or LOS F.
- > In the PM peak hour, four intersections operate at LOS E, and 24 individual traffic movements operate at unacceptable LOS D, LOS E, or LOS F.

Traffic movements, based on existing conditions, operating at unacceptable levels of service are listed below.

- > Second Avenue and East 40th Street
 - Eastbound East 40th Street right turn movement (midday)
- > Second Avenue and East 42nd Street
 - Eastbound East 42nd Street approach (AM)
 - Westbound East 42nd Street defacto left turn movement (midday)
 - Westbound East 42nd Street through movement (midday)
 - Westbound East 42nd Street approach (AM and PM)
 - Southbound Second Avenue defacto left turn movement (midday)
 - Southbound Second Avenue shared left-through movement (AM and PM)
- > Third Avenue and East 40th Street
 - Eastbound East 40th Street approach (AM and PM)
 - Northbound Third Avenue through movement (PM)
 - Northbound Third Avenue right turn movement (midday and PM)
- > Third Avenue and East 42nd Street
 - Eastbound East 42nd Street left turn movement (AM, midday, and PM)
 - Eastbound East 42nd Street through movement (midday and PM)
 - Westbound East 42nd Street through movement (midday and PM)
 - Westbound East 42nd Street right turn movement (AM, midday, and PM)
 - Northbound Third Avenue right turn movement (PM)
- > Lexington Avenue and East 40th Street
 - Eastbound East 40th Street right turn movement (PM)
- > Lexington Avenue and East 42nd Street
 - Eastbound East 42nd Street right turn movement (AM)
 - Eastbound East 42nd Street approach (midday)
 - Westbound East 42nd Street approach (AM)

- Southbound Lexington Avenue left turn movement (AM and PM)
- Southbound Lexington Avenue right turn movement (AM and PM)
- > Lexington Avenue and East 44th Street
 - Southbound Lexington Avenue approach (midday and PM)
- > Lexington Avenue and East 45th Street
 - Westbound East 45th Street approach (PM)
 - Southbound Lexington Avenue through movement (AM and PM)
 - Southbound Lexington Avenue right turn movement (AM and PM)
- > Lexington Avenue and East 46th Street
 - Southbound Lexington Avenue approach (AM and PM)
- > Park Avenue and East 40th Street
 - Eastbound East 40th Street (West Side) approach (midday and PM)
 - Southbound Park Avenue (West Side) approach (midday)
 - Northbound Park Avenue (East Side) approach (PM)
- > Madison Avenue and East 42nd Street
 - Eastbound East 42nd Street approach (AM)
 - Westbound East 42nd Street through movement (AM)
 - Northbound Madison Avenue shared left-through movement (AM, midday, and PM)
 - Northbound Madison Avenue right turn movement (midday)
- > Fifth Avenue and 42nd Street
 - Eastbound West 42nd Street through movement (AM)
 - Westbound East 42nd Street approach (AM)
 - Southbound Fifth Avenue shared left-through movement (AM, midday and PM)
- > Sixth Avenue and West 42nd Street
 - Westbound West 42nd Street right turn movement (AM, midday, and PM)
- > Broadway and West 42nd Street
 - Westbound West 42nd Street approach (AM, midday, and PM)

Parking

A detailed inventory of off-street parking facilities within a quarter-mile radius of the Development Site was obtained from the *Greater East Midtown Rezoning FEIS*; the parking inventory was conducted in 2016 and was adjusted to 2019 conditions by growing the occupancy rates according to the *CEQR Technical Manual* background growth rates and adding in parking demand of significant developments completed between 2016 and 2019. This quarter-mile distance is considered an acceptable walking distance to and from parking, per the *CEQR Technical Manual*. There are 28 public parking garages within or close to this quarter-mile area, as shown in **Figure 9-14. Table 9-14** presents the capacity and occupancy of the off-street parking facilities during the midday peak period on a typical weekday. The total capacity of the 28 parking garages is 3,166 parking spaces, and they are approximately 66 percent occupied during the midday peak period.



Figure 9-14 Off-Street Parking Inventory

Table 9-14 Off-Street Parking Inventory

Map No.	Location	Licensed Capacity	Midday Peak Period Occupancy
1	LAZ Parking LLC	26	23
I	310 Lexington Avenue		90%
2	MHM Parking LLC	300	225
2	560 Third Avenue		75%
2	Icon Parking – Regal Parking LLC	155	77
5	11 East 38th Street		50%
Λ	Affiliated Parking LLC	25	25
-	23 East 38th Street		100%
	Icon Parking – Affiliated Parking LLC	80	80
5	24 East 39th Street		100%
	261 Madison Avenue		
6	Imperial Parking (U.S.), LLC	21	21
0	35 East 38th Street		100%
7	Imperial Parking US LLC	91	45
,	80 Park Avenue		50%
8	Murray 38 Parking LLC	67	50
0	155 East 38th Street		75%
9	Champion Parking Midtown LLC	86	60
<u>_</u>	224 East 39th Street		70%
10	East 39th Street Realty, LLC	95	76
	221 East 38th Street		80%
11	Park Avenue 39 Parking LLC	150	150
	90 Park Avenue		100%
12	99 Park Avenue Corp.	75	60
	99 Park Avenue		80%
	Quick Park – Alexa QP Garage	124	63
13	107 East 41st Street		50%
	101 Park Avenue		
14	SP+ Westin Hotel Garage	76	23
17	221 East 41st Street		30%
15	City Parking – Eagle One Garage LLC	74	59
15	240 East 41st Street		80%
	Icon Parking	130	78
16	245 East 40th Street		60%
	266 East 41st Street		

Table 9-14 Off-Street Parking Inventory

Map No.	Location	Licensed Capacity	Midday Peak Period Occupancy
17	Quik Park – Alexa QP Garage	77	19
17	101 East 41st Street		25%
10	SP+ Westin Hotel Garage	115	57
10	221 East 41st Street		50%
10	SP+ Parking	90	72
19	60 East 44th Street		90%
20	Park on 44th Corp.	103	41
20	230 East 44th Street		40%
21	SP+ Parking	350	262
21	200 Park Avenue		75%
	GGMC Parking – Seven Eleven Garage	165	82
22	212 East 45th Street		50%
	711 Third Avenue		
	iPark – 45th Street Parking Garage	126	113
23	246 East 45th Street		90%
	Icon Parking – Valor Parking LLC	90	72
24	235 East 45th Street		80%
	Quik Park 485 Garage LLC	100	75
25	149 East 46th Street		75%
	485 Lexington Avenue		
	iPark – East 47th Garage Corp.	105	94
26	212-214 East 47th Street		90%
	207-217 East 46th Street		
	Manhattan Parking System- Park Ave Corp.	40	20
27	227 Park Avenue		50%
	City Parking	230	62
28	212 East 44th Street		30%
Total		3,166	2,083
			66%

Subways

Subway Station Elements

As discussed in the Level 2 Screening Assessment and Results, project-generated trips at the 42nd Street – Grand Central station are expected to exceed the 200-trip *CEQR Technical Manual* analysis threshold in the AM and PM peak hours.

The 42nd Street – Grand Central subway station is served by the No. 4 and No. 5 express trains and No. 6 local train operating along the Lexington Avenue line. It is also served by the No. 7 express and local trains operating along the Flushing Line as well as the S trains on the Grand Central Shuttle Line.

Lexington Line (4,5,6)

As shown in **Figure 9-15**, the Lexington Line platform is located below the mezzanine level and access is provided primarily via the stairs located on Mezzanine A/B which is served by several fare control areas (R238, R238A, R237, R237A, R237B, R240, and R240A). Fare control areas have associated stairs to the street level and are configured as follows:

- Fare Control Area (FCA) R238 has 16 turnstiles and connects to GCT via the M7 stairway, M3 stairway, escalators ES255 and ES256, and ADA elevator EL 204. FCA R238A is to the immediate west of FCA R238 (aligned with the M3 stairway), has eight turnstiles and also provides a connection to GCT. Riders exit from FCA R238 and R238A onto the north side of East 42nd Street between Park and Lexington Avenues.
- At the south end of Mezzanine, A/B is FCA R237, which has seven turnstiles, and is served by stair O17 which exits to the east side of Park Avenue south of East 42nd Street at the street level. FCA R237 is also served by stair MB2 that leads to the south side of East 42nd Street between Park and Lexington Avenues through the Bowery Savings Bank.
- FCA R237A is northeast of FCA R237 and has one high exit turnstile that leads to the Bowery Savings Bank on the south side of East 42nd Street. East of FCA R237A is FCA R237B, which consists of four turnstiles, and leads to the street through the Chanin Building which is on the south side of East 42nd Street, and to the southeast corner of Lexington Avenue and East 42nd Street.
- > At the north end of Mezzanine, A/B is FCA R240 and FCA R240A, which provide eleven and four turnstiles, respectively. These two fare controls connect to GCT via stair M8/10, to the Chrysler Building via stair O27, and to Lexington Avenue north of 42nd Street via stair M9.

The Lexington Line consists of two island platforms which serve the uptown and downtown express and local tracks. Nine stairways (P10, P12, P14, P16, P18, P20, P22, P24, and P26) connect to the mezzanine to the southbound platform, and eight stairways (P13, P15, P17, P19, P21, P23, P25, and P27) connect to the mezzanine to the northbound platform.

Flushing Line (7)

The Flushing Line platform is located below East 42nd Street, centered beneath Lexington Avenue and under the diagonal Lexington Line island platforms. As shown on **Figure 9-16**, the platform is served by three main vertical circulation cores: one at the western end, one in the center and one at the eastern end of the platform.

Figure 9-15 Station Plan – Mezzanine Level



Figure 9-16 Station Plan – Flushing Line Platform



vhb

Source: NYCT 2013

The western and center vertical circulation cores connect to Lexington Line Mezzanine A/B, and the third core, at the east end of the platform, which connects to the street level. These circulation cores are configured as follows:

- > At the western end of the platform are two switchback escalators (ES207/208, and ES209 /210) that connect to the platform and Lexington Line Mezzanine A/B.
- > At the eastern end of the platform, Stair PL9 leads to two escalators (ES203 and ES204) and one stairway (ML1) up to Fare Control Area (FCA) R241A.
- At the center of the platform, there are two sets of splayed stairs (PL2 and PL3 feeding PL1, and PL5 and PL6 feeding PL4) that lead to a lower mezzanine that has two escalators (ES205 and ES206) extending to Lexington Line Mezzanine A/B. The lower mezzanine also connects to a passageway that extends west below the Lexington Line island platforms. From this passageway, stairs U1/U3 and U5/U7 connect to the southbound Lexington Line platform, and Stairs U2/U4 and U6/U8 connect up to the northbound Lexington Line platform.

Shuttle Line (S)

The Shuttle Line platform area is underneath East 42nd Street primarily between Vanderbilt and Madison Avenues. It is under reconstruction, which will convert a three track/two island platform configuration to a two track/one island platform layout. This wide platform area connects to a paid zone passageway leading to Lexington Line Mezzanine A/B. There are also connections to the street as follows:

- The eastern end of the platform area also connects to Stairs P10S and P11 that lead up to FCA R236, which has twelve turnstiles. The north end of R236 connects to GCT and the shuttle unpaid passageway (leading to R238A and the Lexington Line Mezzanine A/B). There is also a fare control area (R236A) at platform level, which has nine turnstiles and connects into the proposed One Vanderbilt development with access to East 42nd and East 43rd Streets, LIRR and MetroNorth.
- At the western end of the two Shuttle platforms, stair P3-P4 connects up to fare control area R233, which has two high entry/exit turnstiles and one high exit turnstile. There are two street stairs, S1 and O3, that connect FCA R233 to East 42nd Street, west of Madison Avenue. Stair S1 is a sidewalk stair on the north side of East 42nd Street, and Stair O3 is an easement stair in the Carbide Building and is located on the south side of East 42nd Street.

Table 9-15 through **Table 9-19** shows the results of the level of service analyses at the analyzed stairways, escalators, passageway, and fare control areas, respectively. The following analyzed elements at the 42nd Street – Grand Central station operate at LOS D or worse in at least one peak hour in existing conditions.

In the AM peak hour, these include:

- > Lexington Line southbound platform stairs P10, P12, P14, P16
- > Flushing Line platform stairs PL2, PL3, PL6 and PL9
- > Shuttle Line platform stair P10S
- > Free zone stair M9 connecting to the R240 fare control area
- > Free zone stair M7 connecting to the R238 fare control area

- > Escalators ES203 and ES204 by the Flushing East core
- > Escalators ES208 and ES210 by the Flushing West core

In the PM peak hour, these include:

- > Lexington Line northbound platform stairs P13, P15, and P17
- > Flushing Line platform stairs U2/U4, U6/U8, PL3, PL6, and PL9
- > Free zone stair M9 connecting to the R240 fare control area
- > Free zone stair M7 connecting to the R238 fare control area
- > Free zone stair M3 connecting to the R238 fare control area
- > Escalator ES203 by the Flushing East core
- > Escalator ES205 by the Flushing Center core
- > Escalator ES208 by the Flushing West core
- Escalator ES255 connecting to the R238 fare control area

Peak	Stairway	Effective Width	Pedestrian Volume Up	Pedestrian Volume Down (15. min)	Friction	Surging Factor	v/c Patio	105
Hour	P10	6.42	377	369	0.90	0.75/1.00	1.01	D
	P12	7.50	347	631	0.90	0.75/1.00	1.08	 D
	P14	7.50	355	847	0.90	0.75/1.00	1.30	D
	P16	7.50	310	657	0.90	0.75/1.00	1.06	D
	P18	7.50	394	145	0.90	0.75/1.00	0.66	В
	P20	6.50	415	89	0.90	0.75/1.00	0.73	С
	P22	6.50	376	264	0.90	0.75/1.00	0.87	С
	P24	6.50	323	414	0.90	0.75/1.00	0.96	С
	P26	6.00	103	22	0.90	0.75/1.00	0.20	А
	P13	7.50	508	235	0.90	0.75/1.00	0.90	С
	P15	7.50	544	247	0.90	0.75/1.00	0.96	С
	P17	7.50	567	235	0.90	0.75/1.00	0.98	С
	P19	7.50	440	153	0.90	0.75/1.00	0.73	С
	P21	6.50	468	57	0.90	0.75/1.00	0.78	С
A N A	P23	6.50	334	57	0.90	0.75/1.00	0.57	В
AW	P25	6.50	416	85	0.90	0.75/1.00	0.73	С
	P27	5.00	123	20	0.90	0.75/1.00	0.27	А
	U1/U3	5.00	322	168	0.90	0.90/0.75	0.86	С
	U5/U7	5.00	258	140	0.90	0.90/0.75	0.70	С
	U2/U4	5.00	241	215	0.90	0.90/0.75	0.82	С
	U6/U8	5.00	197	190	0.90	0.90/0.75	0.70	С
	PL2	6.50	621	251	0.90	0.75/0.95	1.24	D
	PL3	6.50	406	388	0.90	0.75/0.95	1.08	D
	PL5	6.00	455	17	0.90	0.75/0.95	0.77	С
	PL6	6.00	783	57	0.90	0.75/0.95	1.36	E
	PL9	8.75	1,476	155	0.90	0.75/0.95	1.80	F
	ML1	5.00	0	155	0.90	0.75/1.00	0.23	А
	P10S	14.00	912	757	0.90	0.75/1.00	1.04	D
	P11	8.00	349	189	0.90	0.75/1.00	0.61	В
	P3-P4	13.50	256	28	0.90	0.75/1.00	0.20	А

Table 9-15 2019 Existing Subway Station Level of Service - Stairways

Peak	.	Effective Width	Pedestrian Volume Up	Pedestrian Volume Down	Friction	Surging Factor	v/c	
Hour	Stairway	(††)	(15-min)	(15-min)	Factor	(Up/Down)	Ratio	LOS
	P10	0.42	100	240	0.90	0.75/1.00	0.45	A
	P12	7.50	108	439	0.90	0.75/1.00	0.58	В
	P14	7.50	107	5/6	0.90	0.75/1.00	0.71	C
	P16	7.50	82	456	0.90	0.75/1.00	0.56	В
	P18	7.50	77	195	0.90	0.75/1.00	0.29	A
	P20	6.50	66	117	0.90	0.75/1.00	0.23	A
	P22	6.50	56	347	0.90	0.75/1.00	0.48	В
	P24	6.50	41	544	0.90	0.75/1.00	0.68	В
	P26	6.00	18	156	0.90	0.75/1.00	0.22	А
	P13	7.50	613	540	0.90	0.75/1.00	1.34	E
	P15	7.50	499	574	0.90	0.75/1.00	1.22	D
	P17	7.50	487	420	0.90	0.75/1.00	1.06	D
	P19	7.50	362	279	0.90	0.75/1.00	0.75	С
	P21	6.50	217	146	0.90	0.75/1.00	0.50	В
	P23	6.50	141	304	0.90	0.75/1.00	0.56	В
PIM	P25	6.50	160	470	0.90	0.75/1.00	0.78	С
	P27	5.00	94	140	0.90	0.75/1.00	0.39	А
	U1/U3	5.00	55	237	0.90	0.90/0.75	0.56	В
	U5/U7	5.00	45	195	0.90	0.90/0.75	0.46	В
	U2/U4	5.00	55	567	0.90	0.90/0.75	1.21	D
	U6/U8	5.00	45	478	0.90	0.90/0.75	1.02	D
	PL2	6.50	111	547	0.90	0.75/0.95	0.82	С
	PL3	6.50	76	815	0.90	0.75/0.95	1.09	D
	PL5	6.00	77	374	0.90	0.75/0.95	0.61	В
	PL6	6.00	130	824	0.90	0.75/0.95	1.29	D
	PL9	8.75	110	1,069	0.90	0.75/0.95	1.08	D
	ML1	5.00	0	53	0.90	0.75/1.00	0.08	А
	P10S	14.00	649	738	0.90	0.75/1.00	0.85	C
	P11	8.00	276	184	0.90	0.75/1.00	0.51	В
	P3-P4	13.50	15	335	0.90	0.75/1.00	0.19	А

Table 9-15 2019 Existing Subway Station Level of Service - Stairways

Note: Methodology based on 2020 CEQR Technical Manual guidelines

Peak Hour	Stairway	Effective Width (ft)	Pedestrian Volume Up (15-min)	Pedestrian Volume Down (15-min)	Friction Factor	Surging Factor (Up/Down)	v/c Ratio	LOS
	M8/10	17.70	865	697	0.90	0.90/1.00	0.69	В
	M9	12.50	1,648	248	0.90	0.90/1.00	1.23	D
	O27	10.75	385	28	0.90	0.90/1.00	0.31	А
	M7	8.75	540	1,111	0.90	0.90/1.00	1.45	Е
AM	M3	10.25	544	964	1.00	0.95/1.00	1.00	С
	S10	4.00	409	37	0.90	1.00/1.00	0.83	С
	S11	4.00	349	74	0.90	1.00/1.00	0.78	С
	S1	3.75	64	7	0.90	0.80/1.00	0.17	А
	O3	7.75	192	21	0.90	0.80/1.00	0.25	А
	M8/10	17.7	458	456	0.90	0.90/1.00	0.40	А
	M9	12.50	250	1,829	0.90	0.90/1.00	1.25	D
	O27	10.75	47	493	0.90	0.90/1.00	0.38	А
	M7	8.75	685	925	0.90	0.90/1.00	1.43	Е
PM	M3	10.25	396	1,174	0.90	0.95/1.00	1.03	D
	S10	4.00	37	240	0.90	1.00/1.00	0.51	В
	S11	4.00	36	459	0.90	1.00/1.00	0.92	С
	S1	3.75	4	84	0.90	0.80/1.00	0.17	А
	O3	7.75	11	251	0.90	0.80/1.00	0.25	А

