

Appendix C1

Transportation



# **Appendix C1:**

# Transportation

FRA prepared this appendix to provide more detailed information to show the results of the analyses of Affected Environment Existing Conditions as summarized in Chapter 6, "Transportation," and prepared for the Western Rail Yard Infrastructure Project EIS.

# C1.1 TRAFFIC, PARKING, AND BICYCLES

# C1.1.1 ANALYSIS METHODOLOGY

The Preferred Alternative is a large infrastructure development in the far west Midtown area of Manhattan, peripheral to and among some of the highly congested routes in and out of New York City's central business district. This area is characterizes as having high vehicle, pedestrian, and transit volumes. The Preferred Alternative would overlap study areas with other ongoing and forthcoming transportation and infrastructure projects, and public and private real estate development in the area. The evaluation for the Preferred Alternative is consistent with methodologies developed for the *CEQR Technical Manual* in recognition of the overlapping projects and unique circumstances within the Study Area. Other local City agencies, including but not limited to NYCDOT and NYCEDC, utilize the methodology developed by NYCDCP for their own projects that involve potential vehicle, pedestrian, and transit impacts, offering a consistent methodology and guidance criteria to all types of projects implemented in the city. Given that NYCDOT manages the roads and traffic signals throughout the City, it is imperative that they coordinate with the private entity or agency sponsoring a new project, because the project may require changes to NYCDOT assets that affect the project or to implement mitigation. Chapter 3, "Transportation," of **Appendix B** provides a detailed summary of the methodology and criteria FRA used in this impact assessment.

# C1.1.1.1 STUDY AREA

The Study Area for the assessment of potential traffic and parking impacts captures the most likely area of increased traffic and parking demand that the Preferred Alternative would generate. The Study Area encompasses West 34th Street on the north, West 29th Street on the south, Twelfth Avenue on the west, and Sixth Avenue on the east (see **Figure 6-1**). All intersections within this Study Area were analyzed to develop a baseline condition for the Affected Environment Existing Conditions using *CEQR Technical Manual* guidance. The Study Area includes potential sites for construction staging or other construction activities that would require lane closures or changes to traffic flow. The Study Area is also inclusive of the most likely routes for workers driving to or from the construction site and the haul routes that trucks would use to carry materials to, or debris from, the construction site.

The Affected Environment Existing Conditions traffic network integrates data collected in 2016 and combines it with additional data available from other ongoing projects, as well as data from NYCDOT's database of turning movement counts and automatic traffic recorder (ATR) information. In particular, the Affected Environment Existing Conditions network was closely coordinated with ongoing studies for the SEQRA EIS under development by ESD for the Empire Station Development Project. Both projects share 2019 condition network volumes that NYCDOT has reviewed and accepted, as well as an aligned Synchro network.

# C1.1.1.2 ANALYSIS YEARS

Affected Environment Existing Conditions network reflects 2019 conditions prior to the ongoing COVID-19 public health emergency. Construction activities generating transportation demand are anticipated to peak in Quarter 2 of 2023<sup>1</sup> with construction efforts overlapping for both the Tunnel Encasement and the Platform. Construction for the Platform and Tunnel Encasement would be complete by 2026, and all localized, temporary street or sidewalk and lane closures required during construction at the Project Site would be restored. Any permanent changes to the traffic network would be in place and part of the transportation network.

# C1.1.1.3 *OPERATION*

The Preferred Alternative would not generate any additional traffic once operational; therefore, this EIS chapter does not include an assessment of 2026 operational conditions.

# C1.1.1.4 CONSTRUCTION

Construction would take a little more than five years to complete. This duration would affect the local Study Area in terms of transportation demand generated by construction works and construction trucks. There could also be temporary network changes during the construction period that the analysis considers.

For construction workers (as more fully detailed in Chapter 3, "Alternatives"), it is anticipated that there will be two shifts for the Platform construction (7 AM–3:30 PM and 3:30 PM–12 AM) and one shift for the Tunnel Encasement (7 AM–3:30 PM). Since work will begin at 7 AM at the Project Site, FRA has assumed that construction workers would arrive at the Project Site prior to 7 AM and leave after 3:30 PM for the daytime shift. Construction workers for the second shift would arrive before 3:30 PM and leave after 12 AM.

Truck deliveries are expected throughout the day with arrivals and departures, but most notably at the start of the morning shift with 25 percent of the trucks arriving and departing during the 6–7 AM period and then at 5 percent per hour until 10 PM (two shifts) for Platform related truck traffic and 10 percent for per hour until 2:30 PM (single shift) for the Tunnel Encasement. Truck route assumptions/assignments were based on typical distributions of construction traffic as determined through prior EISs in the area, as well as ensuring that trucks travel on NYCDOT approved truck routes. The crosstown streets most likely to be utilized by these vehicles would be West 31st, West 33rd, and West 34th Streets. Northbound traffic would likely utilize Eleventh and Twelfth Avenues, while southbound traffic would likely utilize Ninth and Twelfth Avenues.

While the NYCNCC limits construction activities to weekdays between the hours of 7 AM and 6 PM, construction work necessary at all other times, including anytime on the weekends, requires an after-hours authorization from NYCDOB. After hours variance (AHV) applications must be filed with NYCDOB at least two business days before the first intended work day. Permit authorization for weekend or after hour construction work may be granted for the following circumstances—emergency work, cases of public safety, City construction projects, construction activities with minimal impact, and for a claim of undue hardship resulting from unique site characteristics, unforeseen conditions, scheduling conflicts and/or financial considerations.

The construction transportation demand added to the area, including workers and truck deliveries, would be limited. The construction schedule and phasing plan developed by the Project Sponsor was used to establish the peak levels of traffic activity generated by the Preferred Alternative. This is estimated as occurring in the Quarter 2 of 2023 when there would be an average of about 227 workers per day over the two shifts and approximately 89 truck trips per day.

<sup>&</sup>lt;sup>1</sup> The Level 1 and Level 2 Screening Analysis is based on original construction truck and worker estimates calculated prior to revisions made by the Project Sponsor to the construction approach for the High Line underpinning component. The overall effects remain similar as that originally analyzed although somewhat reduced based on the number and size of trucks. Therefore, the numbers used in this EIS are conservative.

# C1.1.1.5 PEAK HOURS FOR ANALYSIS

In consideration of existing traffic patterns and hour-by-hour estimates of the new vehicular trips likely to be generated by transportation and infrastructure projects in the Affected Environment, 8–9 AM, 12–1 PM and 5–6 PM were selected as the peak hours for analysis of weekday traffic conditions. Some level of weekend vehicular activity is expected to be generated by construction of the Preferred Alternative and, while less peaked and lower in total volume than weekday trip generation, could result in traffic impacts as well. Therefore, Saturday midday 12–1 PM hour for analysis of peak hours from vehicular ATRs and other sources. These peak hours conform to peak hours developed for other recent and ongoing environmental studies being conducted in the area to ensure a coordinated and consistent Affected Environment Existing Condition for the Preferred Alternative in comparison to other ongoing studies in this part of Manhattan.

While the above-mentioned four peak hours represent the peak periods for traffic analysis, construction activities have a different set of peak periods based on the two distinct construction worker shifts and schedule of truck arrivals and departures. The peak construction hours used in the analysis include 6–7 AM and 3–4 PM.

# C1.1.1.6 CAPACITY ANALYSIS

The average control delay per vehicle is the basis for determining levels of service for individual lane groups (grouping of movements in one or more travel lanes), the overall approaches to each intersection, and the overall intersection itself. Levels of service (LOS) are defined in **Table C1-1**. Per the table, LOS A describes operations with low delays, i.e., an average control delay of 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 CITERIa for Signalized Intersections
LOS	Average Control Delay
A	≤ 10.0 seconds
В	>10.0 and $\leq$ 20.0 seconds
С	>20.0 and $\leq$ 35.0 seconds
D	>35.0 and $\leq$ 55.0 seconds
E	>55.0 and $\leq$ 80.0 seconds
F	>80.0 seconds
Source: Transportation Research Boar	rd. Highway Capacity Manual, 2000.

# Table C1-1 LOS Criteria for Signalized Intersections

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. High delay values included in this range 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 condition is considered unacceptable to most drivers, and 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.

Consistent with *CEQR Technical Manual* guidelines, for the analysis presented in this chapter, LOS A, B, and C were considered acceptable, LOS D was considered marginally acceptable up to mid-LOS D (45 seconds of delay for signalized intersections), and any level above mid-LOS D was considered unacceptable. LOS E and F indicate congestion. These guidelines are applicable to individual traffic movements and overall intersection levels of service.

# C1.1.1.7 TRANSPORTATION PLANNING FACTORS

The *CEQR Technical Manual* provides guidance on developing the key transportation planning factors that will frame the impact assessment, and initially determine if a detailed study is appropriate. FRA has adopted this guidance for the analysis presented in this chapter. This process begins with identifying the type and size of a project and its location in the City. The planning factors are the key elements of trip generation assumptions that estimate demand generated by any proposed project. This would include the total number of person trips expected to be generated, estimated by project type, land use, or other criteria. The trips are then distributed by assumed mode of travel between auto and taxi, transit, and pedestrians. The mode share is based on available recent census data of travel characteristics as well as precedent completed traffic impact assessments in the general project area. For auto trips, a further refinement using this same data pool, is to estimate the average vehicle occupancy to estimate the actual number of vehicle trips. Finally, the mode share estimates are provided with a temporal distribution with trip arrival and departures estimate for peak travel periods. These transportation factors serve two important functions as established by the *CEQR Technical Manual*:

First, they provide a basis to undertake the initial evaluation to determine if a traffic study is warranted. A preliminary trip generation (Level 1) and trip assignment (Level 2) threshold analysis determine if a project is likely to generate up to 50 vehicles at any one intersection during a peak hour. If this threshold is not met, the *CEQR Technical Manual* guidance indicates that a detailed traffic analysis is not likely to be appropriate as the project increment is below a level that would be a meaningful change in local and regional traffic conditions (see **Appendix C-2** for the summary of the Level 1 and Level 2 analysis for the Preferred Alternative).