Table 9-16 2019 Existing Subway Station Level of Service – Free Zone Stairs

Note: Methodology based on 2020 CEQR Technical Manual guidelines

		Tread	Pedestrian	Pedestrian				
Peak		Width	Volume Up	Volume Down	Surging		v/c	
Hour	Escalator	(in)	(15-min)	(15-min)	Factor	Capacity	Ratio	LOS
	ES203	32	738	0	0.80	750	1.23	D
	ES204	32	738	0	0.80	750	1.23	D
	ES205	40	624	0	0.80	945	0.83	С
	ES206	40	624	0	0.80	945	0.83	С
AIVI	ES208	40	737	0	0.75	945	1.04	D
	ES210	40	737	0	0.75	945	1.04	D
	ES255	40	887	0	0.95	945	0.99	С
	ES256	40	890	0	0.95	945	0.99	С
	ES203	32	0	1,015	1.00	750	1.35	E
	ES204	32	110	0	0.80	750	0.18	А
	ES205	40	0	1,084	1.00	945	1.15	D
DM	ES206	40	193	0	0.80	945	0.26	А
PIVI	ES208	40	0	1,117	1.00	945	1.18	D
	ES210	40	285	0	0.75	945	0.40	А
	ES255	40	0	1,012	1.00	945	1.07	D
	ES256	40	893	0	0.95	945	0.99	С

Table 9-17 2019 Existing Subway Station Level of Service – Escalators

Note: Methodology based on 2020 CEQR Technical Manual guidelines

Table 9-18 2019 Existing Subway Station Level of Service – Passageway

Passageway	Peak Hour	Effective Width (ft)	Pedestrian Volume West (15-min)	Pedestrian Volume East (15-min)	Friction Factor	Surging Factor (West/East)	v/c Ratio	LOS
Passageway between	AM	15	603	442	0.90	0.95/0.95	0.36	А
Mezzanine A and Shuttle	PM	15	399	398	0.90	0.95/0.95	0.28	А

Note: Methodology based on 2020 CEQR Technical Manual guidelines

Peak	Fare Control		Pedestrian Volume In	Pedestrian Volume Out	Friction Factor	Surging	v/c	
Hour	Area	Control Element	(15-min)	(15-min)	(In/Out)	Factor	Ratio	LOS
	R241A	5 turnstiles	155	1,476	0.90/0.90	0.90	0.65	В
	R240	11 turnstiles	931	2,671	0.90/0.90	0.90	0.69	В
	R240A	4 turnstiles	43	226	0.90/0.90	0.90	0.14	А
	R238	16 turnstiles	973	2,016	0.90/0.90	0.90	0.40	А
	R238A	8 turnstiles	972	565	0.90/0.90	0.90	0.46	В
A N A	R238B	4 turnstiles	155	341	0.90/0.90	0.90	0.27	А
Alvi	R237	7 turnstiles	81	944	0.90/0.90	0.90	0.29	А
	R237A	1 HXT	0	150	0.00/0.90	0.90	0.33	А
	R237B	4 turnstiles	111	757	0.90/0.90	0.90	0.44	А
	R236	12 turnstiles	946	1,261	0.90/0.90	0.80	0.43	А
	R236A	9 turnstiles	0	0	0.90/0.90	0.90	0.00	А
	R233	2 HEETs, 1 HXT	28	256	0.90/0.90	0.80	0.28	А
	R241A	5 turnstiles	1,069	110	0.90/0.90	0.90	0.61	В
	R240	11 turnstiles	2,482	643	0.90/0.90	0.90	0.71	С
	R240A	4 turnstiles	295	112	0.90/0.90	0.90	0.25	А
	R238	16 turnstiles	1,738	1,610	0.90/0.90	0.90	0.48	В
	R238A	8 turnstiles	1,208	276	0.90/0.90	0.90	0.47	В
DM	R238B	4 turnstiles	286	134	0.90/0.90	0.90	0.25	А
PIVI	R237	7 turnstiles	669	88	0.90/0.90	0.90	0.28	А
	R237A	1 HXT	0	14	0.00/0.90	0.90	0.03	А
	R237B	4 turnstiles	699	73	0.90/0.90	0.90	0.50	В
	R236	12 turnstiles	922	925	0.90/0.90	0.80	0.37	А
	R236A	9 turnstiles	0	0	0.90/0.90	0.90	0.00	А
	R233	2 HEETs, 1 HXT	335	15	0.90/0.90	0.80	0.74	С

Table 9-19 2019 Existing Subway Station Level of Service – Fare Control Area

Note:

Methodology based on 2020 CEQR Technical Manual guidelines

HEET = High entry/exit turnstile, HXT = high exit turnstile

Surging factors only apply to exiting volumes. The surge factor for entry volumes in 1.0.

Pedestrians

The pedestrian analysis utilizes counts conducted in September 2019 and additional data conducted by NYCDOT in January and October 2019 to supplement the September 2019 counts. In addition, due to the Coronavirus pandemic, pedestrian data from the *Vanderbilt Corridor and One Vanderbilt FEIS (2015)* were used to supplement the pedestrian analysis volume network. The pedestrian peak hours of 8:15 AM to 9:15 AM, 12:15 PM, to 1:15 PM, and 5:15 PM to 6:15 PM were selected for the existing analysis year of 2019.

The Development Site is located adjacent to GCT and thus the study area is characterized by heavy pedestrian flow to the numerous transit options in the area, as well as to the commercial uses (office and retail). Some of the pedestrian elements (crosswalks, corners, and sidewalks) analyzed currently operate at LOS E or F which reflects a busy commercial area but is also characterized by constrained and slower pedestrian flow. This includes the critical elements adjacent to GCT including the Lexington sidewalk frontage, and corner and crosswalks at the intersection of Lexington at East 42nd Street. As shown in **Table 9-20**, seven pedestrian elements operate at LOS E or F during the AM peak hour, and four pedestrian elements operate at LOS E of F during the midday and PM peak hours.

- Of the four sidewalks analyzed, three operate at mid-LOS D or worse during the AM and PM peak hours (mid-LOS D is the threshold for unacceptable pedestrian level of service for CBD areas) and two sidewalks operate at unacceptable level of service during the midday peak hour.
- Of the six crosswalks analyzed, five operate at unacceptable level of service during the AM peak hour, two crosswalks operate at unacceptable level of service during the midday peak hour, and four crosswalks operate at unacceptable level of service during the PM peak hour.
- > Of the five corner elements analyzed, two corner elements operate at unacceptable level of service during the AM, midday, PM peak hours.

The existing peak hour volumes and levels of service for each pedestrian element analyzed are presented in **Table 9-21** through **Table 9-23**.

		Midday Peak	
	AM Peak Hour	Hour	PM Peak Hour
Sidewalk Elements			
Sidewalks at LOS A/B/C and Acceptable LOS D	1	2	1
Sidewalks at Unacceptable LOS D	1	1	1
Sidewalks at LOS E	1	0	1
Sidewalks at LOS F	1	1	1
Crosswalk Elements			
Crosswalks at LOS A/B/C and Acceptable LOS D	1	4	2
Crosswalks at Unacceptable LOS D	2	0	2
Crosswalks at LOS E	1	0	1
Crosswalks at LOS F	2	2	1
Corner Elements			
Corners at LOS A/B/C and Acceptable LOS D	3	3	3
Corners at Unacceptable LOS D	0	1	2
Corners at LOS E	1	1	0
Corners at LOS F	1	0	0

Table 9-20 Year 2019 Existing Pedestrian Levels of Service Summary

Note: Includes four sidewalk, six crosswalk, and five corner analysis locations

		AM	Peak Ho	ur	Midd	ay Peak H	our	PM Peak Hour			
Sidewalk	Effective Width, ft	Volume, ped/hr	Avg Ped Space, SF/P	Platoon LOS	Volume, ped/hr	Avg Ped Space, SF/P	Platoon LOS	Volume, ped/hr	Avg Ped Space, SF/P	Platoon LOS	
Lexington Avenue between East 42nd Street and East 43rd Street (west side)	5.5	4,825	11.3	E	2,230	25.1	D	3,927	14.3	E	
East 42nd Street between Park Avenue and Lexington Avenue (north side)	12.5	3,340	42.6	С	3,098	48.1	С	3,615	37.0	D	
East 42nd Street between Vanderbilt Avenue and Park Avenue (north side)	12.0	4,207	30.2	D	3,137	44.1	С	5,029	27.0	D	
East 42nd Street between Madison Avenue and Vanderbilt Avenue (north side)	5.0	4,932	8.3	F	4,219	10.9	F	6,598	5.3	F	

Table 9-21 Year 2019 Existing Pedestrian Levels of Service – Sidewalks

Table 9-22 Year 2019 Existing Pedestrian Levels of Service – Crosswalks

		AN	l Peak Hou	ır	Midd	ay Peak Ho	ur	PM Peak Hour			
Intersection	Crosswalk	Volume, ped/hr	Avg Ped Space, SF/P	SOJ	Volume, ped/hr	Avg Ped Space, SF/P	SOJ	Volume, ped/hr	Avg Ped Space, SF/P	SOJ	
	North	2,958	14.3	Е	2,415	20.1	D	2,591	18.1	D	
Lexington	East	1,600	6.6	F	1,736	6.3	F	1,406	8.1	Е	
42nd Street	South	2,177	19.3	D	2,094	21.7	D	2,142	22.7	D	
	West	2,536	3.2	F	2,385	3.3	F	2,673	3.3	F	
Madison	North	2,501	19.4	D	1,841	27.4	С	3,395	15.5	D	
Avenue at East 42nd Street	East	1,822	23.2	D	1,502	32.7	С	1,881	24.5	С	

		AM Peak Hour			Midd	ay Peak H	our	PM Peak Hour			
Intersection	Corner	Volume, ped/hr	Avg Ped Space, SF/P	ros	Volume, ped/hr	Avg Ped Space, SF/P	SOJ	Volume, ped/hr	Avg Ped Space, SF/P	ros	
	Northeast	135	24.0	С	163	25.6	С	229	22.6	D	
Lexington	Southeast	345	28.9	С	290	28.7	С	338	30.3	С	
Avenue at East 42nd Street	Northwest	642	5.60	F	776	13.4	Е	608	15.0	D	
	Southwest	394	14.3	Е	281	19.3	D	346	18.5	D	
Madison Avenue at East 42nd Street	Northeast	247	37.4	С	281	46.8	В	412	25.1	С	

Table 9-23 Year 2019 Existing Pedestrian Levels of Service – Corners

No-Action Conditions

Traffic

Traffic Volumes

This section establishes the baseline (No-Action) condition against which potential impacts of the project can be identified. Future year conditions were analyzed for the year 2030. No-Action traffic, pedestrian, and transit volumes were established by applying a background growth rate of 0.25 percent per year for the first five years (years 2020 to 2024) and a growth rate of 0.125 percent per year for the subsequent six years (years 2024 to 2030) in accordance with *CEQR Technical Manual* guidelines for Manhattan projects. This background growth is applied to existing traffic volumes and accounts for smaller projects and general increases in travel demand. As detailed in **Chapter 2, Land Use, Zoning, and Public Policy**, several developments are being planned and will be expected to be developed by the year 2030 within the study area. Fifteen projects were identified in consultation with NYCDCP to be incorporated in the 2030 No-Action condition analyses, totaling approximately 2,800 residential units, 11.4 million sf office/trading floor space, 945 hotel rooms, and 413,000 sf of retail space; these projects are detailed in **Table 9-24**. No-Action traffic volume maps for the AM, midday, and PM peak hours are provided in **Figure 9-17** through **Figure 9-19**.

Table 9-24 Background Development Projects

No.	Project Name/Address	Description	Projected Completion Date
1	GEM Projected Site 6 250 Park Avenue	682,902 sf office space 24,969 sf retail space	2023
2	GEM Projected Site 7 300 Park Avenue	859,763 sf office space 34,050 sf retail space	2024
3	GEM Projected Site 9 485 Lexington Avenue	1,067,794 sf office space 46,125 sf retail space	2029
4	GEM Projected Site 10 111 East 48th Street	892,566 sf office space 41,170 sf retail space	2027
5	GEM Projected Site 11 541 Lexington Avenue	572,384 sf office space 24,725 sf retail space	2026
6	GEM Projected Site 16 214 East 45th Street	947,069 sf office space 43,684 sf retail space	2030
7	516-520 Fifth Avenue	234 hotel rooms 35,000 sf retail space	Under construction
8	343 Madison Avenue	832,613 sf office space 5,357 sf retail space	2026
9	One Vanderbilt	1,079,000 sf office space 246,000 sf trading floor 80,000 sf retail space	2021
10	686-700 Third Avenue	361 hotel rooms 7,500 sf retail space	To be completed by 2030
11	270 Park Avenue	2,420,609 sf office space	2024
12	Waldorf-Astoria Hotel	375 residential units 350 hotel rooms	2022
13	138 East 50th Street	124 residential units 7,5000 sf retail space	2019
14	First Avenue Properties (700 and 708 First Avenue)	2,275 residential units 1,532,437 sf office space 62,744 sf retail space	To be completed by 2030
15	350 Park Avenue	187,406 sf office space 9,925 sf retail space	To be completed by 2030

Note: Projected development sites analyzed in the Greater East Midtown Rezoning FEIS (2017) are identified as "GEM Projected Sites"













Absent the Proposed Project, the Development Site would be redeveloped with approximately 1,682,630 sf of office space, 18,300 sf of retail space, and 5,729 sf of publicly accessible open space. Access to the proposed office space would be provided along both East 42nd Street and Lexington Avenue frontages, and within the Lexington Passageway. Retail space would be provided along the street frontages and internally within GCT.

Roadway Improvements

Roadway improvement projects were identified within the study area including the 42nd Street Transit Improvement Project, protected bike lanes along Third and Sixth Avenues, the Vanderbilt Avenue pedestrian plaza, a complete street project along Fifth Avenue, expansion of public space at Pershing Square, and extension of the west sidewalk along Lexington Avenue. The 42nd Street Transit Improvement Project reduced one general travel lane in each direction along the entirety of 42nd Street and introduced one consistent bus lane in each direction along 42nd Street. As part of this project, left and right turn restrictions along 42nd Street at Lexington and Sixth Avenues were also incorporated. This project was implemented in late 2019, after the existing conditions traffic counts were conducted.

NYCDOT proposed the implementation of protected bike lanes along Third Avenue between East 26th Street and East 135th Street and along Sixth Avenue between West 35th Street and Central Park South. These projects would reduce the number of northbound Third and Sixth Avenues travel lanes by one and introduce a bike lane with a striped buffer along the west side of the avenues. The complete streets project along Fifth Avenue would also introduce a protected bike lane along Fifth Avenue and would reduce the amount of travel lanes to one through lane with an additional left turn lane at specific locations.

As part of the One Vanderbilt development, the portion of Vanderbilt Avenue between East 42nd and East 43rd Streets will be closed to vehicular traffic and a pedestrian plaza will be created to improve pedestrian safety and circulation. The No-Action condition traffic volumes were adjusted to reroute traffic currently using this street segment to other nearby roadways. Two projects are expected to be complete at Pershing Square to provide more pedestrian circulation space in the study area; Park Avenue between East 41st and East 42nd Streets were closed prior to the existing condition traffic counts.

On Lexington Avenue, the west sidewalk will be extended by 10 feet between East 42nd Street and East 52nd Street; the number of southbound travel lanes will be reduced by one to accommodate the expansion. Corner curb extensions were also identified along the east side of Lexington Avenue at East 41st, East 45th, and East 46th Streets. 44th, East 45th, and East 46th Streets. NYCDOT has continued development of the Lexington Avenue sidewalk improvement project since the issuance of the DEIS and, in addition to the measures identified above, the updated plan will also include an extension of the Lexington Avenue bus lane to East 42nd Street (the bus lane currently ends at East 44th Street) and prohibition of left turns from southbound Lexington Avenue onto 42nd Street. These changes to the project plan were incorporated as part of the FEIS analysis.

In addition, it is expected that roadways closed in the existing conditions will be reopened. Specifically, it is expected that the Park Avenue Tunnel, which was closed to vehicular traffic for a rehabilitation project, would reopen in 2021. The No-Action condition traffic volumes were adjusted to distribute traffic from Park Avenue to reflect typical usage of the tunnel prior to its closure.

Levels of Service

Based on the traffic volume increases and traffic operations changes mentioned above, the 2030 No-Action traffic levels of service were determined for the 15 analysis locations. **Table 9-25** and **Table 9-26** provide an overview of the levels of service that are projected to characterize the No-Action "overall" intersection conditions and individual traffic movements, respectively, during the AM, midday, and PM peak hours. Detailed traffic levels of service are provided in **Table 9-27**.

Table 9-25 Year 2030 No-Action Traffic Level of Service Summary – Overall Intersections

		Existing		No-Action						
	AM Peak Hour	Midday Peak Hour	PM Peak Hour	AM Peak Hour	Midday Peak Hour	PM Peak Hour				
Intersections at Overall LOS A/B/C	7	4	6	1	2	1				
Intersections at Overall LOS D	6	10	5	1	1	1				
Intersections at Overall LOS E	2	1	4	<u>2</u>	<u>1</u>	<u>1</u>				
Intersections at Overall LOS F	0	0	0	<u>11</u>	<u>11</u>	<u>12</u>				

Note: Includes 15 signalized intersections

Table 9-26 Year 2030 No-Action Traffic Level of Service Summary – Traffic Movements

		Existing		No-Action					
	AM Peak Hour	Midday Peak Hour	PM Peak Hour	AM Peak Hour	Midday Peak Hour	PM Peak Hour			
Traffic Movements at LOS A/B/C and Acceptable LOS D	37	40	33	21	25	<u>19</u>			
Traffic Movements at Unacceptable LOS D	9	4	8	9	<u>5</u>	<u>6</u>			
Traffic Movements at LOS E	12	13	15	<u>34</u>	<u>8</u>	<u>8</u>			
Traffic Movements at LOS F	0	1	1	32	<u>27</u>	<u>31</u>			
Number of Individual Traffic Movements	58	58	57	<u>65</u>	<u>65</u>	65			

Note: Number of movements may vary between peak hours due to turn prohibitions, parking regulations, and the presence of de facto left turn movements.