Second, if a proposed project exceeded the Level 1 and Level 2 thresholds, then the transportation planning factors provide the incremental traffic demand with which to complete the detailed analyses.

# C1.1.1.8 *IMPACT CRITERIA (IF REQUIRED)*

# C1.1.1.8.1 Traffic

According to the impact criteria guidelines presented in the *CEQR Technical Manual*, changes in conditions that can be considered adverse impacts and call for examination of mitigation occur if they result in an increase in the Preferred Alternative conditions of 5 or more seconds of delay in a lane group over No Action Alternative levels beyond mid-LOS D; 4-second increase in delay at LOS E; and a 3-second increase in delay at LOS F. In addition, impacts requiring mitigation assessment include when levels of service deteriorate from acceptable A, B, or C in the No Action Alternative to marginally unacceptable LOS D (a delay in excess of 45 seconds, the midpoint of LOS D), or unacceptable LOS E or F in the Preferred Alternative conditions.

For unsignalized intersections, similar impact criteria guidelines are applicable; however, for a minor street to cause a significant impact, 90 passenger car equivalents must be identified in the future with the Preferred Alternative in any peak hour. There is only one unsignalized intersection within the Study Area, at Twelfth Avenue and West 33rd Street.

As the Preferred Alternative would be located in New York City, the impact guidelines presented in the *CEQR Technical Manual* were used to identify potential adverse traffic impacts for construction of the Preferred Alternative.

# C1.1.1.8.2 Parking

According to the *CEQR Technical Manual* guidelines for alternatives considered within the Manhattan Business District, the inability of the alternative(s) or the surrounding area to accommodate projected future parking demands would be considered a parking shortfall but is not deemed to be an adverse impact. This supports New York City policy to discourage private vehicles from coming to the Manhattan Business District.

Any unsatisfied demand for parking spaces during the midday peak utilization period would result in vehicles parking outside of the parking Study Area and motorists walking greater distances to their destinations. However, as parking shortfalls do not constitute adverse impacts under the *CEQR Technical Manual* guidelines, mitigation is not proposed.

#### C1.1.1.8.3 Bicycles

In addition to traffic and parking analysis, if required, a qualitative assessment is necessary for bicycle facilities and designated bikeways within the Study Area (e.g., Hudson River Greenway and Ninth Avenue). See Section 6.3.1.1 of Chapter 6, "Transportation," for determination that traffic and parking analysis would be required. For a Bicycle infrastructure inventoried throughout the Study Area for the Existing Conditions and, for the future, future bicycle inventory available during the Peak Construction Condition analysis years is needed. Engineering judgement, as well as possible past precedent from previous EIS documents, is the primary driver in determining potential impact to bicycle infrastructure within the Study Area.

# C1.1.2 AFFECTED ENVIRONMENT

The Affected Environment Existing Conditions (2019) were established for vehicular traffic, intersection geometries, and signal timings and operations for the Study Area. The LOS analysis was developed for signalized intersections, v/c ratios, and stopped delay values, in accordance with standard procedures prescribed in the *Highway Capacity Manual* and detailed throughout this section. FRA used the Synchro 10 software, accepted by NYCDOT, to determine traffic operations at critical intersections. Results of these analyses are tabulated below for each time period analyzed.

# C1.1.2.1 STUDY AREA ROADWAY NETWORK

Locations analyzed within the Study Area include a total of 38 intersections, all but one are signalized (Twelfth Avenue and 33rd Street is unsignalized), along local streets proximate to the Project Site or that would be affected by construction-related changes to the street network, as well as along arterials that would provide access to or from the site. The traffic Study Area focuses on locations where construction-related traffic is anticipated to be most concentrated. The traffic Study Area developed for this EIS, shown previously in Figure 6-1, includes the intersections listed below:

- Sixth Avenue at West 29th Street through West 34th Street
- Seventh Avenue at West 29th Street through West 34th Street
- Eighth Avenue at West 29th Street through West 34th Street (minus West 32nd Street)
- Ninth Avenue at West 29th Street through West 34th Street (minus West 32nd Street)
- Dyer Avenue at West 30th Street, West 31st Street and West 34th Street
- Tenth Avenue at West 29th Street through West 34th Street (minus West 32nd Street)
- Eleventh Avenue at West 29th Street through West 31st, and 34th Street
- Twelfth Avenue at West 29th Street through West 34th Street

# C1.1.2.2 TRAFFIC CONTROL

All intersections within the Study Area are signalized, except for Twelfth Avenue at West 33rd Street. Signal timing plans were obtained from NYCDOT for all signalized intersections.

# C1.1.2.3 TRAFFIC VOLUMES

Balanced existing condition traffic volumes and calibrated models from the Empire Station Development EIS, served as the primary basis for FRA's 2019 existing condition volumes for weekday AM, midday, and PM peak hours. Central Business District (CBD) Tolling and Port Authority Bus Terminal projects have an existing condition year of 2018 and 2019, respectively, were used to update the 2016 counts originally collected for intersections missing from the Empire Station Development project network. An extrapolation factor was used to extrapolate Saturday midday traffic volumes, which were unavailable from the Empire Station Development project. This data was based on the comparison of available data from 2018 Port Authority Bus Terminal and 2019 CBD Tolling ATR data sets, between Weekday midday and Saturday midday peak traffic periods. The analysis accounted for geometric changes that affected travel patterns between 2016 and 2019 in the development and calibration of Affected Environment Existing Condition networks, specifically along Sixth and Seventh Avenues with newly restricted turning movements. **Figures C1-1 through C1-4** include the traffic vehicular flow maps.

# C1.1.2.4 INTERSECTION CAPACITY ANALYSIS

Busy city streets with high v/c ratios, high approach delays, and congestion characterize West Midtown. One of the largest contributing factors to these conditions are high pedestrian volumes, which conflict with turning vehicles further adding to the delay from limited roadway capacity. Pedestrians' movement through the Study Area is concentrated along travel paths to and from the handful of transit stations near the Project Site, retail stores, and countless office buildings.

**Table C1-2** presents a summary of intersection approach LOS for all four of the traffic analysis peak hours. A considerable number of Study Area intersection approaches currently, as modeled in a calibrated Synchro network, operate at LOS D or above.

Existing Intersection Approach Level of Service Summary					
Signalized Intersections Overall LOS	Weekday 8–9 AM	Weekday 12–1 PM	Weekday 5–6 PM	Saturday 12–1 PM	
LOS A, B, or C	79	81	75	84	
LOS D	19	21	21	25	
LOS E	13	8	9	8	
LOS F	27	26	16	23	

Table C1-2 sting Intersection Approach Level of Service Summary

**Tables C1-3 through C1-6** provide the Affected Environment Existing Conditions (2019) Level-of-Service (LOS) tables for signalized and unsignalized intersections within the established vehicular Study Area for the four peak hours FRA selected for analysis: Weekday AM, Midday, and PM, and Saturday Midday LOS tables.

				All I Cu	K HOUI
Intersection Name	Approach	Movement Group	V/C	Delay	LOS
	ND	L	0.23	13.7	В
Sixth Avenue and West 29th Street	IND	Т	0.53	16.2	В
		Т	0.41	27.7	С
	$\begin{array}{c c c c c c c } \hline \mbox{Approach} & \mbox{Movement Group} & \mbox{V/C} & \mbox{Oldstarres} & Old$	R	0.18	6.3	Α
		16.7	В		
	NB	ТР	0.72	5.6	Α
		IR	-	-	-
Sixth Avenue and West 30th Street	ED	1.7	-	-	-
	ED		Movement Group         V/C         Delay           L         0.23         13.7           T         0.53         16.2           T         0.41         27.7           R         0.18         6.3           TR         16.7           TR         -           LT         -           0.86         41.8           11.8         11.8           L         1.05         92.2           T         0.71         5.2           TR         0.75         41.8	D	
	Intersection			11.8	В
	NB	L	1.05	92.2	F
Sixth Avenue and West 31st Street	xth Avenue and West 31st Street	0.71	5.2	Α	
	WB	TR	0.75	41.8	D





Affected Environment Existing Conditions MD Peak Hour Figure C1-2

WESTERN RAIL YARD INFRASTRUCTURE PROJECT

1.7.21





1.7.21

Alle		hent Existing Cond			k Hour
Intersection Name	Approach	Movement Group	V/C	Delay	LOS
			-	-	-
	Intersection			17.5	В
		тр	0.73	5.3	Α
	IND	IR	-	-	-
Sixth Avenue and West 32nd Street		1 7	-	AM Peak           //C         Delay           -         -           17.5           .73         5.3           -         -           .73         47.7           .73         47.7           .73         47.7           .60         2.0           .71         41.8           -         -           .7.5         7.5	-
	ED	LI	0.73	47.7	D
	Intersection			10.7	В
	ND	1 -	-	-	-
	IND	LI	0.60	I/C         Delay           -         -           17.5         -           17.3         5.3           -         -           -         -           0.73         47.7           10.7         -           -         -           0.60         2.0           0.71         41.8	Α
Sixth Avenue and West 33rd Street		тр	0.71	41.8	D
	VVD	IK	-	-	-
	Intersection			'C         Delay           -         -           17.5           73         5.3           -         -           73         47.7           10.7         -           -         -           60         2.0           71         41.8           -         -           7.5         -	A