		AM Peak Hour					Midday	/ Peak Hour		PM Peak Hour			
				Ctrl								Ctrl	
Intersection & Approac	h	Mvt	V/C	Delay ¹	LOS	Mvt	V/C	Ctrl Delay ¹	LOS	Mvt	V/C	Delay ¹	LOS
Second Avenue and East 40	th Stro	eet				-				-			
East 40th Street	EB	Т	0. <u>70</u>	33. <u>4</u>	С	Т	0. <u>49</u>	32. <u>4</u>	С	Т	0. <u>93</u>	<u>67.9</u>	Е
		R	0.44	30.0	С	R	0.99	85. <u>7</u>	F	R	0.72	37. <u>0</u>	D
Second Avenue	SB	LT	1. <u>15</u>	<u>80.3</u>	F	LT	1.21	<u>108.5</u>	F	LT	1. <u>08</u>	54. <u>3</u>	D
Overall Intersection		-	-	<u>71.5</u>	Ε	-	-	<u>100.1</u>	F	-	-	<u>54.1</u>	D
Second Avenue and East 42	nd Str	eet											
East 42nd Street	EB	Т	1. <u>00</u>	<u>57.9</u>	<u>E</u>	Т	0. <u>68</u>	<u>19.4</u>	<u>B</u>	Т	<u>0.95</u>	<u>40.5</u>	<u>D</u>
		R	0. <u>88</u>	<u>48.6</u>	<u>D</u>	R	1. <u>46</u>	<u>234.7</u>	F	R	1. <u>08</u>	<u>79.2</u>	<u>E</u>
	WB	L	1. <u>32</u>	<u>221.4</u>	F	L	0. <u>70</u>	<u>41</u> .0	<u>D</u>	L	1. <u>01</u>	<u>124.5</u>	F
		Т	1.13	109.6	F	Т	0.98	57.0	Е	Т	1.16	118.8	F
Second Avenue	SB	LT	1. <u>08</u>	<u>80.4</u>	F	DefL	1. <u>52</u>	<u>275.6</u>	F	LT	1. <u>17</u>	<u>109.9</u>	F
		R	1.25	179.0	F	Т	1. <u>04</u>	82.3	F	R	1.09	128.9	F
		-	-	-	-	R	0.97	96.6	F	-	-	-	-
Overall Intersection		-	-	<u>90.3</u>	F	-	-	111. <u>6</u>	F	-	-	<u>102.3</u>	F
Third Avenue and East 40th	Stree	t											
East 40th Street	EB	LT	0. <u>84</u>	50. <u>9</u>	D	LT	0. <u>66</u>	<u>21</u> .8	С	LT	1. <u>04</u>	<u>103.4</u>	F
Third Avenue	NB	Т	1.38	208.3	F	Т	1.38	208.8	F	Т	1.43	228.3	F
		R	0.58	45.4	D	R	0.78	<u>55.2</u>	<u>E</u>	R	0.80	73.8	Е
Overall intersection		-	-	160.9	F	-	-	156. <u>3</u>	F	-	-	190.6	F

			AM Pea	ak Hour			Midday	Peak Hour		PM Peak Hour			
Intersection & Approac	h	Myt		Ctrl	105	Mart	NIC	Ctrl Dolay ¹	105	Mart	N/C	Ctrl Dolay ¹	105
Third Avenue and East 42nd	d Stree	et	v/c	Delay	203	IVIVL	V/C	Clif Delay	103	IVIVL	V/C	Delay	103
East 42nd Street	EB	L	1.06	93.8	F	L	0.80	61.8	E	L	0.92	53.8	D
		Т	0. <u>81</u>	16.7	<u>B</u>	Т	1. <u>11</u>	94.5	F	т	0.92	33.4	C
	WB	т	1.66	324.8	F	Т	1.61	316.8	F	т	1.37	208.7	F
		R	1.23	143.3	F	R	1.14	137.1	F	R	1.23	154.7	F
Third Avenue	NB	L	2.00+	500.0+	F	L	2.00+	500.0+	F	L	2.00+	500.0+	F
		т	1.11	71.2	Е	Т	1.01	69. <u>7</u>	Е	Т	0.94	66.8	Е
		R	2.00+	500.0+	F	R	2.00+	500.0+	F	R	2.00+	500.0+	F
Overall Intersection		-	-	<u>197.6</u>	F	-	-	<u>216.2</u>	F	-	-	304. <u>1</u>	F
Lexington Avenue and East 4 East 40th Street Lexington Avenue	EB SB	T R LT	0.90 0.56 1. <u>02</u>	45.2 41.1 <u>40.4</u>	D D D	T R LT	0.51 0.36 0. <u>86</u>	30.2 45.4 21.9	C D C	T R LT	0.54 0.92 0. <u>79</u>	13.5 41.4 7. <u>1</u>	B D A
Overall Intersection	12nd S	- treet	-	<u>41.5</u>	D	-	-	<u>25.0</u>	С	-	-	12. <u>0</u>	В
Fast 42nd Street	FB	т	0.76	47.9	D	т	0.84	27.1	C	т	1.09	75.8	E
		R	0.23	46.8	D	R	0.09	17.3	B	R	0.10	<u>18.1</u>	В
	WB	LT	1.52	277.3	F	LT	1.39	199.9	F	LT	2.00+	500.0+	F
Lexington Avenue	<u>SB</u>	Т	1. <u>37</u>	<u>184.8</u>	F	Т	1. <u>09</u>	<u>65.8</u>	Е	Т	1. <u>27</u>	<u>142.5</u>	F
		R	1.09	83.6	F	R	0.77	<u>30.1</u>	С	R	0.96	<u>45.3</u>	D
Overall Intersection		-	-	<u>167.3</u>	F	-	-	<u>91</u> .6	F	-	-	<u>225.2</u>	F

	AM Peak Hour						Midday	/ Peak Hour		PM Peak Hour			
Internetion Or America	-1-	N 44		Ctrl	1.00	NA4		Ctril Dalau1		N 4 - 4		Ctrl Dalaul	
		Ινιντ	v/C	Delay	LOS	Ινιντ	v/C	Ctri Delay	LUS	Ινιντ	V/C	Delay	LUS
Lexington Avenue and East	43rd Si	treet											
East 43rd Street	WB	L	0. <u>44</u>	24.9	С	L	0. <u>62</u>	<u>33.5</u>	<u>C</u>	L	0. <u>92</u>	<u>65.8</u>	E
Lexington Avenue	SB	Т	<u>1.32</u>	<u>166.9</u>	<u>F</u>	Т	1. <u>39</u>	<u>197.1</u>	Ē	Т	1. <u>51</u>	<u>250.1</u>	<u>F</u>
Overall Intersection		-	-	<u>141.8</u>	<u>F</u>	-	-	<u>166.0</u>	<u>F</u>	-	-	<u>209.1</u>	<u>F</u>
Lexington Avenue and East	44th St	treet											
Lexington Avenue	SB	LT	1. <u>81</u>	<u>385.1</u>	F	LT	1. <u>87</u>	<u>412.6</u>	<u>F</u>	LT	1. <u>97</u>	<u>460.2</u>	F
Overall Intersection		-	-	<u>385.1</u>	F	-	-	<u>412.6</u>	<u>F</u>	-	-	<u>460.2</u>	F
Lexington Avenue and East	45th St	treet											
East 45th Street	WB	DefL	0. <u>56</u>	<u>32.1</u>	С	LT	0.77	37.3	D	LT	1.06	88.9	F
		Т	0.68	32.8	С	-	-	-	-	-	-	-	-
Lexington Avenue	SB	Т	1. <u>60</u>	<u>293.0</u>	F	Т	1. <u>53</u>	<u>267.9</u>	F	Т	1. <u>57</u>	<u>282.8</u>	F
		R	1.23	131. <u>3</u>	F	R	0.63	<u>18.0</u>	В	R	1.26	149. <u>01</u>	F
Overall Intersection		-	-	<u>213.4</u>	F	-	-	<u>200.2</u>	F	-	-	<u>217.7</u>	F
Lexington Avenue and East	46th St	treet											
East 46th Street	EB	Т	0. <u>81</u>	<u>40.9</u>	D	Т	0. <u>92</u>	<u>55.0</u>	D	Т	0. <u>92</u>	<u>53.1</u>	D
		R	0. <u>61</u>	<u>35.4</u>	<u>D</u>	R	0. <u>04</u>	18. <u>27</u>	В	R	0.38	26.5	С
Lexington Avenue	SB	LT	1. <u>73</u>	<u>360.2</u>	F	LT	1. <u>49</u>	<u>255.8</u>	F	LT	1. <u>63</u>	<u>314.9</u>	F
Overall Intersection		-	-	<u>264</u> .8	F	-	-	202.0	F	-	-	233.5	F

			AM Pea	ak Hour			Midday	/ Peak Hour		PM Peak Hour			
Intersection & Approac	:h	Mvt	Ctrl vt V/C Delay ¹ LOS				V/C	Ctrl Delay ¹	LOS	Mvt	V/C	Ctrl Delay ¹	LOS
Park Avenue and East 40th	Street												
East 40th Street (West													Е
Side)	EB	TR	0.88	50.9	D	TR	0.96	76.0	Е	TR	0.92	64.6	
Park Avenue (West Side)	SB	Т	0.92	35.3	D	Т	1.11	85.2	F	Т	1.16	106.1	F
East 40th Street (Tunnel)	EB	LT	0.66	12.3	В	LT	0.67	12.6	В	LT	0.97	38.3	D
Park Avenue (Tunnel)	NB	Т	0.70	18.7	В	Т	0.63	18.9	В	Т	0.54	17.4	В
East 40th Street (East													В
Side)	EB	LT	0.92	45.1	D	LT	0.91	45.5	D	LT	0.89	19.1	
Park Avenue (East Side)	NB	TR	0.92	50.6	D	TR	0.72	29.5	С	TR	1.14	112.5	F
Overall Intersection		-	-	32.1	С	-	-	49.9	D	-	-	68.2	Е
Madison Avenue and East 4	l2nd S	treet											
East 42nd Street	EB	L	1.77	380.3	F	L	0.43	17.5	В	L	0.45	17.9	В
		Т	1.53	265.9	F	Т	1.73	357.6	F	Т	1.90	432.2	F
	WB	Т	2.00+	500.0+	F	Т	2.00+	487.3	F	Т	2.00+	500.0+	F
		R	0.08	27.6	С	R	0.32	14.3	В	R	0.10	9.7	А
Madison Avenue	NB	LT	1.12	94.9	F	LT	1.08	80.0	Е	LT	1.10	88.2	F
		R	2.00+	500.0+	F	R	1.20	287.5	F	R	2.00+	500.0+	F
Overall Intersection		-	-	353.1	F	-	-	279.7	F	-	-	372.7	F

			AM Pea	ak Hour			Midday	/ Peak Hour		PM Peak Hour				
Intersection & Approad	ch	Mvt	V/C	Ctrl Delay ¹	LOS	Mvt	V/C	Ctrl Delay ¹	LOS	Mvt	V/C	Ctrl Delay ¹	LOS	
Fifth Avenue and 42nd Stre														
42nd Street	EB	Т	2.00+	500.0+	F	Т	1.23	128.3	F	Т	1.10	93.1	F	
		R	0.66	58.7	Е	R	0.83	54.0	D	R	0.50	55.0	D	
	WB	L	0.00	0.0	А	L	0.00	0.0	А	L	0.00	0.0	А	
		Т	2.00+	500.0+	F	Ţ	1.93	439.1	F	Ţ	1.52	263.5	F	
Fifth Avenue	SB	L	0.05	13.0	В	L	0.15	16.9	В	L	0.08	15.2	В	
		Т	2.00+	500.0+	F	Т	2.00+	500.0+	F	Т	2.00+	500.0+	F	
		R	0.78	133.6	F	R	0.29	56.0	Е	R	1.11	218.2	F	
Overall Intersection		-	-	500.0+	F	-	-	500.0+	F	-	-	500.0+	F	
Sixth Avenue and West 42nd Street														
West 42nd Street	EB	Т	1.47	248.4	F	Т	1.08	88.6	F	Т	0.98	71.1	Е	
	WB	Т	1.46	238.3	F	Т	1.12	83.3	F	Т	1.50	258.5	F	
		R	0.75	41.0	D	R	0.86	28.9	С	R	0.95	52.1	D	
Sixth Avenue	NB	LT	0.97	42.1	D	LT	0.82	26.0	С	LT	0.82	26.6	С	
		R	1.58	347.8	F	R	1.65	356.6	F	R	1.55	333.1	F	
Overall Intersection		-	-	134.8	F	-	-	66.9	E	-	-	100.8	F	

	AM Peak Hour				Midday Peak Hour				PM Peak Hour			
Intersection & Approach	Mvt	V/C	Ctrl Delay ¹	LOS	Mvt	V/C	Ctrl Delay ¹	LOS	Mvt	V/C	Ctrl Delay ¹	LOS
Broadway and West 42nd Street												
West 42nd Street EB	Т	0.91	38.9	D	Т	0.71	20.7	С	Т	0.66	19.0	В
	R	0.45	19.3	В	R	0.27	13.7	В	R	0.75	44.1	D
WB	L	0.87	20.0	В	L	0.77	40.8	D	L	0.79	20.4	С
	Т	1.16	90.9	F	Т	0.97	47.8	D	Т	1.37	185.4	F
Overall Intersection	-	-	56.9	E	-	-	33.1	С	-	-	92.7	F

¹ Control delay is measured in seconds per vehicle.

² Overall intersection v/c ratio is the critical lane groups' v/c ratio.

The summary overview of 2030 No-Action conditions indicates that:

- In the AM peak hour, 13 intersections would operate at overall LOS E or F compared to two in the existing conditions. Forty-fivefour movements would operate at unacceptable LOS D, E, or F compared to 21 in the existing conditions.
- In the midday peak hour, 12 intersections would operate at overall LOS E or F compared to one in the existing conditions. Forty-one movements would operate at unacceptable LOS D, E, or F compared to 18 in the existing conditions.
- In the PM peak hour, 13 intersections would operate at overall LOS E or F compared to four in the existing conditions. Forty-seven<u>five</u> movements would operate at unacceptable LOS D, E, or F compared to 24 in the existing conditions.

The intersections of East 42nd Street with Second, Third, Lexington, Madison, Fifth, and Sixth Avenues at West 42nd Street, Third Avenue at East 40th Street and Lexington Avenue with between East 43rd and 46th Streets would operate at overall LOS E or F during all peak hours analyzed. The intersection of Second Avenue at East 40th Street would operate at LOS E and LOS F during the AM and midday peak hours, respectively. The intersection of Park Avenue at East 40th Street would operate at LOS E during the PM peak hour. Broadway and West 42nd Street would operate at LOS E or F during the AM and PM peak hours.

Based on the analysis results, under No Action conditions, the majority of traffic movements would now, under No-Action conditions, operate at unacceptable levels of service whereas under existing conditions approximately one-third of the traffic movements analyzed in the AM and midday peak hours operate at unacceptable levels of service while just over 70 percent do so in the PM peak hour. The majority of the intersections with at least one traffic movement operating at unacceptable levels of service during the peak hours analyzed under existing conditions would continue to do so during the No-Action condition. Under the No-Action condition, the following intersections would have at least one movement operating at unacceptable levels of service during at least one movement operating at unacceptable levels of service during the No-Action condition.

- > Second Avenue and East 40th Street
 - Eastbound East 40th Street through movement (PM)
 - Eastbound East 40th Street right turn movement (midday)
 - Southbound Second Avenue approach (AM, midday, and PM)
- Second Avenue and East 42nd Street
 - Eastbound East 42nd Street through movement (AM-and PM)
 - Eastbound East 42nd Street right turn movement (AM, midday and PM)
 - Westbound East 42nd Street left turn movement (AM, midday and PM)
 - Westbound East 42nd Street through movement (AM, midday and PM)
 - Southbound Second Avenue shared left-through movement (AM and PM)
 - Southbound Second Avenue defacto left turn movement (midday)
 - Southbound Second Avenue through movement (midday)
 - Southbound Second Avenue right turn movement (AM, midday and PM)
- > Third Avenue and East 40th Street
 - Eastbound East 40th Street approach (AM and PM)
 - Northbound Third Avenue through movement (AM, midday, and PM)
 - Northbound Third Avenue right turn movement (AM, midday and PM)
- > Third Avenue and East 42nd Street
 - Eastbound East 42nd Street left turn movement (AM, midday, and PM)
 - Eastbound East 42nd Street through movement (midday-and PM)
 - Westbound East 42nd Street through movement (AM, midday, and PM)
 - Westbound East 42nd Street right turn movement (AM, midday, and PM)
 - Northbound Third Avenue left turn movement (AM, midday, and PM)
 - Northbound Third Avenue through movement (AM, midday, and PM)
 - Northbound Third Avenue right turn movement (AM, midday, and PM)
- > Lexington Avenue and East 40th Street
 - Eastbound East 42nd Street through movement (AM)
 - Eastbound East 42nd Street right movement (midday)
 - Southbound Lexington Avenue approach (AM)
- > Lexington Avenue and East 42nd Street
 - Eastbound East 42nd Street through movement (AM and PM)
 - Eastbound East 42nd Street right turn movement (AM)
 - Westbound East 42nd Street approach (AM, midday, and PM)
 - Southbound Lexington Avenue left turn movement (AM and PM)
 - Southbound Lexington Avenue through movement (AM, midday, and PM)
 - Southbound Lexington Avenue right turn movement (AM and PM)
- > Lexington Avenue and East 43rd Street
 - Westbound East 43rd Street left turn movement (PM)
 - Southbound Lexington Avenue approach (AM, midday, and PM)
- > Lexington Avenue and East 44th Street
 - Southbound Lexington Avenue approach (AM, midday, and PM)
- > Lexington Avenue and East 45th Street
 - Westbound East 45th Street approach (PM)
 - Southbound Lexington Avenue through movement (AM, midday, and PM)
 - Southbound Lexington Avenue right turn movement (AM and PM)
- > Lexington Avenue and East 46th Street
 - Eastbound East 46th Street through movement (midday and PM)
 - Southbound Lexington Avenue approach (AM, midday, and PM)
- > Park Avenue and East 40th Street
 - Eastbound East 40th Street (West Side) approach (AM, midday, and PM)
 - Southbound Park Avenue (West Side) approach (midday and PM)

- Eastbound East 40th Street (East Side) approach (AM and midday)
- Northbound Park Avenue (East Side) approach (AM and PM)
- > Madison Avenue and East 42nd Street
 - Eastbound East 42nd Street left turn movement (AM)
 - Eastbound 42nd Street through movement (AM, midday, and PM)
 - Westbound East 42nd Street through movement (AM, midday and PM)
 - Northbound Madison Avenue shared left-through movement (AM, midday, and PM)
 - Northbound Madison Avenue right turn movement (AM, midday, and PM)
- > Fifth Avenue and 42nd Street
 - Eastbound West 42nd Street through movement (AM, midday, and PM)
 - Eastbound West 42nd Street right turn movement (AM, midday, and PM)
 - Westbound East 42nd Street through movement (AM, midday, and PM)
 - Southbound Fifth Avenue through movement (AM, midday, and PM)
 - Southbound Fifth Avenue right turn movement (AM, midday, and PM)
- > Sixth Avenue and West 42nd Street
 - Eastbound 42nd Street approach (AM, midday, and PM)
 - Westbound 42nd Street through movement (AM, midday, and PM)
 - Westbound 42nd Street right turn movement (PM)
 - Northbound Sixth Avenue right turn movement (AM, midday, and PM)
- > Broadway and West 42nd Street
 - Westbound West 42nd Street through movement (AM, midday, and PM)

Parking

Between 2019 and 2030, demand for off-street parking is expected to increase due to background growth and the No-Action condition development projects listed in **Table 9-24**. It is expected that 165 off-street parking spaces would be displaced by 2030 and the total capacity within a quarter-mile (five-minute) walk of the Development Site would thus be reduced from 3,166 to 3,001 spaces. Absent the Proposed Actions, the Development Site would be redeveloped as of right and the incremental parking demand during the midday would be 446 parking spaces. The Development Site parking demand plus the increased parking demand as a result of background development projects in the study area would result in a midday parking demand of 3,129 spaces which would exceed the off-street capacity by 128 spaces. Given this projection, some of the area's parking demand would likely extend to other off-street parking facilities just beyond a quarter-mile (five-minute) walk of their final Midtown destination. This is generally not considered an excessive walking distance.

Subways

Subway Station Elements

In order to establish future No-Action conditions at the 42nd Street – Grand Central subway station, it was determined that use of growth rates from the 2020 CEQR Technical Manual would not accurately predict future No-Action conditions due to the expected implementation of substantial large scale transit improvement projects which would affect passenger demand in the study area. Estimates of peak hour trips were instead developed using outputs from the MTA's Regional Transit Forecasting Model (RTFM), similar to the approach for recent studies such as the Greater East Midtown Rezoning FEIS. The RTFM is a model of regional travel in the New York metropolitan area that includes NYCT subway and bus riders, MTA Bus Company riders, commuters using MNR, LIRR, and transit travel to/from New Jersey, automobile travelers to Manhattan or regional transit stops, and people using other travel modes, including taxi, bicycle, and walk. The model uses TransCAD, a transportation planning software package that combines a geographic information system (GIS) with travel demand models and analysis tools. It is based on socioeconomic forecasts developed by the New York Metropolitan Transportation Council (NYMTC); DCP participated in the development of these forecasts by allocating borough-level growth to specific model analysis zones. Forecasts were made to represent the 2030 No-Action condition.