				Am Peak	Полг
Intersection Name	Approach	Movement Group	V/C	Delay	LOS
			-	-	-
	NB	LTR	0.60	1.3	A
Intersection Name         Sixth Avenue and West 34th Street         Seventh Avenue and West 29th Street         Seventh Avenue and West 30th Street         Seventh Avenue and West 30th Street         Seventh Avenue and West 31st Street         Seventh Avenue and West 31st Street         Seventh Avenue and West 32nd Street         Seventh Avenue and West 32nd Street			-	-	-
Sixth Avenue and West 34th Street	Prsection NameApproachJe and West 34th StreetNBJe and West 34th StreetEBWBIntersectionWBIntersectionAvenue and West 29th StreetSBAvenue and West 29th StreetSBAvenue and West 30th StreetSBAvenue and West 30th StreetSBAvenue and West 31st StreetSBAvenue and West 31st StreetSBAvenue and West 32nd StreetSBAvenue and West 32nd StreetSBAvenue and West 33rd StreetSBAvenue and West 34th StreetSBAvenue and West 34th StreetSB <tr< td=""><td>ιT</td><td>-</td><td>-</td><td>-</td></tr<>	ιT	-	-	-
Intersection Name         Sixth Avenue and West 34th Street         Seventh Avenue and West 29th Street         Seventh Avenue and West 30th Street         Seventh Avenue and West 30th Street         Seventh Avenue and West 31st Street         Seventh Avenue and West 31st Street         Seventh Avenue and West 32nd Street         Seventh Avenue and West 32nd Street         Seventh Avenue and West 33rd Street	ED	LI	0.98	64.3	E
	\\/B	ТР	1.04	79.9	E
	VVD		-	-	-
	Intersection		÷	31.3	С
Seventh Avenue and West 29th	CD.	TR	0.81	12.0	В
	30	Т	-	-	-
Seventin Avenue and West 29th	\ <b>\</b> /D	L	0.58	45.7	D
Sireer	VVD	Т	0.98	98.9	F
	Intersection		÷	26.8	С
Seventh Avenue and West 30th	SB	L	1.04	100.5	F
		Т	0.65	8.5	Α
	EB	Т	0.51	24.9	С
Sileet		R	0.63	31.8	С
	Intersection			21.7	С
	CD.	Т	0.58	2.1	Α
Coverth Averus and West 21st	30	R	0.67	27.6	С
Sevenin Avenue and West 31st	\\/D	L	0.30	18.2	В
Sileet	VVD	Т	0.50	21.3	С
	Intersection			8.9	Α
Seventh Avenue and Meet 22nd	CD.	I T	-	-	-
Seventin Avenue and West 32nd	30	LI	0.63	8.5	Α
Slieel	Intersection		-	8.5	Α
Soventh Avenue and West 22rd	SB	Т	0.49	1.3	Α
Seventin Avenue and West 33rd	WB	L	1.04	86.6	F
Sileet	Intersection			14.6	В
			-	-	-
	SB	LTR	0.53	16.4	В
Seventh Avenue and West 34th			-	-	-
Street	ER	тр	0.99	52.0	D
			-	-	-
	WB	LT	-	-	-

				AM Feak	поиг
Intersection Name	Approach	Movement Group	V/C	Delay	LOS
	••		0.83	13.8	В
	Intersection			24.3	С
		L	0.89	70.3	E
	NB	Т	0.52	17.0	В
Eighth Avenue and West 29th Street			0.90	37.7	D
g	WB	TR	-	-	_
	Intersection			27.8	С
		TR	0.58	7.3	A
	NB	Т	-	-	-
Fighth Avenue and West 30th Street		l	0.72	31.8	С
g	EB		0.64	21.9	C
	Intersection		0.01	13.1	B
		1	0.54	32.6	C
	NB	<u>_</u>	0.60	9.7	A
Fighth Avenue and West 31st Street		T	0.33	13.3	B
	WB	 R	0.85	43.8	D
	Intersection		0.00	16.0	B
	Interedetion	1	1 05	104.0	F
	NB	E	0.96	27.6	C
	ND	TR	-	-	-
Eighth Avenue and West 33rd Street			0.17	17 7	B
	WB	TR	-	-	-
	Intersection			34.2	C
	Intersection	1	1.05	76.6	F
	NB	E	0.65	1.1	
		TR	0.00	-	
	EB	LT		_	
Eighth Avenue and West 34th Street			- 0.82	18.6	B
		т	0.02	12.0	B
	WB	P	0.043	12.3	B
	Intersection	N N	0.45	12.2	B
	Intersection		0.03	22.3	C
	SB	TR	0.95	22.5	0
Ninth Avenue and West 20th Street			-	-	-
Nintil Avenue and West 29th Street	WB	LT	0.81	20.7	-
	Intersection		0.01	23.1	0 C
	Intersection	1	0.54	23.0 5.4	~
	SB	Е Т	0.54	0. <del>4</del>	^
	30		0.30	2.1	A 
Ninth Avenue and West 30th Street		T	0.10	1. <del>4</del> 30 5	л С
	EB		1.05	06.9	
	Intersection	n.	1.05	21 5	
	Intersection	тр	0.75	۲.5 ۲	~
	SB		0.75	5.7	А
Ninth Avenue and West 21st Street			-	-	-
MILLI AVENUE ANU WEST STST STEEL	WB		-	40.1	- -
	Interception		0.04	42.1	P
	Intersection		0.66	02.4	
	SB	IK	0.00	03.1	Г
Ninth Avenue and Meat 22rd Streat		1	-	-	-
winth Avenue and West 33rd Street	WB	L T	0.27	31.4	
	Intorocation		0.32	29.9	
Nighth Assessing and March Oddle Od at	Intersection	1	0.00	/0.0	
NININ Avenue and West 34th Street	5B	L L	0.68	57.9	E

	Table C1-3 (cont'd)
Affected Environment Existing	<b>Conditions Level of Service</b>
	AM Peak Hour

Intersection Name	Approach	Movement Group	V/C	Delay	LOS
		TR	0.57	17.8	В
			-	-	-
	FB	Т	1.05	78.9	E
	LD	R	0.89	106.3	F
	W/B	1.1	-	-	-
			0.83	55.9	E
	Intersection		1	44.3	D
	SB	Т	0.42	19.7	В
Dver Avenue and West 30th Street	EB	L	0.08	3.5	A
Byer / Wende and West bour bireet	WB	R	0.02	0.1	A
	Intersection		i	14.9	В
	NB	1.1	-	-	-
			0.10	22.4	С
	SB	TR	0.26	9.1	A
Dver Avenue and West 31st street	00		$\begin{array}{c c c c c c c c c c c c c c c c c c c $	-	
Byer Avenue and West 913t street		1 17	-	-	-
	WB	Ľ'	0.43	7.1	A
		R	0.27	5.5	A
	Intersection			10.9	В
	SB	IR	0.80	54.4	D
	55	LIX	1.05	132.7	F
Dyer Avenue and West 34th Street	FB	1.7	-	-	-
	LD	L1	0.58	24.8	С
	W/B	Т	0.65	9.4	A
	VVD	R	0.14	14.8	В
	Intersection			35.8	D
	NB	Т	0.55	54.2	D
Topth Avenue and West 20th Street	\M/B	Т	0.57	48.6	D
Tentin Avenue and West 29th Street	VVD	R	0.08	3.1	A
	Intersection			51.3	D
			0.51	31.1	С
	NB	TR	-	-	-
			-	-	-
Tenth Avenue and West 30th Street			-	-	-
	EB	L	0.74	74.9	E
		Т	0.53	50.6	D
	Intersection				D
	NB	Т	0.41	35.3	D
Tenth Avenue and West 31st Street	WB	R	0.55	21.2	С
	Intersection	0	-	33.3	С
	NR	іт	-	-	-
			0.53	38.0	D
Tenth Avenue and West 33rd Street	W/R	ТР	0.33	42.2	D
	VVD	IK	-	-	-
	Intersection			38.5	D
			-	-	-
	NB	LTR	0.58	6.2	A
			-	-	-
Tenth Avenue and West 34th Street	EP	L	1.05	137.9	F
		Т	0.64	30.0	С
	W/R	Т	1.05	93.2	F
		R	0.70	44.4	D
	Intersection			29.9	С

				AM Peak	Hour
Intersection Name	Approach	Movement Group	V/C	Delay	LOS
	<b>CD</b>	тр	0.60	4.1	Α
Eleventh Avenue and Meet 20th	30	IK	-	-	-
Eleventh Avenue and West 29th		L	0.56	12.5	В
Sireei	VVB	Т	0.12	14.1	В
	Intersection			6.1	Α
	00	1.7	-	-	-
	58	LI	0.62	3.5	Α
Elevenin Avenue and West 30in		Т	0.51	25.6	С
Sileet	ED	R	0.40	25.0	С
	Intersection			8.1	Α
	CD	тр	0.69	11.3	В
Flowenth Avenue and West 22rd	30	IK	-	-	-
Street	\//R	L	I	-	-
Sileet	VD	Т	I	-	-
	Intersection			11.3	В
			I	-	-
	SB	LTR	0.79	25.9	С
			I	-	-
		L	0.59	30.1	С
Eleventh Avenue and West 34th Street	EB	Т	0.37	27.6	С
		R	0.78	67.1	E
		L	0.66	15.8	В
	WB	тр	0.91	41.7	D
			-	-	-
	Intersection			29.4	С
	NB	Т	0.57	12.3	В
	SB	Т	0.71	1.3	Α
Twelfth Avenue and West 29th Street	W/B	L	0.18	53.8	D
	VVD	R	0.48	61.8	E
	Intersection			8.9	Α
	NB	TR	0.73	8.3	A
			-	-	-
		1	-	-	-
	SB		0.89	100.3	F
Twelfth Avenue and West 30th Street	00	TR	0.85	15.7	В
			-	-	-
			-	-	-
	EB	LTR	0.01	62.0	E
			-	-	-
	Intersection			15.2	В
	NB	T	0.35	-	-
Twelfth Avenue and West 33rd Street	SB	Т	0.51	-	-
	WB	R	0.06	10.7	В
	Intersection	Unsignalized		0.1	A
	NB	T	0.77	33.8	C
		R	0.57	33.8	C
	SB	L	0.56 $12.5$ $0.12$ $14.1$ $6.1$ $ 0.62$ $3.5$ $0.51$ $25.6$ $0.40$ $25.0$ $8.1$ $0.69$ $11.3$ $              0.79$ $25.9$ $  0.79$ $25.9$ $  0.79$ $25.9$ $  0.79$ $25.9$ $  0.79$ $25.9$ $  0.79$ $25.9$ $  0.79$ $25.9$ $  0.57$ $12.3$ $0.71$ $1.3$ $0.73$ $8.7$ $0.71$ $1.3$ $0.71$ $1.3$ $0.71$ $1.3$ $0.73$ $8.3$ $    0.89$ $100.3$ $0.85$ $15.7$ $    0.01$ $62.0$ $  0.51$ $ 0.51$ $ 0.651$ $ 0.77$ $33.8$ $0.40$ $59.4$ $0.67$ $12.0$ $0.76$ $71.2$ $0.35$ $34.9$ $27.0$	E	
Twelfth Avenue and West 34th Street		Т	0.67	12.0	В
	WB	LR	0.76	71.2	E
		<b>_</b> :\	0.35	34.9	С
	Intersection			27.0	С

				ID Fear	noui
Intersection Name	Approach	Movement Group	V/C	Delay	LOS
	ND	TR	0.18	14.8	В
	IND	Т	0.47	17.2	В
Sixth Avenue and West 29th Street		Т	0.31	25.8	С
	VVB	R	0.25	5.7	Α
	Intersection		•	16.9	В
	ND	тр	0.67	6.2	Α
	NB	IR	-	-	-
Sixth Avenue and West 29th Street	ED.	1.7	-	-	-
	EB		0.73	34.0	С
	Intersection			11.0	В
	ND	L	1.05	97.4	F
	IND	Т	0.67	5.4	Α
Sixth Avenue and West 31st Street		тр	0.78	43.8	D
	VVD	IR	-	-	-
	Intersection			20.2	С
	ND	тр	0.69	5.6	Α
	IND	IK	-	-	-
Sixth Avenue and West 30th Street	ED	1.7	-	-	-
			0.78	49.7	D
	Intersection			12.5	В
	NR	тр	0.69	5.6	Α
	ND		-	-	-
Sixth Avenue and West 31st Street	ED	1.7	-	-	-
	ED	LI	0.78	49.7	D
	Intersection			12.5	В
	NB	тр	0.69	5.6	Α
	ND		-	-	-
Sixth Avenue and West 32nd Street	FR	1.7	-	-	-
	LD	E I	0.78	49.7	D
	Intersection			12.5	В
	NB	IT	0.90	61.6	E
			0.49	7.7	A
Sixth Avenue and West 33th Street	W/B	TR	0.42	22.6	С
	110		0.51	28.5	С
	Intersection			18.4	В
			-	-	-
	SB	LTR	0.55	2.1	A
			-	-	-
Sixth Avenue and West 34th Street	FB	IT	-	-	-
			1.05	80.1	F
	WB	TR	1.05	79.1	E
			-	-	-
	Intersection			37.1	D
	SB	TR	0.63	9.3	A
Seventh Avenue and West 29th		Т	-	-	-
Street	WB	L	0.55	45.5	D
		Т	0.65	53.9	D
	Intersection			18.5	В

				MD Peak	Hour
Intersection Name	Approach	Movement Group	V/C	Delay	LOS
	0.0	L	0.90	61.6	E
	SB	Т	0.49	7.7	Α
Seventh Avenue and West 30th		Т	0.42	22.6	С
Street	EB	R	0.51	28.5	C
	Intersection			18.4	В
		Т	0.44	1.2	Α
Seventh Avenue and West 31st	SB	R	0.83	40.9	D
Seventh Avenue and West 31st		L	0.33	17.8	В
Street	WB	Т	0.48	19.7	В
	Intersection			12.1	В
			-	-	-
Seventh Avenue and West 32nd	SB	LI	0.59	7.8	Α
Street	Intersection		7.8	A	
	SB	Т	0.43	1.7	Α
Seventh Avenue and West 33rd	WB	L	0.90	55.9	Е
Street	Intersection			9.4	Ā
			-	_	-
	SB	ITR	0.58	17.5	В
			-	-	-
Seventh Avenue and West 34th			1 02	56.3	F
Street	EB	TR	-	-	-
		LT	-	_	-
	WB		1.05	44 7	D
	Intersection		1.00	34.5	C
	Interecetion	1	0.36	22.6	C C
	NB	<u> </u>	0.00	15.8	B
Fighth Avenue and West 29th Street	WB	•	0.44	32.8	C
		TR	-		-
	Intersection			20.2	С
	Interedetion	TR	0.50	13.7	B
	NB	Т	-	-	-
Fighth Avenue and West 30th Street		· · · · ·	0.53	24.6	С
	EB	<u> </u>	0.34	15.0	B
	Intersection	•	0.04	15.3	B
	interecoulori	1	0.34	39.4	D
	NB	<u> </u>	0.43	5.8	A
Fighth Avenue and West 31st Street	<u> </u>	T	0.23	7.2	A
	WB	R	0.91	44 1	D
	Intersection		1 0.01	15.7	B
		I	1.04	101.4	F
	NB	<u> </u>	0.78	21.5	Ċ
		TR	-		-
Eighth Avenue and West 33rd Street			0.13	17.8	B
	WB	TR		-	-
	Intersection			32.0	C
		 	1.05	110 4	F
	NR	<u>L</u>	0.74	8.6	Δ.
		TR			-
			-		
Eighth Avenue and West 34th Street	EB	LT	0.86	18.7	B
	<u> </u>	Т	0.00	16.2	R
	WB	R	0.52	13.6	B
	Intersection		0.02	17.3	B

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Intersection Name	Approach	Movement Group	V/C	Delay	LOS
	0.0	TD	0.70	12.5	В
Ninth Avenue and West 29th Street	5B	IR	_	-	-
			_	_	_
	WB	LT	0.65	37.0	D
	Intersection		0.00	17.5	B
	Interecetion		0.58	7.4	Δ
	SB	<u> </u>	0.00	19	Δ
	00	 	0.10	1.6	Δ
Ninth Avenue and West 30th Street		т <u>г</u>	0.12	27.9	C C
	EB	P	1.05	00.6	F
	Intersection		1.00	23.4	C I
	Intersection	TP	0.74	23.4	Δ
	SB		0.74	9.5	A
Ninth Avenue and West 31st Street			-	-	-
Nintri Avenue and West 51st Street	WB	LI	-	-	-
	Interrection	I	0.52	20.7	
	Intersection	TD	0.50	12.5	B
Ninth Avenue and West 33rd Street	SB	IR	0.59	9.6	A
			-	-	-
	WB	L	0.33	22.8	C
		I	0.35	22.0	C
	Intersection		0.00	11.5	В
	SB	L	0.83	71.6	E
		TR	0.49	15.8	В
			-	-	-
Ninth Avenue and West 34th Street	FB	T	1.05	81.3	F
		R	0.83	43.8	D
	WB	IT	-	-	-
			0.92	65.1	E
	Intersection		T	43.0	D
	SB	Ť	0.24	16.3	В
Dver Avenue and West 30th Street	EB	L	0.24	6.4	A
Byer Avenue and West bour blieft	WB	R	0.04	0.1	A
	Intersection			9.4	A
	NB	1.7	-	-	-
	ND	E I	0.28	82.8	F
	SB	TP	0.14	8.2	Α
Dvor Avonue and West 31st Street	55		-	-	-
Dyer Avenue and West 31st Street		1.7	-	-	-
	WB	LI	0.27	33.8	С
		R	0.26	33.9	С
	Intersection			51.6	D
	00		0.53	39.4	D
	28	LK	0.76	73.4	E
	<b>FD</b>	17	-	-	-
Dyer Avenue and West 34th Street	EB		0.50	17.1	В
		Т	0.61	8.9	Α
	WB	R	0.29	16.4	В
	Intersection			21.8	С
	NB	Т	0.60	92.6	F
		T	0.36	32.7	С
I enth Avenue and West 29th Street	WB	R	0.16	6.9	Ā
Ninth Avenue and West 30th Street   Ninth Avenue and West 31st Street   Ninth Avenue and West 33rd Street   Ninth Avenue and West 34th Street   Dyer Avenue and West 30th Street   Dyer Avenue and West 31st Street   Dyer Avenue and West 31st Street   Tenth Avenue and West 29th Street	Intersection		1	79.2	E
		ļ			