The RTFM data also considered planned improvements such as the LIRR ESA project which is currently under construction. The project is expected to be complete, with LIRR trains serving GCT, in late 2022. The LIRR ESA project will include new tunnels connecting the LIRR Mainline tracks in Queens to GCT via the existing 63rd Street Tunnel under the East River. Additional features include a new passenger concourse with eight tracks and four wide platforms, along with mezzanines and concourses, beneath Park Avenue below GCT's existing lower level. New street level entrances would be provided on the south side of East 47th Street east of Madison Avenue, on the north side of East 48th Street midblock between Park and Madison Avenues. In addition, connections to GCT will include escalators to the Biltmore Room and Dining Concourse.

The RTFM was used to forecast subway, bus, MNR, and LIRR peak period trips at GCT in 2030. These outputs were then used by NYCT Operations Planning to update a detailed model of the 42nd Street – Grand Central subway station. This model outputs trips onto individual circulation elements within the subway station, which then allows for the calculation of Level of Service ratings.

In addition, the changes in subway demand due to regional growth and MTA capital improvements, and projected future development independent of the Proposed Project that would have a potential effect on 2030 subway demand at the analyzed station elements, were included in the No-Action subway analysis.

The results of the analysis of subway station elements for the No-Action condition during the weekday AM and PM peak periods are discussed below. In the No-Action condition, recent improvements to the 42nd Street – Grand Central subway station include new or improved access points, new circulation paths through the One Vanderbilt building, and increases in the operating speed of select escalators. As part of the 343 Madison Avenue project, the following improvements are also included as part of the No-Action condition:

two new platform stairs would be constructed at the east end of the Flushing line platform along with an extension of the transfer passageway at the center core; and the existing PL9 stairs on the Flushing line platform and the U2/U4 and U6/U8 stairs between the Lexington line platform and the transfer passageway would be widened. The Development Site would also introduce on-site and off-site transit improvements including construction of a new surface to mezzanine stairs in FCA R38 (M1), and three ADA elevators and one new street entrance at the 42nd Street – Bryant Park/Fifth Avenue subway station to improve circulation and reduce congestion at those elements

Table 9-28 through **Table 9-32** summarizes the 2030 No-Action AM and PM peak hour levels of service at the analysis locations. Of the analyzed station elements, the following locations are expected to operate at LOS D or worse in at least one peak hour.

In the AM peak hour, these include:

- > Lexington line southbound platform stairs P10, P12, P14, P16, P18, and P24
- > Lexington line northbound platform stairs P13, P15, P17, P19, P21, P23, and P25
- > Flushing line platform stairs U1/U3, U2/U4, U5/U7, U6/U8, PL2, PL3, PL6, PL8, and PL9
- > Free zone stair M9 connecting to the R240 control area
- > Free zone stair M7 connecting to the R238 fare control area
- > Escalators ES203 and ES204 by the Flushing East core
- > Escalators ES208 and ES210 by the Flushing West Core
- > Escalators ES255 and ES256 connecting to the R238 fare control area

In the PM peak hour, these include:

- > Lexington line southbound platform stairs P16, P18 and P24
- > Lexington line northbound platform stairs P13, P15, P17, P19, and P21
- > Flushing line platform stairs U2/U4, PL2, and PL6
- > Free zone stair M9 connecting to the R240 control area
- > Free zone stair M7 connecting to the R238 fare control area
- > Escalator ES203 by the Flushing East core
- > Escalators ES208 and ES210 by the Flushing West Core
- > Escalators ES255 and ES256 connecting to the R238 fare control area

Table 9-28 2	2030 No-Action	Subway Station	Level of Service -	· Stairway
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Peak Hour	Stairway	Effective Width (ft)	Pedestrian Volume Up (15-min)	Pedestrian Volume Down (15-min)	Friction Factor	Surging Factor (Up/Down)	v/c Ratio	LOS
	P10	6.42	569	472	0.90	0.75/1.00	1.42	E
	P12	7.50	331	765	0.90	0.75/1.00	1.19	D
	P14	7.50	427	1,002	0.90	0.75/1.00	1.55	E
	P16	7.50	421	1,071	0.90	0.75/1.00	1.61	E
	P18	7.50	377	716	0.90	0.75/1.00	1.20	D
	P20	6.50	355	150	0.90	0.75/1.00	0.71	С
	P22	6.50	480	212	0.90	0.75/1.00	0.97	С
	P24	6.50	425	331	0.90	0.75/1.00	1.02	D
	P26	6.00	252	50	0.90	0.75/1.00	0.48	В
	P13	7.50	761	348	0.90	0.75/1.00	1.35	Е
	P15	7.50	685	432	0.90	0.75/1.00	1.33	D
	P17	7.50	717	419	0.90	0.75/1.00	1.36	Е
	P19	7.50	580	328	0.90	0.75/1.00	1.09	D
	P21	6.50	572	195	0.90	0.75/1.00	1.09	D
	P23	6.50	856	79	0.90	0.75/1.00	1.39	Е
ΛN/	P25	6.50	738	95	0.90	0.75/1.00	1.23	D
Alvi	P27	5.00	400	38	0.90	0.75/1.00	0.85	С
	U1/U3	5.00	322	336	0.90	0.90/0.75	1.19	D
	U5/U7	5.00	270	290	0.90	0.90/0.75	1.02	D
	U2/U4	6.25	267	520	0.90	0.90/0.75	1.17	D
	U6/U8	6.25	226	477	0.90	0.90/0.75	1.05	D
	PL2	6.50	542	619	0.90	0.75/0.95	1.57	E
	PL3	6.50	315	690	0.90	0.75/0.95	1.31	D
	PL5	6.00	447	132	0.90	0.75/0.95	0.91	С
	PL6	6.00	513	182	0.90	0.75/0.95	1.08	D
	PL7	4.00	294	0	0.90	0.75/0.95	0.73	С
	PL8	4.00	537	0	0.90	0.75/0.95	1.33	D
	PL9	13.50	1,265	215	0.90	0.75/0.95	1.05	D
	ML1	5.00	0	215	0.90	0.75/1.00	0.32	А
	P10S	14.00	381	823	0.90	0.75/1.00	0.70	С
	P11	8.00	127	206	0.90	0.75/1.00	0.35	А
	P3-P4	13.50	238	43	0.90	0.75/1.00	0.20	А

Table 9-28	2030 No-/	Action Subw	ay Station	Level of	f Service –	Stairway

Peak		Effective Width	Pedestrian Volume Up	Pedestrian Volume Down	Friction	Surging Factor	v/c	
Hour	Stairway	(ft)	(15-min)	(15-min)	Factor	(Up/Down)	Ratio	LOS
	P10	6.42	192	160	0.90	0.75/1.00	0.48	В
	P12	7.50	126	500	0.90	0.75/1.00	0.66	В
	P14	7.50	157	657	0.90	0.75/1.00	0.86	C
	P16	7.50	163	853	0.90	0.75/1.00	1.06	D
	P18	7.50	161	846	0.90	0.75/1.00	1.05	D
	P20	6.50	82	259	0.90	0.75/1.00	0.42	A
	P22	6.50	67	515	0.90	0.75/1.00	0.69	В
	P24	6.50	68	807	0.90	0.75/1.00	1.02	D
	P26	6.00	40	351	0.90	0.75/1.00	0.50	В
	P13	7.50	675	415	0.90	0.75/1.00	1.30	D
	P15	7.50	404	487	0.90	0.75/1.00	1.01	D
	P17	7.50	508	567	0.90	0.75/1.00	1.23	D
	P19	7.50	656	529	0.90	0.75/1.00	1.39	E
	P21	6.50	599	489	0.90	0.75/1.00	1.47	Е
	P23	6.50	308	342	0.90	0.75/1.00	0.86	С
	P25	6.50	226	500	0.90	0.75/1.00	0.91	С
PIVI	P27	5.00	141	253	0.90	0.75/1.00	0.65	В
	U1/U3	5.00	107	298	0.90	0.90/0.75	0.76	С
	U5/U7	5.00	88	244	0.90	0.90/0.75	0.63	В
	U2/U4	6.25	102	666	0.90	0.90/0.75	1.19	D
	U6/U8	6.25	85	557	0.90	0.90/0.75	0.99	С
	PL2	6.50	168	752	0.90	0.75/0.95	1.16	D
	PL3	6.50	71	640	0.90	0.75/0.95	0.88	С
	PL5	6.00	103	544	0.90	0.75/0.95	0.88	С
	PL6	6.00	141	727	0.90	0.75/0.95	1.18	D
	PL7	4.00	140	46	0.90	0.75/0.95	0.43	А
	PL8	4.00	173	46	0.90	0.75/0.95	0.52	В
	PL9	13.50	163	1,151	0.90	0.75/0.95	0.78	С
	ML1	5.00	0	115	0.90	0.75/1.00	0.17	А
	P10S	14.00	678	349	0.90	0.75/1.00	0.66	В
	P11	8.00	287	87	0.90	0.75/1.00	0.43	А
	P3-P4	13.50	32	224	0.90	0.75/1.00	0.15	Α

Note: Methodology based on 2020 CEQR Technical Manual guidelines

		Effective	Pedestrian	Pedestrian		Surging		
Peak	Ctainway	Width	Volume Up	Volume Down	Friction	Factor	v/c Datia	1.05
Hour	Stairway	(π) 17.70	(15-min)	(1 5-min)		(Up/Down)	Ratio	LU3 D
	10/10	17.70	947	550	0.90	0.90/1.00	0.00	D -
	M9	12.50	2,525	340	0.90	0.90/1.00	1.86	F
	O27	10.75	440	37	0.90	0.90/1.00	0.36	A
	M7	8.75	602	1,201	0.90	0.90/1.00	1.58	E
Δ Μ	M1	12.50	551	737	0.90	0.90/1.00	0.80	С
	M3	10.25	309	1,120	1.00	0.95/1.00	0.94	С
	S10	4.00	286	42	0.90	1.00/1.00	0.61	В
	S11	4.00	328	52	0.90	1.00/1.00	0.70	С
	S1	3.75	60	11	0.90	0.80/1.00	0.17	А
	O3	7.75	179	32	0.90	0.80/1.00	0.24	А
	M8/10	17.70	522	686	0.90	0.90/1.00	0.53	В
	M9	12.50	318	2,546	0.90	0.90/1.00	1.72	F
	O27	10.75	54	427	0.90	0.90/1.00	0.34	А
	M7	8.75	693	728	0.90	0.90/1.00	1.27	D
DM	M1	12.50	539	1,013	0.90	0.90/1.00	0.96	С
FIVI	M3	10.25	339	1,050	0.90	0.95/1.00	0.91	С
	S10	4.00	31	304	0.90	1.00/1.00	0.62	В
	S11	4.00	37	340	0.90	1.00/1.00	0.70	В
	S1	3.75	8	56	0.90	0.80/1.00	0.13	А
	O3	7.75	24	168	0.90	0.80/1.00	0.19	А

Table 9-29 2030 No-Action Subway Station Level of Service – Free Zone Stairs

Note: Methodology based on 2020 CEQR Technical Manual guidelines

		Tread	Pedestrian	Pedestrian				
Peak		Width	Volume Up	Volume Down	Surging		v/c	
Hour	Escalator	(in)	(15-min)	(15-min)	Factor	Capacity	Ratio	LOS
	ES203	32	632	0	0.80	750	1.05	D
	ES204	32	632	0	0.80	750	1.05	D
	ES205	40	781	0	0.80	1,170	0.83	С
	ES206	40	781	0	0.80	1170	0.83	С
AIVI	ES208	40	796	0	0.75	945	1.12	D
	ES210	40	796	0	0.75	945	1.12	D
	ES255	40	1,241	0	0.95	1,050	1.24	D
	ES256	40	1,246	0	0.95	1,050	1.25	D
	ES203	32	0	1,036	1.00	750	1.38	E
	ES204	32	163	0	0.80	750	0.27	А
	ES205	40	0	990	1.00	1,170	0.85	С
DM	ES206	40	414	0	0.80	1170	0.44	А
PIVI	ES208	40	0	1,138	1.00	945	1.20	D
	ES210	40	716	0	0.75	945	1.01	D
	ES255	40	0	1,061	1.00	1,050	1.01	D
	ES256	40	1,241	0	0.95	1,050	1.24	D

Table 9-30 2030 No-Action Subway Station Level of Service – Escalators

Note: Methodology based on 2020 CEQR Technical Manual guidelines

Table 9-31 2030 No-Action Subway Station Level of Service – Passageway

Passageway	Peak Hour	Effective Width (ft)	Pedestrian Volume West (15-min)	Pedestrian Volume East (15-min)	Friction Factor	Surging Factor (West/East)	v/c Ratio	LOS
Passageway	AM	15	1,075	1,309	0.90	0.95/0.95	0.83	С
between Mezzanine A and Shuttle	PM	15	1,291	748	0.90	0.95/0.95	0.71	В

Note: Methodology based on 2020 CEQR Technical Manual guidelines

Peak	Fare Control		Pedestrian Volume In	Pedestrian Volume Out	Friction Factor	Surging	v/c	
Hour	Area	Control Element	(15-min)	(15-min)	(In/Out)	Factor	Ratio	LOS
	R241A	5 turnstiles	215	1,265	0.90/0.90	0.90	0.60	В
	R240	11 turnstiles	819	3,260	0.90/0.90	0.90	0.76	С
	R240A	4 turnstiles	88	652	0.90/0.90	0.90	0.37	А
	R238D	7 turnstiles	737	551	0.90/0.90	0.90	0.43	А
	R238	16 turnstiles	1,039	2,631	0.90/0.90	0.90	0.49	В
	R238A	8 turnstiles	1,193	331	0.90/0.90	0.90	0.47	В
AM	R238B	4 turnstiles	111	473	0.90/0.90	0.90	0.30	А
	R237	7 turnstiles	109	905	0.90/0.90	0.90	0.29	А
	R237A	1 HXT	0	134	0.00/0.90	0.90	0.30	А
	R237B	4 turnstiles	144	938	0.90/0.90	0.90	0.54	В
	R236	12 turnstiles	1,029	508	0.90/0.90	0.80	0.32	А
	R236A	9 turnstiles	714	430	0.90/0.90	0.90	0.30	А
	R233	2 HEETs, 1 HXT	43	238	0.90/0.90	0.80	0.30	А
	R241A	5 turnstiles	1,151	163	0.90/0.90	0.90	0.67	В
	R240	11 turnstiles	3,056	714	0.90/0.90	0.90	0.86	С
	R240A	4 turnstiles	603	181	0.90/0.90	0.90	0.49	В
	R238D	7 turnstiles	1,013	539	0.90/0.90	0.90	0.53	В
	R238	16 turnstiles	1,638	1,773	0.90/0.90	0.90	0.48	В
	R238A	8 turnstiles	1,143	342	0.90/0.90	0.90	0.46	В
PM	R238B	4 turnstiles	170	161	0.90/0.90	0.90	0.19	А
	R237	7 turnstiles	824	87	0.90/0.90	0.90	0.34	А
	R237A	1 HXT	0	13	0.00/0.90	0.90	0.03	А
	R237B	4 turnstiles	995	105	0.90/0.90	0.90	0.71	С
	R236	12 turnstiles	436	965	0.90/0.90	0.80	0.27	А
	R236A	9 turnstiles	78	617	0.90/0.90	0.90	0.15	А
	R233	2 HEETs, 1 HXT	224	32	0.90/0.90	0.80	0.52	В

Table 9-32 2030 No-Action Subway Station Level of Service – Fare Control Area

Note:

Methodology based on 2020 CEQR Technical Manual guidelines

HEET = High entry/exit turnstile, HXT = high exit turnstile

Surging factors only apply to exiting volumes. The surge factor for entry volumes in 1.0.

Pedestrians

The 2030 No-Action pedestrian volumes were developed by increasing existing volumes to reflect expected growth in overall travel through and within the study area and incorporating pedestrian volumes from projects expected to be completed and operating by then. Pedestrian trips resulting from the ESA project were also incorporated into the analysis in addition to changes to the sidewalk and corners fronting the One Vanderbilt development and the Lexington Avenue west sidewalk extension, which are both expected to be completed in 2021.

The No-Action pedestrian levels of service were determined for the locations analyzed in the existing conditions. **Table 9-33** provides an overview of the pedestrian levels of service for the peak hours analyzed. Pedestrian volumes and levels of service are provided in **Table 9-34** through **Table 9-36**. The summary of the No-Action condition indicates that:

- > During the AM and midday peak hours, two sidewalks can be expected to operate at mid-LOS D or worse, compared to three sidewalks during the AM peak hour and the two during the midday peak hour in existing conditions. During the PM peak hour, three sidewalks would operate at mid-LOS D or worse, the same as existing conditions.
- During the AM peak hour, six crosswalks can be expected to operate at mid-LOS D or worse, compared to five crosswalks in existing conditions. During the midday and PM peak hours, five crosswalks would operate at mid-LOS D or worse, compared to two crosswalks during the midday peak hour and four crosswalks during the PM peak hour in existing conditions.
- During the AM peak hour, two cornersone corner can be expected to operate at mid-LOS D or worse, compared to two in the same as existing conditions condition. During the midday and PM peak hours, threetwo corners would operate at mid-LOS D or worse, compared to two corners in both the midday and PM peak hours in the same as existing conditions.

		Midday Peak	
	AM Peak Hour	Hour	PM Peak Hour
Sidewalk Elements			
Sidewalks at LOS A/B/C and Acceptable LOS D	2	2	1
Sidewalks at Unacceptable LOS D	1	1	2
Sidewalks at LOS E	1	1	1
Sidewalks at LOS F	0	0	0
Crosswalk Elements			
Crosswalks at LOS A/B/C and Acceptable LOS D	0	1	1
Crosswalks at Unacceptable LOS D	1	1	2
Crosswalks at LOS E	3	2	<u>2</u>
Crosswalks at LOS F	2	2	<u>1</u>
Corner Elements			
Corners at LOS A/B/C and Acceptable LOS D	<u>4</u>	<u>3</u>	<u>3</u>
Corners at Unacceptable LOS D	0	1	2
Corners at LOS E	1	1	<u>0</u>
Corners at LOS F	<u>0</u>	<u>0</u>	0

Table 9-33 Year 2030 No-Action Pedestrian Levels of Service Summary

Note: Includes four sidewalk, six crosswalk, and five corner analysis locations

		AN	AM Peak Hour			Midday Peak Hour			Peak Hou	r
Sidewalk	Effective Width, ft	Volume, ped/hr	Avg Ped Space, SF/P	Platoon LOS	Volume, ped/hr	Avg Ped Space, SF/P	Platoon LOS	Volume, ped/hr	Avg Ped Space, SF/P	Platoon LOS
Lexington Avenue between East 42nd Street and East 43rd Street (west side)	15.5	5,634	32.2	С	3,263	50.2	С	5,132	34.4	D
East 42nd Street between Park Avenue and Lexington Avenue (north side)	12.5	4,045	34.9	С	4,030	36.6	D	4,215	31.5	D
East 42nd Street between Vanderbilt Avenue and Park Avenue (north side)	12.0	4,809	26.1	D	4,859	27.7	D	5,621	23.9	D
East 42nd Street between Madison Avenue and Vanderbilt Avenue (north side)	12.0	7,500	16.0	E	6,685	18.7	E	9,510	12.8	E

Table 9-34 Year 2030 No-Action Pedestrian Levels of Service – Sidewalks

Table 9-35 Year 2030 No-Action Pedestrian Levels of Service – Crosswalks

		AN	l Peak Hou	r	Midd	ay Peak Ho	our	PM	PM Peak Hour		
Intersection	Crosswalk	Volume, ped/hr	Avg Ped Space, SF/P	SOT	Volume, ped/hr	Avg Ped Space, SF/P	SOI	Volume, ped/hr	Avg Ped Space, SF/P	ros	
Lexington	North	3,270	12.9	Е	3,332	13.8	Е	2,842	16.3	D	
Avenue at	East	1,738	<u>6</u> .9	F	2,069	<u>6.4</u>	F	1,601	<u>8.1</u>	<u>E</u>	
East 42nd	South	2,307	18.4	D	2,442	19.9	D	2,240	22.2	D	
Street	West	2,828	2.7	F	3,256	2.3	F	2,907	2.9	F	
Madison Avenue at	North	4,181	10.1	Е	3,666	12.5	E	5,164	9.2	E	
East 42nd Street	East	2,682	14.7	E	2,615	17.5	D	2,697	16.3	D	

		AM	AM Peak Hour			Midday Peak Hour			PM Peak Hour		
Intersection	Corner	Volume, ped/hr	Avg Ped Space, SF/P	SOI	Volume, ped/hr	Avg Ped Space, SF/P	SOJ	Volume, ped/hr	Avg Ped Space, SF/P	SOJ	
	Northeast	138	20.3	D	166	16.3	D	234	19.0	D	
Lexington Avenue at	Southeast	352	25.8	С	296	22.4	D	345	27.5	С	
East 42nd	Northwest	595	<u>28.0</u>	<u>C</u>	809	<u>27.0</u>	<u>C</u>	502	<u>37</u> .4	<u>C</u>	
Street	Southwest	447	11.0	Е	461	11.2	Е	387	16.9	D	
Madison Avenue at East 42nd Street	Northeast	682	36.4	С	717	35.5	С	921	24.4	С	

Table 9-36 Year 2030 No-Action Pedestrian Levels of Service – Corners

With-Action Conditions

The Proposed Project would redevelop the Development Site with approximately 2,108,820 square feet (sf) of office space, 452,950 sf of hotel space (500 rooms) and 43,370 sf of retail space located on the cellar, ground floor, and second floor of the proposed building. Access to the office space would be provided on 42nd Street and on the Lexington Passageway in GCT. Hotel access would be provided on Lexington Avenue and retail space would be provided along the street frontages and internally within GCT.