				MD Peak	Hour
Intersection Name	Approach	Movement Group	V/C	Delay	LOS
		•	0.70	45.5	D
	NB	TR	-	-	-
			-	-	-
Tenth Avenue and West 30th Street			_	_	-
	FB	L	1.05	107.4	F
		т	1.00	107.4	F
	Intersection	1	1.05	58.0	F
	ND	т	0.45	30.9	
Topth Avenue and West 21st Street			0.45	4.4	A
Tentin Avenue and West 51st Street	VVD	ĸ	0.34	51.0	C
	Intersection		0.0	A	
	NB	LT	-	-	-
			0.64	5.6	A
Tenth Avenue and West 33rd Street	WB			24.4	C
				-	-
	Intersection		1	8.0	A
			-	-	-
	NB	LTR	0.70	6.7	A
			0.82	34.0	С
Tenth Avenue and West 34th Street	FB	L	1.05	130.7	F
		Т	0.45	23.0	С
	W/B	T	1.05	96.3	F
	110	R	0.68	42.5	D
	Intersection			29.3	С
	CB	тр	0.46	4.4	A
	55		-	-	-
Street	\//B	L	0.16	4.9	Α
Silcer	110	Т	0.46	19.2	В
	Intersection		-	7.2	Α
	SB	IТ	-	-	-
Flowenth Avenue and West 20th		LI	0.64	4.8	Α
Eleventin Avenue and West 30th	ED	Т	0.83	42.6	D
Sileet	ED	R	0.43	26.8	С
	Intersection			15.6	В
	CD.	TB	0.56	8.9	Α
	30	IR	-	-	-
Eleventh Avenue and West 33rd		L	-	-	-
Slieel	VVD	Т	0.07	29.3	С
	Intersection			9.5	Α
			-	-	-
	SB	LTR	0.69	22.8	С
			-	-	-
		L	1.02	91.9	F
Eleventh Avenue and West 34th	EB	 T	0.36	27.2	С
Street		R	0.44	35.3	D
			0.49	13.4	B
	WB		0.83	33.3	C
		TR	-	-	-
	Intersection		1	31.7	С
	NB	Т	0.53	11.9	B
	SB	T	0.65	2.0	Ā
Twelfth Avenue and West 29th Street		L .	0.12	41.3	D
	WB	R	0.89	81.2	F
	Intersection			11.2	В

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Intersection Name	Approach	Movement Group	V/C	Delay	LOS
	ND	тр	0.73	11.6	В
	IND	IK	-	-	-
		1	-	-	-
	SD.	L	1.05	130.8	F
Twolfth Avenue and West 20th Street	30	тв	0.79	20.2	С
Twenth Avenue and West Sour Street			-	-	-
			-	-	-
	EB	LTR	0.04	47.7	D
			-	-	-
	Intersection			21.3	С
	NB	Т	0.29	-	-
Twolfth Avenue and Meat 22rd Street	SB	Т	0.44	-	-
Twenth Avenue and West 35rd Street	WB	R	0.09	10.2	В
	Intersection	Unsignalized		0.2	Α
		Т	0.70	50.3	D
	IND	R	0.64	53.3	D
	CD.	L	0.59	58.2	E
Twelfth Avenue and West 34th Street	30	Т	0.61	12.7	В
	\//B	I P	0.59	45.6	D
	VVD		0.37	27.9	С
	Intersection			33.9	С

				PM Peak	Hour
Intersection Name	Approach	Movement Group	V/C	Delay	LOS
	ND	L	0.19	13.1	В
	IND	Т	0.46	15.3	В
Sixth Avenue and West 29th Street		Т	0.56	31.4	С
	VVD	R	0.24	5.7	Α
	Intersection			16.7	В
	NB	TR	0.67	5.9	A
			-	-	-
Sixth Avenue and West 30th Street	FB	IΤ	-	-	-
			0.70	31.6	C
	Intersection		1 4 9 5	10.1	В
	NB	L	1.05	89.1	F
		l	0.59	3.5	A
Sixth Avenue and West 31st Street	WB	TR	0.93	60.9	E
	luteur estieur		-	-	-
	Intersection		0.60	24.7	
	NB	TR	0.60	4.8	A
Sixth Avenue and West 22nd Street			-	-	-
Sixin Avenue and West 52nd Street	EB	LT	0.61	- 11.0	- D
	Intersection		0.01	9.8	Δ
	Intersection			9.0	~
	NB	LT	- 0.48	3.2	- Δ
Sixth Avenue and West 33rd Street			0.40	37.4	
	WB	TR	-	-	-
	Intersection			8.8	Α
	NB		-	-	-
		LTR	0.45	1.3	Α
			-	-	-
Sixth Avenue and West 24th Street	ГР	LT	-	-	-
Sixin Avenue and West 34th Street	ED		0.87	53.3	D
	W/B	TP	0.97	63.6	E
	VVD		-	-	-
	Intersection			27.4	С
	SB	TR	0.61	7.6	A
Seventh Avenue and West 29th		T	1.05	113.4	F
Street	WB	L	0.55	48.9	D
		T	1.05	114.1	F
	Intersection		0.04	37.4	D
	SB		0.84	51.1	D
Seventh Avenue and West 30th			0.54		A
Street	EB		0.41	23.4	
	Interception	ĸ	0.00	32.0	
	Intersection	т	0.53	10.1	
	SB		0.00	1.7	
Seventh Avenue and West 31st			0.07	19.5	B
Street	WB	Т	0.40	42.2	ם
	Intersection	•	0.02	17.2	B

Intersection Name	Approach	Movement Group	V/C	Delay	LOS
Seventh Avenue and West 32nd Street			-	-	-
	28	LI	0.59	8.0	Α
	Intersection		<u>.</u>	8.0	Α
Coverth Avenue and West 22rd	SB	Т	0.46	1.8	Α
Sevenin Avenue and West 33rd	WB	L	1.05	92.1	F
Slieet	Intersection			15.6	В
			-	-	-
	SB	LTR	0.48	15.6	В
			-	-	-
Seventh Avenue and West 34th	FB	TR	0.96	48.1	D
Street			-	-	-
	WB	іт	-	-	-
			0.75	9.5	A
	Intersection	-	1	22.5	C
	NB	<u> </u>	0.82	59.6	E
		Т	0.47	16.2	В
Eighth Avenue and West 29th Street	WB	TR	1.01	47.7	D
			-	-	-
	Intersection			28.7	C
	NB		0.55	8.1	A
		 	-	-	-
Eighth Avenue and West 30th Street	EB	<u> </u>	0.61	26.1	C
		I	0.41	16.7	В
	Intersection		0.75	11.7	В
	NB	<u> </u>	0.75	41.6	D
Fighth Avenue and Mest 21st Street			0.55	8.5	A
Eighth Avenue and West 31st Street	WB		0.44	14.8	В
	Interportion	R	1.00	01.3	E
	Intersection	1	1.05	20.7	
	NB	<b>L</b>	1.05	95.7	Г Р
		TR	0.80	13.4	Б
Eighth Avenue and West 33rd Street			0.28	18.8	B
	WB	TR	- 0.20	-	-
	Intersection		_	26.0	C
	Intersection	1	1.05	99.6	F
	NB	<u>L</u>	0.77	61	A
		TR	-	-	-
			_	-	-
Eighth Avenue and West 34th Street	EB	LT	0.68	12.0	В
	14/5	Т	0.54	15.0	В
	WB	R	0.33	11.5	В
	Intersection		•	14.0	В
	00	TO	0.71	13.1	В
	SB	IK	-	-	-
Ninth Avenue and West 29th Street		1 -	-	-	-
	VVB		0.92	47.7	D
	Intersection		•	22.2	С
		L	0.57	9.3	Α
	SB	Т	0.41	2.5	А
Ninth Avenue and West 30th Street		R2	0.14	2.3	А
	ED	Т	0.30	27.5	С
		R	0.98	89.7	F

				PM Peak	Hour
Intersection Name	Approach	Movement Group	V/C	Delay	LOS
	Intersection			18.0	В
	CD.	TR	0.63	9.3	Α
	30	Т	-	-	-
Ninth Avenue and West 31st Street	W/D	LT	-	-	-
	VVD	Т	1.05	82.6	F
	Intersection			31.3	С
	CD.	TR	0.48	9.8	Α
	30		-	-	-
Ninth Avenue and West 33rd Street		L	0.38	21.5	С
	VVD	Т	0.57	23.7	С
	Intersection			13.0	В
		L	0.37	42.3	D
	SB	TB	0.46	15.4	В
		IR	-	-	-
Ninth Avenue and West 24th Street		Т	1.05	81.0	F
Ninth Avenue and West 34th Street	EB	R	1.05	85.2	F
	W/D	1.7	-	-	-
	VVD	LI	0.94	81.6	F
	Intersection			51.0	D
	SB	Т	0.14	39.1	D
Duer Avenue and West 20th Street	EB	L	0.35	9.8	Α
Dyer Avenue and West 30th Street	WB	R	0.05	0.1	Α
	Intersection			14.4	В
	NB	1.7	-	-	-
		LI	0.42	2.0	Α
	CD.	тр	0.09	7.8	Α
Duar Avanua and West 21st street	30	IR	-	-	-
Dyer Avenue and West 51st street	WB	1 7	-	-	-
		LI	0.47	33.1	С
		R	0.52	33.6	С
	Intersection			12.6	В
	SD.	IP	0.54	39.4	D
	50	LK	0.91	101.4	F
	EB	IТ	-	-	-
Dyer Avenue and West 34th Street	LD		0.67	22.4	С
	W/B	Т	0.74	17.9	В
	VVD	R	0.14	13.9	В
	Intersection			28.2	С
	NB	Т	0.73	47.3	D
Tenth Avenue and West 20th Street	W/R	Т	0.37	31.5	С
	440	R	0.33	16.2	В
	Intersection		1	42.2	D
			1.05	15.4	В
	NB	TR	-	-	-
			-	-	-
Tenth Avenue and West 30th Street		1	-	-	-
	EB		0.94	82.6	F
		Т	0.86	74.0	E
	Intersection			26.4	С
	NB	Т	0.44	2.9	A
Tenth Avenue and West 31st Street	WB	R	0.58	16.9	В
	Intersection			4.9	A

		, , , , , , , , , , , , , , , , , , ,		PM Peak	Hour
Intersection Name	Approach	Movement Group	V/C	Delay	LOS
	NB	IT	-	-	-
			0.62	7.4	A
Tenth Avenue and West 33rd Street	WB	TR	0.46	18.7	В
	110		-	-	-
	Intersection			9.2	A
			-	-	-
	NB	LTR	0.70	5.2	A
			-	-	-
Tenth Avenue and West 34th Street	FB	L	1.05	126.8	F
		T	0.62	23.1	С
	WB	T	1.05	90.2	F
		R	1.05	89.6	F
	Intersection		-	30.4	С
	SB	TR	0.40	5.8	A
Eleventh Avenue and West 20th			-	-	-
Street	WB	L	-	-	-
olicet	110	Т	0.39	40.2	D
	Intersection			12.5	В
	SB	1.7	-	-	-
Eleventh Avenue and West 20th	6	E I	0.42	10.8	В
Street	EB	Т	0.90	53.4	D
Slieet	LD	R	0.52	28.9	С
	Intersection			23.5	С
	<b>CD</b>	тр	0.31	13.6	В
Flowenth Avenue and West 22rd	30	11X	-	-	-
Eleventin Avenue and West 33rd		L	0.71	41.0	D
Sileer	VVD	Т	0.10	23.0	С
	Intersection			20.7	С
			-	-	-
	SB	LTR	0.34	17.1	В
			-	-	-
		L	1.03	90.0	F
Eleventh Avenue and West 34th	EB	Т	0.57	31.3	С
Street		R	0.74	58.8	E
		L	0.58	15.0	В
	WB	тр	0.95	46.3	D
		IR	-	-	-
	Intersection		_	38.5	D
	NB	Т	0.71	15.4	В
Twolfth Avenue and West 20th	SB	Т	0.76	5.5	A
Street		L	0.25	55.2	Е
Sileer	VVD	R	1.05	132.6	F
	Intersection		_	16.2	В
		ТР	0.91	14.9	В
	IND	١ĸ	-	-	-
		I	-	-	-
	CD.	L	1.05	109.3	F
Twelfth Avenue and West 30th	SD	ТР	1.01	37.3	D
Street		IK	-	-	-
			-	-	-
	EB	LTR	0.10	63.9	E
			-	-	-
	Intersection			28.5	С

# Table C1-5 (cont'd) Affected Environment Existing Conditions Level of Service

		-		<b>PM Peak</b>	Hour
Intersection Name	Approach	Movement Group	V/C	Delay	LOS
	NB	Т	0.44	-	-
Twelfth Avenue and West 33rd	SB	Т	0.56	-	-
Street	WB	R	0.10	12.0	В
	Intersection	Unsignalized		0.1	A
	NB	Т	0.77	5.0	Α
		R	0.51	4.7	Α
Twolfth Avenue and Meat 24th	СD	L	1.05	129.5	F
Street	30	Т	0.77	14.7	В
Sileer	\M/P	I P	0.60	62.3	E
	VVD	LR	0.38	44.5	D
	Intersection			17.8	В

Intersection Name	Approach	Movement Group	V/C	Delay	LOS
	ND	L	0.19	14.9	В
	IND	Т	0.48	17.4	В
Sixth Avenue and West 29th Street		Т	0.32	26.0	С
	VVD	R	0.26	5.7	Α
	Intersection			17.0	В
	ND	тр	0.69	6.5	Α
	NB	IR	-	-	-
Sixth Avenue and West 30th Street	ГР	1.7	-	-	-
	EB	LI	0.75	37.1	D
	Intersection		<u> </u>	11.7	В
	ND	L	1.03	85.5	F
	NB	Т	0.69	5.6	Α
Sixth Avenue and West 31st Street		тр	0.80	45.5	D
	WB	IR	-	-	-
	Intersection			19.7	В
	NB	TR	0.71	5.7	Α
			-	-	-
Sixth Avenue and West 32nd Street	EB	1.7	-	-	-
		LI	0.80	51.9	D
	Intersection		<u> </u>	12.9	В
		LT	-	-	-
	NB		0.58	2.5	Α
Sixth Avenue and West 33rd Street		тр	0.70	40.4	D
	VVB	IR	-	-	-
	Intersection		<u> </u>	8.4	Α
			-	-	-
	NB	LTR	0.56	2.2	Α
			-	-	-
Civith Avenue and Meat 24th Chreat	<b>FD</b>	1.7	-	-	-
Sixin Avenue and West 34th Street	EB	LI	0.48	47.2	D
		TD	0.92	47.5	D
	VVB	IK	0.18	20.5	С
	Intersection		•	22.0	С

Intersection Name	Approach	Movement Group	V/C	Delay	LOS
		тр	0.64	9.5	А
Coverth Avenue and West 20th	58	IR	-	-	-
Seventin Avenue and West 29th		L	0.57	46.5	D
Sileer	VVD	Т	0.67	55.3	E
	Intersection			18.9	В
	SB	L	0.91	64.7	E
Seventh Avenue and West 30th	00	Т	0.50	7.7	A
Street	FB	T	0.43	20.3	С
01001		R	0.47	23.6	С
	Intersection		1	17.9	В
	SB	T	0.45	1.2	A
Seventh Avenue and West 31st		R	0.72	28.5	C
Street	WB	L	0.34	17.2	В
		T	0.50	19.4	В
	Intersection		1	10.1	В
Seventh Avenue and West 32nd	SB	LT	-	-	-
Street			0.60	7.9	A
	Intersection	<del>_</del>	0.44	7.9	A
Seventh Avenue and West 33rd	SB		0.44	2.0	A
Street	WB	L	0.93	59.9	E
	Intersection		1	10.2	В
	CD.		-	-	-
	30		0.59	17.7	D
Soventh Avenue and West 24th	EB		-	- 10.5	- P
Sevenul Avenue and West 54th		TR	0.55	19.5	
01001			_	_	_
	WB	LT	0.54	74	Α
	Intersection		0.01	15.3	B
		L	0.37	22.7	C
	NB	T	0.45	16.0	B
Eighth Avenue and West 29th Street			0.55	20.0	С
Ũ	WB	IR	-	-	-
	Intersection			17.8	В
		TD	0.52	8.1	Α
	IND	IR	-	-	-
Eighth Avenue and West 30th Street	EP	L	0.54	27.7	С
	ED	Т	0.32	14.6	В
	Intersection			11.6	В
	NR	L	0.35	22.7	С
	ND	Т	0.44	6.3	A
Eighth Avenue and West 31st Street	W/B	T	0.23	7.9	A
	110	R	0.95	54.9	D
	Intersection		+	17.3	В
		L	1.04	99.2	F
	NB	TR	0.80	18.5	В
Fighth Avenue and West 33rd Street			-	-	-
	WB	TR	0.14	17.8	В
			-	-	-
	Intersection			29.2	C
		L	0.38	4.6	A
Eighth Avenue and West 34th Street	NB	TR	0.74	4.5	A
				- 1	- 1