Traffic

Traffic Volumes

Overall, the Proposed Project would generate a total of 217 vph (138 "ins" and 79 "outs") in the AM peak hour, 251 vph (126 "in" and 125 "outs") in the midday peak hour, and 274 (104 "ins" and 170 "outs") in the PM peak hour. These vehicle trips were distributed as described in the Level 2 screening assessment and would result in modest traffic volume increases to individual intersections within the traffic study area. The With-Action traffic volumes for the AM, midday, and PM peak hours are shown in **Figure 9-20** through **Figure 9-22**.













Levels of Service

Based on the traffic volume increments illustrated above, the 2030 With-Action traffic levels of service were determined for the fifteen analysis locations. **Table 9-37** and **Table 9-38** provide an overview of the levels of service that characterize 2030 With-Action "overall" intersection conditions and individual traffic movements during the AM, midday, and PM peak hours, respectively. Detailed traffic levels of service comparing the No-Action and With-Action conditions during each peak hour are provided in **Table 9-39** through **Table 9-41**.

Table 9-37	Year 2030 With-Action	Traffic Level of Servic	e Summary – Overal	I Intersections
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		No-Action			With-Action	
	AM Peak Hour	Midday Peak Hour	PM Peak Hour	AM Peak Hour	Midday Peak Hour	PM Peak Hour
Intersections at Overall LOS A/B/C	1	2	1	0	1	1
Intersections at Overall LOS D	1	1	1	2	2	0
Intersections at Overall LOS E	<u>2</u>	<u>1</u>	<u>1</u>	<u>2</u>	<u>1</u>	2
Intersections at Overall LOS F	<u>11</u>	<u>11</u>	<u>12</u>	<u>11</u>	<u>11</u>	12
Number of significantly impacted intersections	-	-	-	<u>15</u>	14	15

Note: Includes 15 signalized intersections

_		No-Action			With-Action	
	AM Peak Hour	Midday Peak Hour	PM Peak Hour	AM Peak Hour	Midday Peak Hour	PM Peak Hour
Traffic Movements at LOS A/B/C and Acceptable LOS D	21	25	<u>19</u>	<u>21</u>	22	<u>16</u>
Traffic Movements at Unacceptable LOS D	9	<u>5</u>	<u>6</u>	<u>5</u>	<u>4</u>	<u>6</u>
Traffic Movements at LOS E	<u>3</u>	<u>8</u>	<u>8</u>	<u>7</u>	10	<u>6</u>
Traffic Movements at LOS F	32	<u>27</u>	<u>31</u>	32	29	<u>36</u>
Number of significantly impacted movements	-	-	-	<u>24</u>	<u>21</u>	<u>26</u>
Number of Individual Traffic Movements	<u>65</u>	<u>65</u>	<u>64</u>	<u>65</u>	<u>65</u>	<u>64</u>

Table 9-38 Year 2030 With-Action Traffic Level of Service Summary – Traffic Movements

Note: Number of movements may vary between peak hours due to turn prohibitions, parking regulations, and the presence of de facto left turn movements.

			2030 N	o-Action			2030 W	/ith-Action	
Intersection & Approac	h	Mut	N/C	Ctrl Delav ¹	105	Mixt	N/C	Ctrl Delay ¹	105
Second Avenue and East 40t	h Stre	et	v/c	Delay	LUJ	IVIVC	v/C	Ctri Delay	205
East 40th Street	EB	Т	0. <u>70</u>	33. <u>4</u>	С	Т	0. <u>72</u>	33. <u>57</u>	С
		R	0.44	30.0	С	R	0.46	30. <u>21</u>	С
Second Avenue	SB	LT	1. <u>15</u>	<u>80.3</u>	F	LT	1. <u>16</u>	<u>85.1</u>	F
Overall Intersection		-	-	<u>71.5</u>	E	-	-	<u>75.1</u>	E
Second Avenue and East 42r	nd Stre	et							
East 42nd Street	EB	Т	1. <u>00</u>	<u>57.9</u>	<u>E</u>	Т	1. <u>00</u>	<u>58</u> .9	₽ <u></u>
		R	0. <u>88</u>	<u>48.6</u>	<u>D</u>	R	<u>0.88</u>	<u>48.6</u>	<u>D</u>
	WB	L	1. <u>32</u>	<u>221.4</u>	F	L	1. <u>37</u>	<u>238.7</u>	F
		Т	1.13	109.6	F	Т	1.13	110.2	F
Second Avenue	SB	LT	1. <u>08</u>	<u>80.4</u>	F	LT	1. <u>09</u>	<u>80.3</u>	F
		R	1.25	179.0	F	R	1.30	198.4	F
Overall Intersection		-	-	<u>90.3</u>	F	-	-	<u>92.3</u>	F
Third Avenue and East 40th	Street								
East 40th Street	EB	LT	0. <u>84</u>	50. <u>59</u>	D	LT	0. <u>90</u>	<u>58.8</u>	Е
Third Avenue	NB	Т	1.38	208.3	F	Т	1.40	217.0	F
		R	0.58	<u>45.4</u>	D	R	0.59	<u>47.4</u>	D
Overall intersection		-	-	<u>160.9</u>	<u>F</u>	-	-	167. <u>8</u>	F
Third Avenue and East 42nd	Street	:							
East 42nd Street	EB	L	1. <u>06</u>	<u>93.8</u>	F	L	1. <u>07</u>	<u>94.9</u>	F
		Т	0. <u>81</u>	<u>16.7</u>	<u>B</u>	Т	0. <u>81</u>	<u>16.7</u>	<u>B</u>
	WB	Т	1.66	324.8	F	Т	1.68	335.4	F
		R	1.23	143.3	F	R	1.24	149.3	F
Third Avenue	NB	L	2.00+	500.0+	F	L	2.00+	500.0+	F
		Т	1.11	71.2	Е	Т	1.11	75.1	Е
		R	2.00+	500.0+	F	R	2.00+	500.0+	F
Overall Intersection		-	-	<u>197.6</u>	F	-	-	224.4	F

			2030 N	o-Action		2030 With-Action			
Intersection & Approach		Mut	NIC	Ctrl	1.05	N/1v+		Ctrl Dolov ¹	105
Lexington Avenue and East 4	0th St	treet	v/c	Delay	103	IVIVC	V/C	Ctil Delay	103
East 40th Street	FR	т	0.90	45.2	D	т	0.96	- 52 7	D
	LD	R	0.56	41 1	- D	R	0.50	<u>415</u>	D
Lexington Avenue	SB	LT	1. <u>02</u>	<u>40.4</u>	D	LT	1. <u>03</u>	<u>44.2</u>	D
Overall Intersection		-	-	<u>41.5</u>	D	-	-	<u>45.9</u>	D
Lexington Avenue and East 4	2nd S	treet							
East 42nd Street	EB	Т	0.76	47. <u>6</u>	D	Т	0.76	47.7	D
		R	0.23	46.8	D	R	0.23	46.8	D
	WB	LT	1.52	277.3	F	LT	1.58	305.3	F
Lexington Avenue	SB	Ī	<u>1.37</u>	<u>184.8</u>	<u>F</u>	Ī	<u>1.39</u>	<u>193.9</u>	<u>F</u>
		R	1.09	<u>83.6</u>	F	R	1.34	<u>185.1</u>	F
Overall Intersection		-	-	<u>167.3</u>	F	-	-	<u>185.0</u>	F
Lexington Avenue and East 4	3rd S	treet							
East 43rd Street	WB	L	0. <u>44</u>	<u>24.9</u>	С	L	0. <u>44</u>	24.9	С
Lexington Avenue	SB	Т	<u>1.32</u>	<u>166.9</u>	<u>F</u>	Т	1. <u>38</u>	<u>193.0</u>	<u>F</u>
Overall Intersection		-	-	<u>141.8</u>	<u>F</u>	-	-	<u>164.3</u>	<u>F</u>
Lexington Avenue and East 44th Street									
Lexington Avenue	SB	LT	1. <u>81</u>	<u>385.1</u>	F	LT	1. <u>88</u>	<u>416.4</u>	F
Overall Intersection		-	-	<u>385.1</u>	F	-	-	<u>416.4</u>	F

			2030 N	o-Action		2030 With-Action			
				Ctrl					
Intersection & Approact	h 15+6 C	Mvt	V/C	Delay'	LOS	Mvt	V/C	Ctrl Delay'	LOS
Lexington Avenue and East 2	+510 5		0.50	22.4		5.4	0.5.6	22.4	
East 45th Street	WB	DefL	0. <u>56</u>	<u>32.1</u>	C	DefL	0. <u>56</u>	<u>32.1</u>	C
		Т	0.68	32.8	C -	-	0.70	33.5	- -
Lexington Avenue	SB	T	1. <u>60</u>	<u>293.0</u>	F	Т	1. <u>67</u>	<u>325.9</u>	F
		R	1.23	131. <u>3</u>	F	R	1.29	157. <u>1</u>	F
Overall Intersection		-	-	<u>213.4</u>	F	-	-	<u>239.0</u>	F
Lexington Avenue and East 4	46th S [.]	treet							
East 46th Street	EB	Т	0. <u>81</u>	<u>40.9</u>	D	Т	0. <u>82</u>	<u>42.4</u>	D
		R	0. <u>61</u>	<u>35.4</u>	<u>D</u>	R	0. <u>69</u>	<u>41.3</u>	D
Lexington Avenue	SB	LT	1. <u>73</u>	<u>360.2</u>	F	LT	1. <u>77</u>	<u>378</u> .7	F
Overall Intersection		-	-	<u>264</u> .8	F	-	-	<u>276.5</u>	F
Park Avenue and East 40th S	treet								
East 40th Street (West Side)	EB	TR	0.88	50.9	D	TR	0.93	60.4	E
Park Avenue (West Side)	SB	Т	0.92	35.3	D	Т	0.92	35.3	D
East 40th Street (Tunnel)	EB	LT	0.66	12.3	В	LT	0.71	14.2	В
Park Avenue (Tunnel)	NB	Т	0.70	18.7	В	Т	0.70	18.8	В
East 40th Street (East Side)	EB	LT	0.92	45.1	D	LT	1.00	63.0	Е
Park Avenue (East Side)	NB	TR	0.92	50.6	D	TR	0.94	55.5	Е
Overall Intersection		-	-	32.1	С	-	-	35.8	D
Madison Avenue and East 42	2nd St	reet							
East 42nd Street	EB	L	1.77	380.3	F	L	1.77	380.3	F
		Т	1.53	265.9	F	Т	1.53	266.9	F
	WB	Т	2.00+	500.0+	F	Т	2.00+	500.0+	F
		R	0.08	27.6	С	R	0.08	27.6	С
Madison Avenue	NB	LT	1.12	94.9	F	LT	1.12	95.3	F
		R	2.00+	500.0+	F	R	2.00+	500.0+	F
Overall Intersection		-	-	353.1	F	-	-	<u>385</u> .5	F

			2030 N	o-Action		2030 With-Action			
				Ctrl					
Intersection & Approac	h	Mvt	V/C	Delay ¹	LOS	Mvt	V/C	Ctrl Delay ¹	LOS
Fifth Avenue and 42nd Stree	t								
42nd Street	EB	Т	2.00+	500.0+	F	Т	2.00+	500.0+	F
		R	0.66	58.7	Е	R	0.66	59.0	Е
	WB	L	0.00	0.0	А	L	0.00	0.0	А
		Т	2.00+	500.0+	F	Т	2.00+	500.0+	F
Fifth Avenue	SB	L	0.05	13.0	В	L	0.05	13.0	В
		Т	2.00+	500.0+	F	Т	2.00+	500.0+	F
		R	0.78	133.6	F	R	0.78	133.6	F
Overall Intersection		-	-	500.0+	F	-	-	500.0+	F
Sixth Avenue and West 42nd	l Stree	et							
West 42nd Street	EB	Т	1.47	248.4	F	Т	1.47	249.3	F
	WB	Т	1.46	238.3	F	Т	1.54	273.2	F
		R	0.75	41.0	D	R	0. <u>85</u>	43.8	D
Sixth Avenue	NB	LT	0.97	42.1	D	LT	0.97	42.3	D
		R	1.58	347.8	F	R	1.58	347.8	F
Overall Intersection		-	-	134.8	F	-	-	143.4	F
Broadway and West 42nd St	reet								
West 42nd Street	EB	Т	0.91	38.9	D	Т	0.91	39.2	D
		R	0.45	19.3	В	R	0.45	19.3	В
	WB	L	0.87	20.0	В	L	0.97	31.1	С
		Т	1.16	90.9	F	Т	1.20	107.3	F
Overall Intersection		-	-	56.9	E	-	-	65.1	Е

¹ Control delay is measured in seconds per vehicle.

 $^{\rm 2}$ Overall intersection v/c ratio is the critical lane groups' v/c ratio.

Denotes a significantly impacted movement

			2030	No-Action			2030	With-Action	
Intersection & Approac	h	Mvt	V/C	Ctrl Delay ¹	LOS	Mvt	V/C	Ctrl Delay ¹	LOS
Second Avenue and East 40t	h Stre	et							
East 40th Street	EB	Т	0. <u>49</u>	32. <u>4</u>	С	Т	0. <u>52</u>	<u>33.2</u>	С
		R	0.99	85. <u>7</u>	F	R	1.00	87. <u>2</u>	F
Second Avenue	SB	LT	1.21	<u>108.5</u>	F	LT	1.22	<u>111.9</u>	F
Overall Intersection		-	-	<u>100.1</u>	F	-	-	<u>102.6</u>	F
Second Avenue and East 42r	nd Str	eet							
East 42nd Street	EB	Т	0. <u>68</u>	<u>19.4</u>	<u>B</u>	Т	0. <u>70</u>	<u>20.1</u>	С
		R	1. <u>46</u>	<u>234.7</u>	F	R	1. <u>50</u>	<u>252</u> .2	F
	WB	L	0. <u>70</u>	<u>41</u> .0	<u>D</u>	L	0. <u>73</u>	<u>44.1</u>	<u>D</u>
		Т	0.98	57.0	Е	Т	0.98	57.4	Е
Second Avenue	SB	DefL	1. <u>52</u>	<u>275.6</u>	F	DefL	1. <u>52</u>	<u>277.1</u>	F
		Т	1. <u>04</u>	82.3	F	Т	1. <u>04</u>	<u>84.4</u>	F
		R	0.97	96.6	F	R	1.04	115.0	F
Overall Intersection		-	-	111. <u>6</u>	F	-	-	<u>115.5</u>	F
Fhird Avenue and East 40th	Street					I			
East 40th Street	EB	LT	0. <u>66</u>	<u>21</u> .8	С	LT	0. <u>71</u>	<u>23.1</u>	С
Third Avenue	NB	Т	1.38	208.8	F	Т	1.41	220.3	F
		R	0.78	<u>55.2</u>	<u>E</u>	R	0.78	<u>57.4</u>	Е
Overall intersection		-	-	156. <u>3</u>	F	-	-	163. <u>4</u>	F
Third Avenue and East 42nd	Stree	t							
East 42nd Street	EB	L	0. <u>80</u>	<u>61.8</u>	Е	L	0. <u>81</u>	<u>62</u> .5	Е
		Т	1. <u>11</u>	<u>94.5</u>	F	Т	1. <u>11</u>	<u>94.4</u>	F
	WB	Т	1.61	316.8	F	Т	1.65	331.4	F
		R	1.14	137.1	F	R	1.14	137.3	F
Third Avenue	NB	L	2.00+	500.0+	F	L	2.00+	500.0+	F
		Т	1.01	69. <u>7</u>	Е	Т	1.02	69.8	Е
		R	2.00+	500.0+	F	R	2.00+	500.0+	F
Overall Intersection		-	-	216.2	F	-	-	<u>249.5</u>	F

		2030 No-Action				2030 With-Action			
Intersection & Approach		Mvt	V/C	Ctrl Delay ¹	LOS	Mvt	V/C	Ctrl Delay ¹	LOS
Lexington Avenue and East 4	0th S	treet							
East 40th Street	EB	Т	0.51	30.2	С	Т	0.55	31.0	С
		R	0.36	45.4	D	R	0.40	46.0	D
Lexington Avenue	SB	LT	0. <u>86</u>	21.9	С	LT	0. <u>87</u>	22. <u>3</u>	С
Overall Intersection		-	-	<u>25.0</u>	С	-	-	25. <u>7</u>	С
Lexington Avenue and East 4	2nd S	Street							
East 42nd Street	EB	Т	0.84	27.1	С	Т	0.85	27.1	С
		R	0.09	17.3	В	R	0.09	17.3	В
	WB	LT	1.39	199.9	F	LT	1.49	245.6	F
Lexington Avenue	SB	Ī	1.09	<u>65.8</u>	<u>E</u>	Ī	<u>1.10</u>	<u>66.6</u>	<u>E</u>
		R	0.77	<u>30.1</u>	С	R	1.03	<u>60.1</u>	Е
Overall Intersection		-	-	<u>91</u> .6	F	-	-	<u>108</u> .4	F
Lexington Avenue and East 4	3rd S	treet							
East 43rd Street	WB	L	0. <u>62</u>	<u>33.5</u>	<u>C</u>	L	0. <u>64</u>	<u>34.9</u>	<u>C</u>
Lexington Avenue	SB	Т	1. <u>39</u>	<u>197.1</u>	<u>F</u>	Т	1. <u>47</u>	<u>235</u>	<u>F</u>
Overall Intersection		-	-	<u>166.0</u>	<u>F</u>	-	-	<u>198.6</u>	<u>F</u>
Lexington Avenue and East 4	4th S	treet							
Lexington Avenue	SB	LT	1. <u>87</u>	<u>412.6</u>	<u>E</u>	LT	1. <u>95</u>	<u>449.9</u>	F
Overall Intersection		-	-	<u>412.6</u>	Ē	-	-	<u>449.9</u>	F
Lexington Avenue and East 4	5th S	treet							
East 45th Street	WB	LT	0.77	37.3	D	LT	0.78	38.1	D
Lexington Avenue	SB	Т	1. <u>53</u>	<u>267.9</u>	F	Т	1. <u>62</u>	<u>305.3</u>	F
		R	0.63	<u>18.0</u>	В	R	0.72	21. <u>8</u>	С
Overall Intersection		-	-	200.2	F	-	-	<u>229</u> .1	F