			S	AT Peak	Hour
Intersection Name	Approach	Movement Group	V/C	Delay	LOS
	EB	LT	-	-	-
	ED	LI	0.49	12.3	В
		Т	0.38	9.3	Α
	VVD	R	0.53	17.2	В
	Intersection			8.3	Α
	00	TD	0.72	13.7	В
	30	IR	-	-	-
Ninth Avenue and West 29th Street		1.7	-	-	-
	VVD	LI	0.67	26.1	С
	Intersection			16.2	В
		L	0.59	7.6	Α
	SB	Т	0.49	2.0	А
		R2	0.19	3.1	А
Ninth Avenue and West 30th Street		Т	0.26	27.7	С
	EB	R	0.97	75.5	Е
	Intersection			18.9	В
			0.71	6.4	A
	SB	TR	-	-	_
Ninth Avenue and West 31st Street			_	-	_
	WB	LT	0.47	36.5	D
	Intersection		0.17	11.4	B
	Intersection	TR	0.61	60.8	F
	SB		0.01		
Ninth Avenue and West 33rd Street			0.30	31.2	- C
Nintil Avenue and West 551d Street	WB	<u> </u>	0.30	20.7	0 C
	Intersection	l	0.52	29.7	
	Intersection	1	0.86	75.5	
	<b>CD</b>	L	0.00	15.5	
	30	TR	0.40	15.0	D
		т	- 0.27	-	-
Ninth Avenue and West 34th Street	EB		0.37	9.9	A 
		R	0.95	114.2	Г
	WB	LT	-	- 49.0	-
	Intersection		0.50	40.9	0
	Intersection	T	0.05	34.5	
	<u>58</u>	I	0.25	105.7	F
Dyer Avenue and West 30th Street	EB	L	0.25	24.7	
-	VVB	R	0.04	0.1	A
	Intersection		1	51.0	D
	NB	LT	-	-	-
			0.28	1.4	A
	SB	TR	0.15	9.4	A
Dyer Avenue and West 31st street			-	-	-
,		LT	-	-	-
	WB		0.31	8.9	A
		К	0.26	8.5	A
	Intersection		0.54	5.2	A
	SB	LR	0.54	39.8	Ď
			0.59	51.3	Ď
	EB	LT	-	-	-
Dyer Avenue and West 34th Street			0.28	13.6	B
	WB	<u> </u>	0.33	4.5	A
		R	0.30	9.3	A
	Intersection			16.8	В

	Table C1-6 (cont'd)
<b>Affected Environment Existing</b>	<b>Conditions Level of Service</b>
	SAT Peak Hour

Intersection Name	Approach	Movement Group	V/C	Delay	LOS
	NB	Т	0.61	93.3	F
Tenth Avenue and West 20th Street		Т	0.37	44.2	D
Tenth Avenue and West 29th Street	VVB	R	0.17	12.2	В
	Intersection		<u>.</u>	81.7	F
			0.90	56.4	E
	NB	TR	-	-	-
			-	-	-
Tenth Avenue and West 30th Street			-	-	-
	EB	L	1.04	110.0	F
		Т	0.93	89.2	F
	Intersection		-	65.9	E
	NB	Т	0.47	4.4	A
Tenth Avenue and West 31st Street	WB	R	0.35	30.6	С
	Intersection			6.6	A
	NR	1.7	-	-	-
	ND	LI	0.66	5.4	Α
Tenth Avenue and West 33rd Street	\\/P	тр	0.41	42.9	D
	VVD	IR	-	-	-
	Intersection			10.2	В
			-	-	-
	NB	LTR	0.70	6.4	Α
			0.53	8.3	Α
Topth Avonuo and West 34th Street	EB	L	0.71	47.2	D
Tenth Avenue and West 34th Street	ED	Т	0.46	22.8	С
	WB	Т	0.55	39.4	D
	VVD	R	0.70	50.7	D
	Intersection			17.3	В
	SB	TB	0.49	4.8	A
Eleventh Avenue and West 29th	00		-	-	-
Street	WB	L	0.17	3.8	A
		Т	0.48	14.6	В
	Intersection		1	6.6	A
	SB	IT	-	-	-
Eleventh Avenue and West 30th			0.52	3.3	A
Street	FB	T	0.75	35.5	D
		R	0.40	25.3	C
	Intersection			12.8	B
	SB	TR	0.58	9.1	A
Eleventh Avenue and West 33rd			-	-	-
Street	WB		-	-	-
	=	<u>Т</u>	0.07	30.8	C
	Intersection			9.7	A
	65		-	-	-
	SB		0.70	23.0	C
			-	-	-
			0.81	44.5	D
Eleventh Avenue and West 34th Street	EB		0.37	27.4	C
		R	0.45	36.0	D
		L	0.51	18.0	В
	WB	TR	0.45	25.1	C
	late th		-	-	-
	Intersection	-	0.50	26.1	
	NB	T T	0.52	11.4	В

			3	АТ Реак	Hour
Intersection Name	Approach	Movement Group	V/C	Delay	LOS
	SB	Т	0.66	2.2	Α
Twelfth Avenue and West 29th		L	0.14	41.6	D
Street	VVD	R	1.01	110.3	F
	Intersection			12.6	В
	ND	тр	0.75	12.6	В
	IND	IK	-	-	-
			-	-	-
	C B	L	1.03	125.9	F
Twelfth Avenue and West 30th	30	TD	0.81	20.5	С
Street		IR	-	-	-
	EB		-	-	-
		LTR	0.02	47.5	D
			-	-	-
	Intersection			21.7	С
	NB	Т	0.30	-	-
Twelfth Avenue and West 33rd	SB	Т	0.45	-	-
Street	WB	R	0.09	10.3	В
	Intersection	Unsignalized		0.2	Α
	ND	Т	0.72	50.7	D
	IND	R	0.67	54.5	D
Twolfth Avenue and Meat 24th	CD.	L	0.61	58.9	E
Stroot	30	Т	0.63	13.0	В
Sueer	W/R	I P	0.50	42.6	D
	VVD	LR	0.38	28.2	С
	Intersection			34.1	С

# C1.1.2.5 PARKING SUPPLY AND UTILIZATION

Existing parking conditions were evaluated by confirming field inventory of on-street parking regulations within the parking Study Area, defined below, as well as capacity of immediately adjacent off-street public parking facilities most likely to be used by workers during the construction period. The future parking demand associated with the Peak Construction Conditions is expected to be concentrated at two off-street parking facilities along West 30th Street between Tenth Avenue and Eleventh Avenue. No operational demand would be generated by the Peak Construction Conditions once construction is complete.

# C1.1.2.5.1 On-Street Parking

The on-street parking regulations were confirmed within ¼-mile of the Project Site in 2020, as shown on **Figure C1-5** and detailed in **Table C1-7**. Most of the Parking Study Area's curbside regulations restrict weekday daytime usage to commercial loading and unloading activities, authorized vehicles, or prohibit parking overall. Unrestricted parking, except for street cleaning regulations, is permitted along a limited number of blocks southeast of the Project Site, such as along West 29th Street between Tenth and Eleventh Avenues, and West 26th, West 25th, and West 24th Streets between Ninth and Tenth Avenues. The east side of Twelfth Avenue has available parking spaces, though the west side does not. However, these spaces serve area residents and there is little weekday parking turnover.





1 Parking Regulations

**On-Street Parking Inventory** Figure C1-5

WESTERN RAIL YARD INFRASTRUCTURE PROJECT

#### Table C1-7 On-Street Parking Regulations Legend

Legend	Signage
1	NO STANDING ANYTIME
2	NO PARKING ANYTIME
3	1 HOUR METERED PARKING SATURDAY 9 AM-7 PM
4	1 HOUR METERED PARKING 10 AM-4 PM EXCEPT SUNDAY
5	BUS (SYMBOL) BUS LAYOVER ONLY MONDAY-FRIDAY 8 AM-6 PM
	NO ENGINE IDLING MAX FINE \$2000
6	BUS STOP SIGN (BUS AND HANDICAP SYMBOLS) NO STANDING
7	CITY-OWNED VEHICLES
8	DEPT OF SANITATION
9	HARD HAT (SYMBOL) TEMPORARY CONSTRUCTION REGULATION (RIDER)
10	M 18 LTD 8TH STREET/FOURTH AVENUE (TYPICAL BUS ROUTE/DESTINATION PANEL)
11	NO PARKING 7 AM–7 PM EXCEPT SUNDAY
12	NO PARKING 7 AM–7 PM MON THRU FRI (ARROW)
13	NO PARKING 7 PM–MIDNIGHT INCLUDING SUNDAY
14	NO PARKING 8 AM–6 PM EXCEPT SUNDAY
15	NO PARKING 8 AM–6 PM MON THRU FRI
16	NO PARKING TRUCK WAITING LINE
17	NO STANDING 10 PM–6 AM INCLUDING SUNDAY
18	NO STANDING 4–7 PM EXCEPT SUNDAY
19	NO STANDING 4–7 PM MONDAY–FRIDAY (SINGLE ARROW)
20	NO STANDING 4–7 PM ALL DAYS
21	NO STANDING 4–7 PM MONDAY–FRIDAY
22	NO STANDING 7–10 AM 4–7 PM EXCEPT SUNDAY
23	NO STANDING 7–10 AM 4–7 PM INCLUDING SUNDAY
24	NO STANDING 7 AM–3 PM EXCEPT SUNDAY
25	NO STANDING 7 AM–7 PM INCLUDING SUNDAY
26	NO STANDING 8 AM–10 PM ALL DAYS
27	NO STANDING 8 AM-7 PM MONDAY-FRIDAY (SINGLE ARROW)
28	NO STANDING ANYTIME EXCEPT AUTHORIZED VEHICLES
29	NO STANDING ANY TIME EXCEPT VEHICLES WITH NYP LICENSE PLATES
30	
31	NO STANDING ANY TIME HARD HAT (SYMBOL) TEMPORARY CONSTRUCTION REGULATION
32	NO STANDING EXCEPT TRUCKS LOADING AND UNLOADING (SINGLE ARROW)
33	NO STANDING EXCEPT TRUCKS LOADING AND UNLOADING 10 AM-4 PM EXCEPT SUNDAY
34	NO STANDING EXCEPT TRUCKS LOADING AND UNLOADING 10 AM-4 PM INCLUDING SUNDAY
35	NO STANDING EXCEPT TRUCKS LOADING AND UNLOADING 7 AM-4 PM EXCEPT SUNDAY
36	NO STANDING EXCEPT TRUCKS LOADING AND UNLOADING 7 AM-7 PM INCLUDING SUNDAY
37	NO STANDING EXCEPT TRUCKS LOADING AND UNLOADING 8 AM-10 PM EXCEPT SUNDAY
38 20	
39	
40	
41	
42	
43	
44	IKUCK (SYMBUL) IKUCK LUADING UNLY MUNDAY-FRIDAY & AM-6 PM
Source:	IYODOT Parking Regulations https://data.cityofnewyork.us/Transportation/Parking-Regulation-Locations-
and-s	agns/xswq-wave and Field Observations

# C1.1.2.5.2 Off-Street Parking

The analysis included an inventory of licensed capacities at two public parking garages on West 30th Street between Tenth and Eleventh Avenues: iPark–Hudson Yards Parking and MPG Parking. MPG Parking has a capacity of 79 parking spaces and iPark–Hudson Yards Parking has a capacity of 181 parking spaces.