			2030	No-Action			2030 \	With-Action	
Intersection & Approac	h	Mvt	V/C	Ctrl Delay ¹	LOS	Mvt	V/C	Ctrl Delay ¹	LOS
Lexington Avenue and East	46th S	treet							
East 46th Street	EB	Т	0. <u>92</u>	<u>55.0</u>	D	Т	0. <u>93</u>	<u>57.7</u>	<u>E</u>
		R	0. <u>04</u>	18. <u>7</u>	В	R	0. <u>19</u>	21. <u>7</u>	С
Lexington Avenue	SB	LT	1. <u>49</u>	<u>255.8</u>	F	LT	1. <u>53</u>	<u>271.5</u>	F
Overall Intersection		-	-	<u>202.0</u>	F	-	-	<u>211.1</u>	F
Park Avenue and East 40th S	Street	-							
East 40th Street (West Side)	EB	TR	0.96	76.0	Е	TR	1.02	103.8	F
Park Avenue (West Side)	SB	Т	1.11	85.2	F	Т	1.11	85.2	F
East 40th Street (Tunnel)	EB	LT	0.67	12.6	В	LT	0.74	12.6	В
Park Avenue (Tunnel)	NB	Т	0.63	18.9	В	Т	0.63	18.9	В
East 40th Street (East Side)	EB	LT	0.91	45.5	D	LT	1.00	62.2	Е
Park Avenue (East Side)	NB	TR	0.72	29.5	С	TR	0.75	31.6	С
Overall Intersection		-	-	49.9	D	-	-	54.5	D
Madison Avenue and East 42	2nd St	reet							
East 42nd Street	EB	L	0.43	17.5	В	L	0.43	17.4	В
		Т	1.73	357.6	F	Т	1.74	359.9	F
	WB	Т	2.00+	487.3	F	Т	2.00+	500.0+	F
		R	0.32	14.3	В	R	0.32	14.3	В
Madison Avenue	NB	LT	1.08	80.0	Е	LT	1.08	81.5	F
		R	1.20	287.5	F	R	1.20	287.5	F
Overall Intersection		-	-	279.7	F	-	-	321.0	F
Fifth Avenue and 42nd Stree	et								
42nd Street	EB	Т	1.23	128.3	F	Т	1.23	129.9	F
		R	0.83	54.0	D	R	0.83	54.0	D
	WB	L	0.00	0.0	А	L	0.00	0.0	А
		Т	1.93	439.1	F	Т	2.00+	500.0+	F
Fifth Avenue	SB	L	0.15	16.9	В	L	0.15	16.9	В
		Т	2.00+	500.0+	F	Т	2.00+	500.0+	F
		R	0.29	56.0	Е	R	0.29	56.0	Е
Overall Intersection		-	-	500.0+	F	-	-	500.0+	F

		[2030	No-Action		2030 With-Action				
Intersection & Approac	h	Mvt	V/C	Ctrl Delay ¹	LOS	Mvt	V/C	Ctrl Delay ¹	LOS	
Sixth Avenue and West 42nd	d Stree	et								
West 42nd Street	EB	Т	1.08	88.6	F	Т	1.09	89.7	F	
	WB	Т	1.12	83.3	F	Т	1.23	131.3	F	
		R	0.86	28.9	С	R	1.00	45.8	D	
Sixth Avenue	NB	LT	0.82	26.0	С	LT	0.82	26.0	С	
		R	1.65	356.6	F	R	1.65	356.6	F	
Overall Intersection		-	-	66.9	E	-	-	78.0	Ε	
Broadway and West 42nd St	reet									
West 42nd Street	EB	Т	0.71	20.7	С	Т	0.71	20.7	С	
		R	0.27	13.7	В	R	0.27	13.8	В	
	WB	L	0.77	40.8	D	L	0.92	48.0	D	
		Т	0.97	47.8	D	Т	1.03	60. <u>8</u>	Е	
Overall Intersection		-	-	33.1	С	-	-	39. <u>6</u>	D	

¹ Control delay is measured in seconds per vehicle.

 $^{\rm 2}$ Overall intersection v/c ratio is the critical lane groups' v/c ratio.

Denotes a significantly impacted movement

		2030 No-Action				2030 With-Action			
Intersection & Approac	h	Mvt	V/C	Ctrl Delay ¹	LOS	Mvt	V/C	Ctrl Delay ¹	LOS
Second Avenue and East 40	th Stre	eet							
East 40th Street	EB	Т	0. <u>93</u>	<u>67.9</u>	Е	Т	<u>1.02</u>	<u>85.6</u>	<u>E</u>
		R	0.72	37. <u>0</u>	D	R	0.73	37. <u>5</u>	D
Second Avenue	SB	LT	1. <u>08</u>	54. <u>3</u>	D	LT	1. <u>09</u>	<u>54.8</u>	<u>D</u>
Overall Intersection		-	-	<u>54.1</u>	D	-	-	<u>56.1</u>	Е
Second Avenue and East 42nd Street									
East 42nd Street	EB	Т	<u>0.95</u>	<u>40.5</u>	<u>D</u>	Т	<u>0.98</u>	<u>43.4</u>	<u>D</u>
		R	1. <u>08</u>	<u>79.2</u>	<u>E</u>	R	1. <u>09</u>	<u>83.5</u>	F
	WB	L	1. <u>01</u>	<u>124.5</u>	F	L	1. <u>15</u>	<u>170.5</u>	F
		Т	1.16	118.8	F	Т	1.16	119.6	F
Second Avenue	SB	LT	1. <u>17</u>	<u>109.9</u>	F	LT	1. <u>18</u>	<u>112.7</u>	F
		R	1.09	128.9	F	R	1.17	153.5	F
Overall Intersection		-	-	<u>102.3</u>	F	-	-	<u>106.8</u>	F
Third Avenue and East 40th	Street	t							
East 40th Street	EB	LT	1. <u>04</u>	<u>103.4</u>	F	LT	1. <u>12</u>	<u>106.0</u>	F
Third Avenue	NB	Т	1.43	228.3	F	Т	1.46	242.9	F
		R	0.80	73.8	Е	R	0.78	69.4	Е
Overall intersection		-	-	<u>190.6</u>	F	-	-	<u>200.6</u>	F
Third Avenue and East 42nd	Stree	t							
East 42nd Street	EB	L	<u>0.92</u>	<u>53.8</u>	<u>D</u>	L	<u>0.93</u>	<u>54.7</u>	<u>D</u>
		Т	<u>0.92</u>	<u>33.4</u>	<u>C</u>	Т	<u>0.92</u>	<u>33.3</u>	<u>C</u>
	WB	Т	1.37	208.7	F	Т	1.41	223.4	F
		R	1.23	154.7	F	R	1.24	156.9	F
Third Avenue	NB	L	2.00+	500.0+	F	L	2.00+	500.0+	F
		Т	0.94	66.8	Е	Т	0.94	66.7	Е
		R	2.00+	500.0+	F	R	2.00+	500.0+	F
Overall Intersection		-	-	304. <u>1</u>	F	-	-	<u>361.0</u>	F

	2030 No-Action							2030 With-Action					
Intersection & Approacl	า	Mvt	V/C	Ctrl Delay ¹	LOS	Mvt	V/C	Ctrl Delay ¹	LOS				
Lexington Avenue and East	40th S	treet											
East 40th Street	EB	Т	0.54	13.5	В	Т	0. <u>61</u>	15.0	В				
		R	0.92	41.4	D	R	0.96	46.4	D				
Lexington Avenue	SB	LT	0. <u>79</u>	7. <u>1</u>	А	LT	0. <u>80</u>	7. <u>3</u>	А				
Overall Intersection		-	-	12. <u>0</u>	В	-	-	13. <u>2</u>	В				
Lexington Avenue and East 4	12nd 9	Street											
East 42nd Street	EB	Т	1.09	<u>75.8</u>	Е	Т	1.09	<u>75.8</u>	Е				
		R	0.10	18.1	В	R	0.10	18.1	В				
	WB	LT	2.00+	500.0+	F	LT	2.00+	500.0+	F				
Lexington Avenue	SB	Ī	<u>1.27</u>	<u>142.5</u>	<u>F</u>	Ī	<u>1.28</u>	<u>144.6</u>	<u>F</u>				
		R	0.96	<u>45.3</u>	D	R	1.28	156. <u>8</u>	F				
Overall Intersection		-	-	<u>225.2</u>	F	-	-	<u>256.4</u>	F				
Lexington Avenue and East	13rd S	treet											
East 43rd Street	WB	L	0. <u>92</u>	<u>65.8</u>	Е	L	0. <u>93</u>	<u>68.0</u>	Е				
Lexington Avenue	SB	Т	1. <u>51</u>	<u>250.1</u>	<u>F</u>	Т	1. <u>58</u>	<u>281.7</u>	F				
Overall Intersection		-	-	<u>209.1</u>	<u>F</u>	-	-	<u>235.8</u>	F				
Lexington Avenue and East 4	14th S	treet											
Lexington Avenue	SB	LT	1. <u>97</u>	460.2	F	LT	<u>2.04</u>	<u>491.2</u>	F				
Overall Intersection		-	-	<u>460.2</u>	F	-	-	<u>491.2</u>	F				
Lexington Avenue and East 4	15th S	treet											
East 45th Street	WB	LT	1.06	88.9	F	LT	1.06	<u>90.4</u>	F				
Lexington Avenue	SB	Т	1. <u>57</u>	<u>282.8</u>	F	Т	1. <u>64</u>	<u>314.5</u>	F				
		R	1.26	149. <u>1</u>	F	R	1.31	170.4	F				
Overall Intersection		-	-	<u>217.7</u>	F	-	-	<u>242.1</u>	F				
Lexington Avenue and East 4	46th S	treet											
East 46th Street	EB	Т	0. <u>92</u>	<u>53.1</u>	D	Т	0. <u>92</u>	<u>54.5</u>	D				
		R	0.38	26.5	С	R	0.50	30.3	С				
Lexington Avenue	SB	LT	1. <u>63</u>	<u>314.9</u>	F	LT	1. <u>65</u>	<u>327.0</u>	F				
Overall Intersection		-	-	<u>233.5</u>	F	-	-	<u>239.8</u>	F				

			2030	No-Action		2030 With-Action					
Intersection & Approac	h	Mvt	V/C	Ctrl Delay ¹	LOS	Mvt	V/C	Ctrl Delay ¹	LOS		
Park Avenue and East 40th S	Street										
East 40th Street (West Side)	EB	TR	0.92	64.6	Е	TR	0.98	104.1	F		
Park Avenue (West Side)	SB	Т	1.16	106.1	F	Т	1.16	107.0	F		
East 40th Street (Tunnel)	EB	LT	0.97	38.3	D	LT	1.05	59.4	Е		
Park Avenue (Tunnel)	NB	Т	0.54	17.4	В	Т	0.54	17.4	В		
East 40th Street (East Side)	EB	LT	0.89	19.1	В	LT	0.97	20.2	С		
Park Avenue (East Side)	NB	TR	1.14	112.5	F	TR	1.18	125.4	F		
Overall Intersection		-	-	68.2	E	-	-	77.4	E		
Madison Avenue and East 4	2nd St	reet									
East 42nd Street	EB	L	0.45	17.9	В	L	0.45	17.8	В		
		Т	1.90	432.2	F	Т	1.91	436.4	F		
	WB	Т	2.00+	500.0+	F	Т	2.00+	500.0+	F		
		R	0.10	9.7	А	R	0.10	9.7	А		
Madison Avenue	NB	LT	1.10	88.2	F	LT	1.11	90.1	F		
		R	2.00+	500.0+	F	R	2.00+	500.0+	F		
Overall Intersection		-	-	372.7	F	-	-	419.8	F		
Fifth Avenue and 42nd Stree	et										
42nd Street	EB	Т	1.10	93.1	F	Т	1.10	94.5	F		
		R	0.50	55.0	D	R	0.50	55.0	D		
WI		L	0.00	0.0	А	L	0.00	0.0	А		
		Т	1.52	263.5	F	Т	1.70	342.1	F		
Fifth Avenue	SB	L	0.08	15.2	В	L	0.08	15.2	В		
		Т	2.00+	500.0+	F	Т	2.00+	500.0+	F		
	R	1.11	218.2	F	R	1.11	218.2	F			
Overall Intersection		-	-	500.0+	F	-	-	500.0+	F		
Sixth Avenue and West 42nd Street											
West 42nd Street	EB	Т	0.98	71.1	Е	Т	0.98	71.9	E		
	WB	Т	1.50	258.5	F	Т	1.66	324.9	F		
		R	0.95	52.1	D	R	1.09	89.4	F		
Sixth Avenue	NB	LT	0.82	26.6	С	LT	0.82	26.9	С		
		R	1.55	333.1	F	R	1.55	333.1	F		
Overall Intersection	-	-	100.8	F	-	-	123.3	F			

			2030	No-Action		2030 With-Action				
Intersection & Approac	Mvt V/C Ctrl Delay ¹ LO			LOS	Mvt	V/C	Ctrl Delay ¹	LOS		
Broadway and West 42nd St										
West 42nd Street	EB	Т	0.66	19.0	В	Т	0.67	19.1	В	
		R	0.75	44.1	D	R	0.76	44.8	D	
	WB	L	0.79	20.4	С	L	1.02	50.5	D	
		Т	1.37	185.4	F	Т	1.46	224.3	F	
Overall Intersection		-	-	92.7	F	-	_	113.1	F	

¹ Control delay is measured in seconds per vehicle.

² Overall intersection v/c ratio is the critical lane groups' v/c ratio.

Denotes a significantly impacted movement

The summary overview of 2030 With-Action conditions indicates that:

- In the AM peak hour, 13 intersections would operate at overall LOS E or F similar to the No-Action conditions. Forty-sixfour movements would operate at unacceptable LOS D, E, or F comparedsimilar to 45 in the No-Action condition.
- In the midday peak hour, 14<u>12</u> intersections would operate at overall LOS E or F compared<u>similar</u> to 12 in the No-Action condition. Forty-fourthree movements would operate at unacceptable LOS D, E, or F compared to 41<u>40</u> in the No-Action condition.
- In the PM peak hour, 14 intersections would operate at overall LOS E or F compared to 13 in the No-Action condition. Fifty-oneForty-eight movements would operate at unacceptable LOS D, E, or F compared to 4745 in the No-Action condition.

Traffic movements that operate at unacceptable levels of service under the No-Action condition would continue to do so under the With- Action condition; additional movements that would be expected to operate at unacceptable levels of service as a result of the Proposed Project are listed below:

- Third Avenue and East 40th Street
 - Northbound Third Avenue right turn movement (AM)
- > Lexington Avenue and East 40th Street
 - Eastbound East 40th Street right turn movement (PM)
- > Lexington Avenue and East 42nd Street
 - Southbound Lexington Avenue right turn movement (midday-and PM)
- > Park Avenue and East 40th Street
 - Eastbound East 40th Street (Tunnel) approach (PM)
- > Sixth Avenue and West 42nd Street
 - Westbound West 42nd Street right turn movement (midday)
- > Broadway and West 42nd Street
 - Westbound West 42nd left turn movement (midday and PM)

Of the 15 intersections analyzed, the Proposed Project would result in significant adverse traffic impacts at <u>all 15 intersections during the AM peak hour (at 24 movements) and the</u>

<u>PM peak hour (at 26 movements), and at</u> 14 intersections during the <u>AM peak hour (at 22 movements)</u> and the midday peak hour (at <u>23 movements)</u>, and at all <u>15 intersections (at <u>2721</u> movements) during the <u>PM peak hour.</u>). Although traffic increases at individual intersections as a result of the Proposed Project are expected to be modest (typically not more than one additional vehicle per minute), significant traffic impacts are expected for each of the 15 intersections during one or more peak hours due to prevailing traffic congestion in the network. All but one of the 15 intersections analyzed would have one or more specific traffic movements that would operate at unacceptable traffic level of service, the majority of these unacceptable movements would be expected to operate at LOS E or F, in the No Action condition during each of the peak hours analyzed. The significantly impacted traffic movements are identified below:</u>

- > Second Avenue and East 40th Street
 - Eastbound East 40th Street through movement (PM)
 - Southbound Second Avenue approach (AM and midday)
- > Second Avenue and East 42nd Street
 - Eastbound East 42nd Street throughright turn movement (midday and PM)
 - Eastbound East 42nd Street right turn movement (midday and PM)
 - Westbound East 42nd Street left turn movement (AM, midday, and PM)
 - Southbound Second Avenue through movement (midday)
 - Southbound Second Avenue right turn movement (AM, midday, and PM)
- > Third Avenue and East 40th Street
 - Third Avenue and Eastbound East 40th Street approach (AM)
 - Northbound Third Avenue through movement (AM, midday, and PM)
- > Third Avenue and East 42nd Street
 - Westbound East 42nd Street through movement (AM, midday, and PM)
 - Westbound East 42nd Street right turn movement (AM)
 - Northbound Third Avenue shared left turn movement (AM, midday, and PM)
 - Northbound Third Avenue right turn movement (AM, midday, and PM)
- > Lexington Avenue and East 40th Street
 - Eastbound East 40th Street through movement (AM)
 - Eastbound East 40th Street right turn movement (PM)
- > Lexington Avenue and East 42nd Street
 - Westbound East 42nd Street approach (AM, midday, and PM)
 - Southbound Lexington Avenue through movement (AM)
 - Southbound Lexington Avenue right turn movement (AM, midday, and PM)
- > Lexington Avenue and East 43rd Street
 - Southbound Lexington Avenue approach (<u>AM, midday and PM</u>)
- > Lexington Avenue and East 44th Street
 - Southbound Lexington Avenue approach (AM, midday, and PM)

- > Lexington Avenue and East 45th Street
 - Southbound Lexington Avenue through movement (AM, midday, and PM)
 - Southbound Lexington Avenue right turn movement (AM and PM)
- > Lexington Avenue and East 46th Street
 - Southbound Lexington Avenue approach (AM, midday, and PM)
- > Park Avenue and East 40th Street
 - Eastbound East 40th Street (West Side) approach (AM, midday, and PM)
 - Eastbound East 40th Street (Tunnel) approach (PM)
 - Eastbound East 40th Street (East Side) approach (AM and midday)
 - Northbound Park Avenue (East Side) approach (PM)
- > Madison Avenue and East 42nd Street
 - Eastbound East 42nd Street through movement (PM)
 - Westbound East 42nd Street through movement (AM, midday, and PM)
- > Fifth Avenue and 42nd Street
 - Westbound East 42nd Street through movement (AM, midday, and PM)
- Sixth Avenue and West 42nd Street
 - Westbound West 42nd Street through movement (AM, midday, and PM)
 - Westbound West 42nd Street right turn movement (midday and PM)
- > Broadway and West 42nd Street
 - Westbound West 42nd Street left turn movement (midday and PM)
 - Westbound West 42nd Street through movement (AM, midday, and PM)

The identification and evaluation of traffic capacity improvements needed to mitigate potential significant adverse traffic impacts created by the Proposed Projected are presented in **Chapter 16, Mitigation**.

Parking

The peak weekday project-generated parking demand was determined to be 131 spaces during the 9 AM to 10 AM hour as shown in **Table 9-42**. During the midday period, which is the peak parking demand for the project area, the project-generated parking demand was determined to be 125 spaces and the overall project area parking demand would increase from 3,129 spaces in the No-Action to 3,254 spaces under the With-Action condition. Overall, under the With-Action condition parking demand would exceed the off-street parking capacity within a quarter-mile of the Development Site by 253 spaces; according to the *CEQR Technical Manual*, since the site is located in Parking Zone 1 this shortfall is not considered a significant impact due to the magnitude of available alternative modes of transportation in the area.

Hour	Hotel	Local Retail	Open Space	Office	Weekday Total
12 AM - 1 AM	17	0	0	0	17
1 AM - 2 AM	18	0	0	0	18
2 AM - 3 AM	18	0	0	0	18
3 AM - 4 AM	18	0	0	0	18
4 AM - 5 AM	18	0	0	0	18
5 AM - 6 AM	18	0	0	0	18
6 AM - 7 AM	18	0	0	0	18
7 AM - 8 AM	17	2	0	7	26
8 AM - 9 AM	15	2	0	69	86
9 AM - 10 AM	13	2	0	116	131
10 AM - 11 AM	11	2	0	112	125
11 AM - 12 PM	10	2	0	111	123
12 PM - 1 PM	12	2	0	110	124
1 PM - 2 PM	10	2	0	110	122
2 PM - 3 PM	8	2	0	112	122
3 PM - 4 PM	6	2	0	117	125
4 PM - 5 PM	5	2	0	84	91
5 PM - 6 PM	11	2	0	12	25
6 PM - 7 PM	8	2	0	1	11
7 PM - 8 PM	12	2	0	0	14
8 PM - 9 PM	14	1	0	0	15
9 PM - 10 PM	15	0	0	0	15
10 PM - 11 PM	16	0	0	0	16
11 PM - 12 AM	16	0	0	0	16

Fable 9-42	Projected	Weekday	Parking	Demand

Subways

The Proposed Project is expected to generate a total of 502 and 619 new subway trips in the AM and PM peak hours, respectively. Conditions at analyzed stairs, escalators, passageways, and fare control areas in the With-Action condition are discussed below.

Subway Station Elements

As part of the Proposed Project, a number of transit and public realm improvements would be introduced to enhance passenger circulation conditions at the 42nd Street – Grand Central subway station. These changes include:

Redesign and expansion of FCAs R238 and R238A, including a new surface to station mezzanine stair (M1) and new subway entrance, which would provide direct connection from East 42nd Street to the subway station. In addition, turnstiles will be relocated from the subway mezzanine up to the new and expanded at grade fare control area thus alleviating major congestion points at the subway mezzanine. This will also allow for enhanced passenger distribution along the subway mezzanine and Lexington line platform stairs.

- A new transit hall, which would contain retail, information screens and booths, and connections to the Terminal, would be constructed on the western side of the Development Site and would expand pedestrian circulation area through the GCT's 42nd Street passage.
- Redesign of the FCA R240 area, which would include additional turnstiles, a relocated "Strawberry stair" aligned with the mezzanine, and the removal of girders and back-ofhouse spaces. This suite of improvements would provide better visual and physical connection to the P26 and P27 stairs on the northern end of the Lexington line platform, improving its function for both entry and exiting movements.
- Removal of girders from the subway mezzanine level to improve circulation and enhance sightlines.
- A "Short Loop connection" would be constructed to provide direct access for MNR and LIRR riders from the GCT lower level to the subway. Without this connection, all MNR and LIRR riders would be required to travel through the GCT upper level and use the R238 fare control area stairs to enter the subway station.

The above improvements would reduce passenger crowding and congestion and provide more vertical circulation capacity in the FCA 238 area, which would experience a larger number of MNR and LIRR riders. The M7 stairway, which would operate at LOS E during at least one peak hour in the No-Action condition signifying congested conditions, would improve to LOS C with the Proposed Project. The adjacent ES255 and ES256 escalators would also experience level of service improvements as well; the escalators would operate at LOS C in the With-Action condition compared to LOS D in the No-Action condition in the PM peak hour and would operate better (within LOS D) in the AM peak hour.

The 42nd Street – Grand Central subway station elements were analyzed with these station improvements and the results are shown in **Table 9-43** through **Table 9-47**. As shown in **Table 9-43** and **Table 9-44**, eight of the 43 analyzed stairs are expected to operate at LOS D or worse (v/c ratio at least 1.00) and experience an increase in v/c ratio in the AM peak hour in the With-Action condition compared to the No-Action condition. Of these eight stairs, five would exceed the width increment threshold and therefore were identified as having a significant adverse impact as a result of <u>the new demandchanges in station's travel patterns</u> <u>resulting</u> from the Proposed <u>ProjectProject's improvements</u>. These five stairs are located along the southbound Lexington line platform (P16 and P18) and the northbound Lexington line platform (P13, P19, and P21). The v/c ratio at 19 of the 42 stairs analyzed in the No-Action condition would improve under the With-Action condition as a result of the increased circulation capacity and redistribution of subway riders through the station.

In the PM peak hour, five of the 43 analyzed stairs are expected to operate at LOS D or worse and experience an increase in v/c ratio. One stairway, the P13 stair along the northbound Lexington line platform, would have a significant adverse impact as a result of the Proposed Project. Compared to the No-Action condition, the v/c ratio would improve at 24 stairs under the With-Action condition.

As shown in **Table 9-45**, six escalators are expected to operate at LOS D in the With Action condition during the AM peak hour, similar to the No-Action condition. Three escalators are

expected to operate at LOS D or worse in the With-Action condition during the PM peak hour, compared to five escalators in the No-Action condition. Significant adverse impacts were identified at two escalators – ES208 and ES210 located at the west end of the Flushing line platform – during both the AM and PM peak hours.

As shown in **Table 9-46** and **Table 9-47**, the passageway between Mezzanine A and the Shuttle and all analyzed fare control areas within the 42nd Street – Grand Central subway station would continue to operate at acceptable levels of service in both peak hours in the With-Action condition.

Table 9-43 2030 No-Action vs With-Action Subway Station Level of Service – Stairway

		No-Action							With-Action							
Peak		Effective	Ped Vol Up	Ped Vol Down	Friction	Surging Factor			Effective	Ped Vol Up	Ped Vol Down	Friction	Surging Factor	•		
Hour	Stairway	Width (ft)	(15-min)	(15-min)	Factor	(Up/Down)	v/c Ratio	LOS	Width (ft)	(15-min)	(15-min)	Factor	(Up/Down)	v/c Ratio	LOS	
	P10	6.42	569	472	0.90	0.75/1.00	1.42	E	6.42	542	364	0.90	0.75/1.00	1.25	D	
	P12	7.50	331	765	0.90	0.75/1.00	1.19	D	7.50	271	793	0.90	0.75/1.00	1.14	D	
	P14	7.50	427	1,002	0.90	0.75/1.00	1.55	E	7.50	375	1,040	0.90	0.75/1.00	1.52	E	
	P16	7.50	421	1,071	0.90	0.75/1.00	1.61	Е	7.50	387	1,158	0.90	0.75/1.00	1.65	E	
	P18	7.50	377	716	0.90	0.75/1.00	1.20	D	7.50	486	809	0.90	0.75/1.00	1.44	E	
	P20	6.50	355	150	0.90	0.75/1.00	0.71	С	6.50	441	149	0.90	0.75/1.00	0.84	С	
	P22	6.50	480	212	0.90	0.75/1.00	0.97	С	6.50	432	160	0.90	0.75/1.00	0.84	С	
	P24	6.50	425	331	0.90	0.75/1.00	1.02	D	6.50	492	249	0.90	0.75/1.00	1.03	D	
	P26	6.00	252	50	0.90	0.75/1.00	0.48	В	6.00	254	55	0.90	0.75/1.00	0.49	В	
	P13	7.50	761	348	0.90	0.75/1.00	1.35	E	7.50	847	361	0.90	0.75/1.00	1.47	Е	
-	P15	7.50	685	432	0.90	0.75/1.00	1.33	D	7.50	562	446	0.90	0.75/1.00	1.18	D	
	P17	7.50	717	419	0.90	0.75/1.00	1.36	E	7.50	662	387	0.90	0.75/1.00	1.25	D	
	P19	7.50	580	328	0.90	0.75/1.00	1.09	D	7.50	645	345	0.90	0.75/1.00	1.19	D	
	P21	6.50	572	195	0.90	0.75/1.00	1.09	D	6.50	715	209	0.90	0.75/1.00	1.32	D	
	P23	6.50	856	79	0.90	0.75/1.00	1.39	E	6.50	763	60	0.90	0.75/1.00	1.23	D	
	P25	6.50	738	95	0.90	0.75/1.00	1.23	D	6.50	754	86	0.90	0.75/1.00	1.24	D	
AM	P27	5.00	400	38	0.90	0.75/1.00	0.85	С	5.00	402	46	0.90	0.75/1.00	0.86	С	
	U1/U3	5.00	322	336	0.90	0.90/0.75	1.19	D	5.00	323	336	0.90	0.90/0.75	1.20	D	
	U5/U7	5.00	270	290	0.90	0.90/0.75	1.02	D	5.00	267	291	0.90	0.90/0.75	1.01	D	
	U2/U4	5.00	267	520	0.90	0.90/0.75	1.17	D	6.25	262	521	0.90	0.90/0.75	1.17	D	
	U6/U8	5.00	226	477	0.90	0.90/0.75	1.05	D	6.25	219	478	0.90	0.90/0.75	1.04	D	
-	PL2	6.50	542	619	0.90	0.75/0.95	1.57	E	6.50	539	620	0.90	0.75/0.95	1.56	Е	
	PL3	6.50	315	690	0.90	0.75/0.95	1.31	D	6.50	313	692	0.90	0.75/0.95	1.30	D	
	PL5	6.00	447	132	0.90	0.75/0.95	0.91	С	6.00	438	132	0.90	0.75/0.95	0.89	С	
	PL6	6.00	513	182	0.90	0.75/0.95	1.08	D	6.00	498	183	0.90	0.75/0.95	1.06	D	
	PL7	4.00	294	0	0.90	0.75/0.95	0.73	С	4.00	287	0	0.90	0.75/0.95	0.71	С	
	PL8	4.00	537	0	0.90	0.75/0.95	1.33	D	4.00	525	0	0.90	0.75/0.95	1.30	D	
	PL9	8.75	1,265	215	0.90	0.75/0.95	1.05	D	13.50	1,265	215	0.90	0.75/0.95	1.05	D	
	ML1	5.00	0	215	0.90	0.75/1.00	0.32	А	5.00	0	215	0.90	0.75/1.00	0.32	А	
	P10S	14.00	381	823	0.90	0.75/1.00	0.70	С	14.00	291	729	0.90	0.75/1.00	0.59	В	
	P11	8.00	127	206	0.90	0.75/1.00	0.35	Α	8.00	125	182	0.90	0.75/1.00	0.32	А	
	P3-P4	13.50	238	43	0.90	0.75/1.00	0.20	Α	13.50	238	43	0.90	0.75/1.00	0.20	А	
Table 9-43 2030 No-Action vs With-Action Subway Station Level of Service – Stairway

				No-	Action						With-Ad	tion			
Peak		Effective	Ped Vol Up	Ped Vol Down	Friction	Surging Factor			Effective	Ped Vol Up	Ped Vol Down	Friction	Surging Factor		
Hour	Stairway	Width (ft)	(15-min)	(15-min)	Factor	(Up/Down)	v/c Ratio	LOS	Width (ft)	(15-min)	(15-min)	Factor	(Up/Down)	v/c Ratio	LOS
	P10	6.42	192	160	0.90	0.75/1.00	0.48	В	6.42	258	192	0.90	0.75/1.00	0.62	В
	P12	7.50	126	500	0.90	0.75/1.00	0.66	В	7.50	153	523	0.90	0.75/1.00	0.72	С
	P14	7.50	157	657	0.90	0.75/1.00	0.86	С	7.50	156	642	0.90	0.75/1.00	0.84	С
	P16	7.50	163	853	0.90	0.75/1.00	1.06	D	7.50	133	657	0.90	0.75/1.00	0.82	С
	P18	7.50	161	846	0.90	0.75/1.00	1.05	D	7.50	92	953	0.90	0.75/1.00	1.06	D
	P20	6.50	82	259	0.90	0.75/1.00	0.42	А	6.50	79	229	0.90	0.75/1.00	0.38	А
	P22	6.50	67	515	0.90	0.75/1.00	0.69	В	6.50	69	426	0.90	0.75/1.00	0.59	В
	P24	6.50	68	807	0.90	0.75/1.00	1.02	D	6.50	69	668	0.90	0.75/1.00	0.87	С
	P26	6.00	40	351	0.90	0.75/1.00	0.50	В	6.00	56	752	0.90	0.75/1.00	1.02	D
	P13	7.50	675	415	0.90	0.75/1.00	1.30	D	7.50	916	402	0.90	0.75/1.00	1.60	Е
	P15	7.50	404	487	0.90	0.75/1.00	1.01	D	7.50	490	460	0.90	0.75/1.00	1.10	D
ſ	P17	7.50	508	567	0.90	0.75/1.00	1.23	D	7.50	581	551	0.90	0.75/1.00	1.31	D
ſ	P19	7.50	656	529	0.90	0.75/1.00	1.39	E	7.50	495	521	0.90	0.75/1.00	1.17	D
ſ	P21	6.50	599	489	0.90	0.75/1.00	1.47	E	6.50	338	521	0.90	0.75/1.00	1.11	D
ſ	P23	6.50	308	342	0.90	0.75/1.00	0.86	С	6.50	323	275	0.90	0.75/1.00	0.80	С
DM	P25	6.50	226	500	0.90	0.75/1.00	0.91	С	6.50	242	427	0.90	0.75/1.00	0.85	С
PIVI	P27	5.00	141	253	0.90	0.75/1.00	0.65	В	5.00	145	464	0.90	0.75/1.00	0.97	С
Î	U1/U3	5.00	107	298	0.90	0.90/0.75	0.76	С	5.00	107	298	0.90	0.90/0.75	0.76	С
ſ	U5/U7	5.00	88	244	0.90	0.90/0.75	0.63	В	5.00	87	244	0.90	0.90/0.75	0.63	В
ſ	U2/U4	5.00	102	666	0.90	0.90/0.75	1.19	D	6.25	103	666	0.90	0.90/0.75	1.19	D
ſ	U6/U8	5.00	85	557	0.90	0.90/0.75	0.99	С	6.25	85	556	0.90	0.90/0.75	0.99	С
Î	PL2	6.50	168	752	0.90	0.75/0.95	1.16	D	6.50	167	748	0.90	0.75/0.95	1.15	D
ľ	PL3	6.50	71	640	0.90	0.75/0.95	0.88	С	6.50	71	635	0.90	0.75/0.95	0.87	С
Î	PL5	6.00	103	544	0.90	0.75/0.95	0.88	С	6.00	104	526	0.90	0.75/0.95	0.85	С
ľ	PL6	6.00	141	727	0.90	0.75/0.95	1.18	D	6.00	142	715	0.90	0.75/0.95	1.16	D
Î	PL7	4.00	140	46	0.90	0.75/0.95	0.43	А	4.00	140	43	0.90	0.75/0.95	0.43	А
ľ	PL8	4.00	173	46	0.90	0.75/0.95	0.52	В	4.00	172	43	0.90	0.75/0.95	0.51	В
ĺ	PL9	8.75	163	1,151	0.90	0.75/0.95	0.78	С	13.50	163	1151	0.90	0.75/0.95	0.78	С
ĺ	ML1	5.00	0	115	0.90	0.75/1.00	0.17	А	5.00	0	115	0.90	0.75/1.00	0.17	А
Ì	P10S	14.00	678	349	0.90	0.75/1.00	0.66	В	14.00	535	235	0.90	0.75/1.00	0.50	В
Ì	P11	8.00	287	87	0.90	0.75/1.00	0.43	Α	8.00	223	59	0.90	0.75/1.00	0.33	А
Ì	P3-P4	13.50	32	224	0.90	0.75/1.00	0.15	Α	13.50	30	178	0.90	0.75/1.00	0.12	А

Note: Methodology based on 2020 CEQR Technical Manual guidelines

Table 9-44 2030 No-Action vs With-Action Subway Station Level of Service – Free Zone Stairs

				No-Actio	on						With-Act	ion			
Peak		Effective	Pedestrian Volume	Pedestrian Volume	Friction	Surging Factor	v/c		Effective	Pedestrian Volume	Pedestrian Volume	Friction	Surging Factor	v/c	
Hour	Stairway	Width	Up (15-min)	Down (15-min)	Factor	(Up/Down)	Ratio	LOS	Width (ft)	Up (15-min)	Down (15-min)	Factor	(Up/Down)	Ratio	LOS
	M8/10	17.70	947	530	0.90	0.90/1.00	0.66	В	17.7	1,398	376	0.90	0.90/1.00	0.81	С
	M9	12.50	2,525	340	0.90	0.90/1.00	1.86	F	12.5	2,052	317	0.90	0.90/1.00	1.54	E
	O27	10.75	440	37	0.90	0.90/1.00	0.36	А	10.75	462	56	0.90	0.90/1.00	0.39	А
	M7	8.75	602	1,201	0.90	0.90/1.00	1.58	Е	8.75	542	511	0.90	0.90/1.00	0.94	С
	M1	12.50	551	737	0.90	0.90/1.00	0.80	С	12.50	465	939	0.90	0.90/1.00	0.86	С
AM	Loop	-	-	-	-	-	-	-	13.50	1,718	252	0.90	0.90/1.00	1.07	D
	M3	10.25	309	1,120	1.00	0.95/1.00	0.94	С	10.25	549	876	0.90	0.95/1.00	0.95	С
	S10	4.00	286	42	0.90	1.00/1.00	0.61	В	4.00	286	42	0.90	1.00/1.00	0.61	В
	S11	4;00	328	52	0.90	1.00/1.00	0.70	С	4.00	328	52	0.90	1.00/1.00	0.70	С
	S1	3.75	60	11	0.90	0.80/1.00	0.17	А	3.75	60	11	0.90	0.80/1.00	0.17	А
	O3	7.75	179	32	0.90	0.80/1.00	0.24	А	7.75	179	32	0.90	0.80/1.00	0.24	А
	M8/10	17.7	522	686	0.90	0.90/1.00	0.53	В	17.7	578	1,524	0.90	0.90/1.00	0.91	С
	M9	12.5	318	2,546	0.90	0.90/1.00	1.72	F	12.5	290	1,601	0.90	0.90/1.00	1.14	D
	O27	10.75	54	427	0.90	0.90/1.00	0.34	А	10.75	72	585	0.90	0.90/1.00	0.46	В
	M7	8.75	693	728	0.90	0.90/1.00	1.27	D	8.75	300	831	0.90	0.90/1.00	0.99	С
	M1	12.50	539	1,013	0.90	0.90/1.00	0.96	С	12.50	262	1,016	0.90	0.90/1.00	0.77	С
PM	Loop	-	-	-	-	-	-	-	13.50	238	1,502	0.90	0.90/1.00	0.97	С
	M3	10.25	339	1,050	0.90	0.95/1.00	0.91	С	10.25	556	934	0.90	0.95/1.00	0.99	С
	S10	4.00	31	304	0.90	1.00/1.00	0.62	В	4.00	29	235	0.90	1.00/1.00	0.49	В
	S11	4.00	37	340	0.90	1.00/1.00	0.70	В	4.00	34	259	0.90	1.00/1.00	0.54	В
	S1	3.75	8	56	0.90	0.80/1.00	0.13	А	3.75	7	44	0.90	0.80/1.00	0.11	А
	O3	7.75	24	168	0.90	0.80/1.00	0.19	А	7.75	22	133	0.90	0.80/1.00	0.15	А

Note: Methodology based on 2020 CEQR Technical Manual guidelines

Table 9-45 2030 No-Action vs With-Action Subway Station Level of Service – Escalators

				No-Action			With-Action									
Peak Hour	Fscalator	Tread Width (in)	Pedestrian Volume	Pedestrian Volume	Surging Factor	Canacity	v/c Ratio	105	Tread Width (in)	Pedestrian Volume	Pedestrian Volume	Surging	Canacity	v/c Ratio	105	
noui	ES203	32	632	0	0.80	750	1.05	D	32	632	0	0.80	750	1.05	D	
	ES204	32	632	0	0.80	750	1.05	D	32	632	0	0.80	750	1.05	D	
	ES205	40	781	0	0.80	1,170	0.83	С	40	764	0	0.80	1,170	0.82	С	
	ES206	40	781	0	0.80	1,170	0.83	С	40	764	0	0.80	1,170	0.82	С	
AW	ES208	40	796	0	0.75	945	1.12	D	40	840	0	0.75	945	1.18	D	
	ES210	40	796	0	0.75	945	1.12	D	40	840	0	0.75	945	1.18	D	
	ES255	40	1,241	0	0.95	1,050	1.24	D	40	1,186	0	0.95	1,050	1.19	D	
	ES256	40	1,246	0	0.95	1,050	1.25	D	40	1,186	0	0.95	1,050	1.19	D	
	ES203	32	0	1,036	1.00	750	1.38	E	32	0	1,036	1.00	750	1.38	Е	
	ES204	32	163	0	0.80	750	0.27	А	32	163	0	0.80	750	0.27	А	
	ES205	40	0	990	1.00	1,170	0.85	С	40	0	946	1.00	1,170	0.81	С	
	ES206	40	414	0	0.80	1,170	0.44	А	40	413	0	0.80	1,170	0.44	А	
PIVI	ES208	40	0	1,138	1.00	945	1.20	D	40	0	1,230	1.00	945	1.30	D	
	ES210	40	716	0	0.75	945	1.01	D	40	723	0	0.75	945	1.02	D	
	ES255	40	0	1,061	1.00	1,050	1.01	D	40	0	1,014	1.00	1,050	0.97	С	
	ES256	40	1,241	0	0.95	1,050	1.24	D	40	952	0	0.95	1,050	0.95	С	

Note: Methodology based on 2020 CEQR Technical Manual guidelines

Table 9-46 2030 No-Action vs With-Action Subway Station Level of Service – Passageway

				No-Act	ion						With-A	ction			
	Peak	Effective	Pedestrian Volume West	Pedestrian Volume East	Friction	Surging Factor	v/c		Effective	Pedestrian Volume West	Pedestrian Volume East	Friction	Surging Factor	v/c	
Passageway	Hour	Width (ft)	(15-min)	(15-min)	Factor	(West/East)	Ratio	LOS	Width (ft)	(15-min)	(15-min)	Factor	(West/East)	Ratio	LOS
Passageway between Mezzanine	AM	15	1,075	1,309	0.90	0.95/0.95	0.83	С	15	1,122	609	0.90	0.95/0.95	0.60	В
A and Shuttle	PM	15	1,291	748	0.90	0.95/0.95	0.71	С	15	621	798	0.90	0.95/0.95	0.49	В

Note: Methodology based on 2020 CEQR Technical Manual guidelines

Table 9-47 2030 No-Action vs. With-Action Subway Station Level of Service – Fare Control Area

				N	o-Action				-	With	-Action			
Peak	Fare	With Action	Pedestrian Volume	Pedestrian Volume	Friction Factor	Surging	v/c		Pedestrian Volume	Pedestrian Volume	Friction Factor	Surging	v/c	
Hour	Control	Control Element	In (15-min)	Out (15-min)	(In/Out)	Factor	Ratio	LOS	In (15-min)	Out (15-min)	(In/Out)	Factor	Ratio	LOS
	R241A	5 turnstiles	215	1,265	0.90/0.90	0.90	0.60	В	215	1,265	0.90/0.90	0.90	0.60	В
	R240	11 turnstiles	819	3,260	0.90/0.90	0.90	0.76	С	651	3,257	0.90/0.90	0.90	0.72	С
	R240A	5 turnstiles	88	652	0.90/0.90	0.90	0.37	А	27	71	0.90/0.90	0.90	0.04	А
	R240B	4 turnstiles	-	-	-	-	-	-	71	586	0.90/0.90	0.90	0.33	А
	R238	17 turnstiles	1,039	2,631	0.90/0.90	0.90	0.49	В	1,401	2,545	0.90/0.90	0.90	0.50	В
	R238A	13 turnstiles	1,193	331	0.90/0.90	0.90	0.47	В	2,603	825	0.90/0.90	0.90	0.65	В
AM	R238C	3 turnstiles	-	-	-	-	-	-	49	834	0.90/0.90	0.90	0.58	В
	R237	7 turnstiles	109	905	0.90/0.90	0.90	0.29	А	109	862	0.90/0.90	0.90	0.28	А
	R237A	1 HXT	0	134	0.00/0.90	0.90	0.30	А	0	177	0.00/0.90	0.90	0.39	А
	R237B	4 turnstiles	144	938	0.90/0.90	0.90	0.54	В	144	938	0.90/0.90	0.90	0.54	В
	R236	12 turnstiles	1,029	508	0.90/0.90	0.80	0.32	А	911	415	0.90/0.90	0.80	0.28	А
	R235	9 turnstiles	714	430	0.90/0.90	0.90	0.30	А	31	442	0.90/0.90	0.90	0.10	А
	R233	2 HEETs, 1 HXT	43	238	0.90/0.90	0.80	0.30	А	43	238	0.90/0.90	0.80	0.30	А
	R241A	5 turnstiles	1,151	163	0.90/0.90	0.90	0.67	В	1,151	163	0.90/0.90	0.90	0.67	В
	R240	11 turnstiles	3,056	714	0.90/0.90	0.90	0.86	С	2,380	730	0.90/0.90	0.90	0.70	В
	R240A	5 turnstiles	603	181	0.90/0.90	0.90	0.49	В	360	80	0.90/0.90	0.90	0.22	А
	R240B	4 turnstiles	-	-	-	-	-	-	970	131	0.90/0.90	0.90	0.70	С
	R238	17 turnstiles	1,638	1,773	0.90/0.90	0.90	0.48	В	1,840	1,460	0.90/0.90	0.90	0.45	В
	R238A	13 turnstiles	1,143	342	0.90/0.90	0.90	0.46	В	1,260	2,065	0.90/0.90	0.90	0.56	В
PM	R238C	3 turnstiles	-	-	-	-	-	-	1,022	53	0.90/0.90	0.90	0.93	С
	R237	7 turnstiles	824	87	0.90/0.90	0.90	0.34	А	778	96	0.90/0.90	0.90	0.32	А
	R237A	1 HXT	0	13	0.00/0.90	0.90	0.03	А	0	13	0.00/0.90	0.90	0.03	А
	R237B	4 turnstiles	995	105	0.90/0.90	0.90	0.71	С	764	97	0.90/0.90	0.90	0.55	В
	R236	12 turnstiles	436	965	0.90/0.90	0.80	0.27	А	293	759	0.90/0.90	0.80	0.20	А
	R235	9 turnstiles	78	617	0.90/0.90	0.90	0.15	А	500	48	0.90/0.90	0.90	0.16	А
	R233	2 HEETs, 1 HXT	224	32	0.90/0.90	0.80	0.52	В	178	30	0.90/0.90	0.80	0.41	А

Notes:

Methodology based on 2020 CEQR Technical Manual guidelines

HEET = High entry/exit turnstile, HXT = high exit turnstile

Surging factors only apply to exiting volumes. The surge factor for entry volumes in 1.0.

Pedestrians

The project-generated pedestrian volumes were distributed through the pedestrian network and added to the 2030 No-Action volumes to develop the 2030 With-Action pedestrian volumes. Pedestrian analyses were performed based on these volumes and the With-Action pedestrian levels of service were determined for the analysis locations. Sidewalk widenings along the entrances of the Proposed Project site along Lexington Avenue and East 42nd Street were also incorporated into the analysis. **Table 9-48** provides an overview of the pedestrian levels of service for the peak hours analyzed. Pedestrian volumes and levels of service are provided in **Table 9-49** through **Table 9-51**. The summary of the With-Action condition indicates that:

- During the AM and midday peak hours, two sidewalks can be expected to operate at mid-LOS D or worse, the same during AM and midday peak hours as the No-Action condition. During the PM peak hour, two sidewalks would operate at mid-LOS D or worse, compared to three sidewalks in the No-Action condition.
- Six crosswalks during the AM peak hour and five crosswalks during the PM peak hour can be expected to operate at mid-LOS D or worse, the same as the No-Action condition. During the midday peak hour, six crosswalks can be expected to operate at mid-LOS D or worse, compared to five crosswalks in the No-Action condition.
- During the AM peak hour, two corners can be expected to operate at mid-LOS D or worse, the same as the No-Action condition. During the midday and PM peak hours, two corners can be expected to operate at mid-LOS D or worse, compared to three corners in both peak hours in the No-Action condition.

Of the 15 pedestrian elements analyzed, the Proposed Project would result in significant adverse impacts at one pedestrian element (one crosswalk) during the AM peak hour, five elements (three crosswalks and two corners) during the midday peak hour, and one element (one crosswalk) during the PM peak hour. Mitigation measures that could be implemented to mitigate these significant adverse pedestrian impacts are discussed in **Chapter 16**, **Mitigation**.

Table 9-48	Year 2030	With-Action	Pedestrian	Levels of	f Service Summary
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		Midday Peak	
	AM Peak Hour	Hour	PM Peak Hour
Sidewalk Elements			
Sidewalks at LOS A/B/C and Acceptable LOS D	2	2	2
Sidewalks at Unacceptable LOS D	1	1	1
Sidewalks at LOS E	1	1	1
Sidewalks at LOS F	0	0	0
Number of significantly impacted sidewalk elements	0	0	0
Crosswalk Elements	-		
Crosswalks at LOS A/B/C and Acceptable LOS D	0	0	1
Crosswalks at Unacceptable LOS D	1	2	2
Crosswalks at LOS E	3	2	1
Crosswalks at LOS F	2	2	2
Number of significantly impacted crosswalk elements	1	3	1
Corner Elements			
Corners at LOS A/B/C and Acceptable LOS D	3	3	3
Corners at Unacceptable LOS D	1	0	2
Corners at LOS E	1	2	0
Corners at LOS F	0	0	0
Number of significantly impacted corner elements	0	2	0

Note: Includes four sidewalk, six crosswalk, and five corner analysis locations

		AM	Peak Ho	ur	Midda	y Peak Ho	ur	PM	Peak Hou	r
Sidewalk	Effective Width, ft	Volume, ped/hr	Avg Ped Space,	Platoon LOS	Volume, ped/hr	Avg Ped Space, SF/P	Platoon LOS	Volume, ped/hr	Avg Ped Space, SF/P	Platoon LOS
Lexington Avenue between East 42nd Street and East 43rd Street (west side)	20.5	5,877	41.4	С	3,880	56.0	С	5,535	42.6	С
East 42nd Street between Park Avenue and Lexington Avenue (north side)	17.5	4,320	46.2	С	4,883	42.6	С	4,656	40.4	С
East 42nd Street between Vanderbilt Avenue and Park Avenue (north side)	12.0	4,946	25.3	D	5,288	25.3	D	5,877	22.8	E
East 42nd Street between Madison Avenue and Vanderbilt Avenue (north side)	12.0	7,592	15.8	E	7,000	17.7	E	9,680	12.5	E

Table 9-49 Year 2030 With-Action Pedestrian Levels of Service – Sidewalks

Denotes significantly impacted pedestrian element

Table 9-50 Year 2030 With-Action Pedestrian Levels of Service – Crosswalks

		AM F	Peak Hour		Midda	y Peak Hou	r	PM Peak Hour			
Intersection	Crosswalk	Volume, ped/hr	Avg Ped Space, SF/P	SOJ	Volume, ped/hr	Avg Ped Space, SF/P	ros	Volume, ped/hr	Avg Ped Space, SF/P	ros	
Lexinaton	North	3,363	12.6	Е	3,664	12.3	Е	2,986	15.4	D	
Avenue at	East	1,768	5<u>6</u>.8	F	2,180	<u>6.0</u>	F	1,665	<u>7.7</u>	F	
East 42nd	South	2,334	18.2	D	2,546	18.9	D	2,288	21.7	D	
Street	West	2,933	2.5	F	3,664	1.8	F	3,096	2.5	F	
Madison Avenue at	North	4,235	10.0	Е	3,870	11.7	E	5,269	9.0	E	
East 42nd Street	East	2,695	14.6	Ε	2,624	17.5	D	2,709	16.2	D	

Denotes significantly impacted pedestrian element

		AN	1 Peak Hoι	ır	Midd	lay Peak H	our	PM Peak Hour			
Intersection	Corner	Volume, ped/hr	Avg Ped Space, SF/P	ros	Volume, ped/hr	Avg Ped Space, SF/P	ros	Volume, ped/hr	Avg Ped Space, SF/P	ros	
	Northeast	138	19.4	D	166	13.9	E	234	17.4	D	
Avenue at	Southeast	352	25.2	С	296	20.7	D	345	26.5	С	
East 42nd	Northwest	666	<u>53.2</u>	<u>B</u>	932	<u>45</u> .0	<u>B</u>	621	<u>62.1</u>	<u>A</u>	
Street	Southwest	447	10.2	Е	461	8.9	Е	387	15.5	D	
Madison Avenue at East 42nd Street	Northeast	707	365.9	С	819	33.5	С	974	23.7	D	

Table 9-51 Year 2030 With-Action Pedestrian Levels of Service – Corners

Denotes significantly impacted pedestrian element

Vehicular and Pedestrian Safety

Crash data were obtained for the study area intersections from NYCDOT for the most recent three-year period for which such data are available (2015 through 2017). This information is based on data provided by the New York State Department of Transportation (NYSDOT), New York State Department of Motor Vehicles (NYSDMV), and New York City Police Department (NYPD).

The crash data detail reported crashes (crashes resulting in death, injury, or property damage in excess of \$1,000), fatalities, injuries, and pedestrian and bicycle injuries annually. According to the *CEQR Technical Manual*, an intersection is considered a high-crash location when there are 48 or more total reportable and non-reportable crashes, or five or more pedestrian/bicyclist injury crashes in any consecutive 12 months during the most recent three-year period for which data are available.

Table 9-52 presents a summary of total crashes at the study area intersections during the three-year period of 2015 through 2017, and also shows total fatalities, injuries, and pedestrian and bicycle crashes. Four intersections along 42nd Street at Second, Lexington, Park, and Sixth Avenues are considered high-crash locations by the NYCDOT criteria; these intersections have at least five pedestrian/bicyclist injury crashes within a consecutive 12-month period. Vehicular and pedestrian crash thresholds are not exceeded at any of the other analysis intersections.

Table 9-52 Vehicle and Pedestrian Crash Summary

							Pedes	trian C	rashes	Bicy	cle Cra	shes
	ection		Tota	al Crash	es by Year			by Yea	r		by Yea	<u>r</u>
North-South Roadway	East-West Roadway	2015	2016	2017	l otal Fatalities	l otal Injuries	2015	2016	2017	2015	2016	2017
Second Avenue	East 40th Street	6	1	3	0	5	2	1	0	1	0	0
Second Avenue	East 42nd Street	16	11	15	0	46	2	7	5	2	3	1
Third Avenue	East 40th Street	5	4	2	0	7	1	1	0	1	0	0
Third Avenue	East 42nd Street	10	5	11	0	16	3	1	1	0	0	0
Lexington Avenue	East 40th Street	2	2	4	0	8	0	1	1	0	0	0
Lexington Avenue	East 42nd Street	11	5	10	0	19	6	1	3	0	1	2
Lexington Avenue	East 43rd Street	4	2	4	0	8	0	1	1	1	1	0
Lexington Avenue	East 44th Street	2	4	3	0	5	1	0	1	0	1	0
Lexington Avenue	East 45th Street	2	1	3	0	3	1	0	0	0	0	0
Lexington Avenue	East 46th Street	4	2	2	0	9	2	1	0	0	0	0
Park Avenue	East 40th Street	2	2	6	0	13	0	0	2	0	0	1
Park Avenue	East 42nd Street	3	6	11	0	16	1	4	0	0	1	5
Vanderbilt Avenue	East 42nd Street	1	3	3	0	3	0	1	1	0	0	0
Madison Avenue	East 42nd Street	8	5	7	0	16	0	0	1	4	0	0
Fifth Avenue	East 42nd Street	5	11	9	0	21	1	0	2	2	3	0
Sixth Avenue	West 42nd Street	8	17	5	0	31	2	5	1	1	1	2
Broadway	West 42nd Street	3	0	5	0	6	3	0	1	0	0	2

Denotes a high crash location

Source: NYSDOT/NYSDMV (2015-2017)

9-117 Transportation

175 Park Avenue FEIS

During the three-year period mentioned above, a total of 42 crashes, 46 injuries, and 20 pedestrian/bicyclist-related crashes occurred at the intersection of Second Avenue and East 42nd Street. Based on a review of the crash data, of the 16 pedestrian/bicyclist – related crashes in 2016 and 2017, five involved pedestrians crossing against the traffic signal, and eight involve conflicts with turning vehicles. This intersection is signalized and operates in four phases (including two leading pedestrian interval phases) with pedestrian countdown signals and high visibility crosswalks striped along each approach.

A total of 26 crashes, 19 injuries, and 13 pedestrian/bicyclist-related crashes occurred at the intersection of Lexington Avenue and East 42nd Street from 2015 to 2017. Based on a review of the crash data, of the 11 pedestrian/bicyclist-related crashes in 2015 and 2017, two involved pedestrians crossing against the traffic signal, and seven involved conflicts with turning vehicles. This intersection is signalized and operates in four phases, (including a leading pedestrian interval phase) with pedestrian countdown signals and high visibility crosswalks striped along each approach. The signal phasing was modified in 2018 to provide a separate phase for Lexington Avenue turning vehicles which allows pedestrian to enter the crosswalk ahead of turning vehicles. Left turns along westbound 42nd Street and right turns along eastbound 42nd Street are prohibited from 7AM to 7PM.

A total of 20 crashes, 16 injuries, and 11 pedestrian/bicyclist-related crashes occurred at the intersection of Park Avenue and East 42nd Street from 2015 to 2017. This intersection is signalized and operates in two phases (including a pedestrian crossing phase) with pedestrian countdown signals and high visibility crosswalks striped along each approach.

From 2015 to 2017, a total of 30 crashes, 31 injuries, and 12 pedestrian/bicyclist – related crashes occurred at the intersection of Sixth Avenue and West 42nd Street. Based on a review of the crash data, of the six pedestrian/bicyclist-related crashes in 2016, three involved conflicts with turning vehicles. This intersection is signalized and operates in three phases (including a leading pedestrian interval phase) with pedestrian countdown signals and high visibility crosswalks striped along each approach. Left turns are prohibited along eastbound 42nd Street from 7AM to 7PM.

A transit initiative, the 42nd Street Transit Improvement Project, was implemented within the study area in the Fall 2019. This project aimed to improve transit reliability along the corridor through the redesign of bus lanes, turn restrictions, curb regulations, and bus queue jump signals. Improvements such as left and right turn restrictions along 42nd Street at Lexington and Sixth Avenues have been extended to include all time periods. The number of general travel lanes along 42nd Street have been reduced and narrowed to accommodate dedicated bus lanes at Second and Park Avenues as well. As a result of these changes, the overall level of pedestrian safety is expected to improve at these intersections, and the total amount of crashes and pedestrian injuries are expected to decrease.