# C1.1.2.6 BICYCLE INFRASTRUCTURE

A field inventory was conducted of the available bicycle infrastructure within the vehicular Study Area. The Study Area includes approximately three miles of official bicycle lanes, primarily designated as protected bike lanes, but also includes some conventional and shared bike lanes. Protected bike lanes are denoted by high-visibility green paint with solid white painted lines and an added buffer of a parking lane separating bicycle riders from vehicular traffic. North-south protected bicycle lanes are present along Twelfth Avenue (bi-directional along the west side of the avenue), Ninth Avenue, Eighth Avenue, and Sixth Avenue with a potential future bicycle lane along Eleventh Avenue as per the 2020 NYC Bike Map. The protected bike lanes along these four avenues are demarcated with the typical green paint with solid white painted lines as well as an added buffer of a parking lane separating bicycle riders from vehicular traffic. Construction work, scaffolding, and barriers currently interrupt much of the Ninth Avenue bike lane. A portion of the Ninth Avenue bike lane, between West 33rd Street and West 31st Street is a conventional bike lane. Furthermore, the bicycle infrastructure along Twelfth Avenue, traversing the entire Study Area between West 29th Street to West 34th Street, is a protected bike route that is also known as the Hudson River Greenway-a protected pedestrian walkway and bike path largely uninterrupted by vehicular crossings. The bike path and pedestrian walkway are separated from vehicular traffic by a landscaped median and the bike path is also separated from the pedestrian walkway by a landscaped median. Solid line pavement markers divide the bike path into two directions and bike signals are installed at pedestrian crossing locations. There are bike signals at all the intersections along the Sixth Avenue route between, and including, West 29th Street and West 34th Street.

There is one westbound protected and conventional bicycle corridor along West 29th Street, on which riders travel in the same direction as vehicular traffic. It is protected between Sixth and Eleventh Avenues and is conventional between Eleventh and Twelfth Avenues. West 30th Street, where bicycle riders travel eastbound with the traffic, is a combination of a conventional and shared bicycle lane between Sixth Avenue and Twelfth Avenue. The portions that are a shared bicycle lane, where the bike lane is not separated from the vehicular travel lane by a solid pavement marker line nor any sort of physical boundary, are between Eleventh and Tenth Avenue and Sixth Avenue. The portions that are protected are between Twelfth Avenue and Eleventh Avenue and Ninth and Seventh Avenue. The segment between Tenth Avenue and Ninth Avenue is temporarily blocked by construction work.

There are six Citi Bike docking stations, which is New York City's official bike rental platform, throughout the Study Area to facilitate and support transfer between bike rental and public transportation, i.e. MTA subway, buses, etc. There is a Citi Bike station along the east curbside of Eighth Avenue between West 33rd Street and West 34th Street. Although there is no official bike lane along Seventh Avenue, between West 29th Street and West 34th Street, there are two Citi Bike stations; one along the north curb of West 31st Street at Seventh Avenue and another one along the southern curb of West 33rd Street at Seventh Avenue. There are two Citi Bike stations along the west curbside of Sixth Avenue at West 33rd Street and West 34th Street bike lane corridors within the Study Area, only West 30th Street has a bike docking station along its north curbside between Eleventh Avenue and Tenth Avenue. In general, Citi Bike stations are within close proximity (less than a block away) to major subway station lines across West 33rd Street and West 34th Street at Sixth, Seventh, and Eighth Avenues.

# C1.2 TRANSIT AND PEDESTRIANS

# C1.2.1 ANALYSIS METHODOLOGY

FRA's analysis methodology, as described above, is incorporated by reference because it is the same for Transit and Pedestrian analysis as for Traffic and Parking analysis. The transit- and pedestrian-specific aspects to the methodology are summarized below.

# C1.2.1.1 STUDY AREA

The pedestrian and transit Study Area is based on the anticipated distribution of pedestrians and transit riders generated by the Preferred Alternative. Project-generated pedestrians include people who walk to and from their destination, and people who take subways, regional rail, buses, or cars. Pedestrians approaching or departing the Project Site disperse quickly among the various sidewalks leading away from the Project Site, but some are concentrated on routes to nearby subway stations, bus stops, or Penn Station. The Study Area for the assessment of potential transit and pedestrian impacts includes the streets around the Project Site and extends east toward the Eighth Avenue West 34th Street subway station and Penn Station. The Study Area is bounded by West 34th Street on the north, West 30th Street on the south, Twelfth Avenue on the west, and Eighth Avenue on the east. The Study Area contains access to two subway stations, three bus routes, and regional rail services at Penn Station (see **Appendix B**, Figure 3-2).

# C1.2.1.2 DATA COLLECTION

Initial pedestrian volume counts on sidewalks, corners, crosswalks, and subway station elements for the Preferred Alternative were collected in September 2016. At that time, extensive construction was underway in the Eastern Rail Yard site. Only one new building, 10 Hudson Yards was partially completed and partially occupied at that time. Various sidewalks and crosswalks were closed to pedestrians for construction activities and West 33rd Street was closed between Tenth and Eleventh Avenues to both pedestrians and traffic. Since that time, most of the buildings and public spaces of the Eastern Rail Yard have opened, including the Vessel interactive sculpture. As a result, pedestrian activity in the area significantly increased east of the Project Site. There is not consistent 2019 pedestrian data, nor a reasonable comparison factor available to apply to pedestrian data collection in 2016. In 2019, additional pedestrian volume counts on sidewalks, corners, and crosswalks after the opening of the Eastern Rail Yard site. Limited sampling locations included areas between Sixth Avenue and Eighth Avenue, West 29th Street through West 34th Street. These counts were relatively similar to those from 2016, because east of Eighth Avenue saw limited changes in pedestrian travel pattern. However, the ongoing COVID-19 public health emergency has significantly depressed activity in this area, as is the case in other areas of Manhattan, since March 2020. Pedestrian activity in the area is expected eventually to return to pre-COVID-19 levels, but the timing of that resurgence is uncertain.

# C1.2.1.3 CAPACITY ANALYSIS

# C1.2.1.3.1 Transit

LOS analyses were conducted for key elements within those stations in accordance with procedures described in the *CEQR Technical Manual*. Results of these analyses are tabulated for each time period analyzed and summarized in subsequent sections.

# C1.2.1.3.2 Pedestrians

A pedestrian LOS analysis was conducted for key pedestrian elements (sidewalks, corners, and crosswalks) in accordance with procedures described in the *CEQR Technical Manual*. Results of these analyses are tabulated for each time period analyzed and summarized in subsequent sections.

# C1.2.1.4 IMPACT CRITERIA

# C1.2.1.4.1 Transit – Subway Stairway and Passageway

The *CEQR Technical Manual* evaluates transit conditions for stairways and passageways in terms of the minimum width increment threshold (WIT) based on the minimum amount of additional capacity that would be required to restore conditions to either their No Action Alternative v/c ratio or to a v/c ratio of 1.00 (LOS C/D), whichever is greater. FRA has adopted these criteria for purposes of analyzing the Preferred Alternative. Stairways that are substantially degraded in LOS or which experience the formation of extensive queues from project-generated demand would typically be considered as impacts, once the thresholds shown in **Table C1-8** are reached or exceeded.

	WIT for Significant Impact (inches						
Build Alternative v/c	Stairway	Passageway					
1.00-1.09	8	13					
1.10–1.19	7	11.5					
1.20–1.29	6	10					
1.30–1.39	5	8.5					
1.40–1.49	4	6					
1.50–1.59	3	4.5					
1.60 and up	2	3					
Cource: 2014 CEOR Technical Manual Tak	16-11						

#### Table C1-8 Stairway and Passageway Impact Criteria

#### Transit – Subway Line Haul C1.2.1.4.2

Increases in per car load levels that remain within New York City Transit (NYCT) subway car loading guidelines ("guideline capacity") are not considered as generating impacts. A projected Peak Construction Conditions increase from the No Action Alternative that exceeds guideline capacity is considered an impact pursuant to CEQR Technical Manual guidance of an increase of five or more transit riders per car or if the route is projected to operate under capacity in the No Action Alternative and overcapacity in the with the Preferred Alternative. FRA has adopted these criteria for purposes of analyzing the Preferred Alternative.

#### C1.2.1.4.3 Transit – Bus Routes

According to the CEQR Technical Manual and NYCT guidelines, additional bus service along a route is recommended when load levels exceed maximum capacity at the route's maximum load point. NYCT's general policy is to provide additional bus service where demand warrants increased service, considering financial and operational constraints.

#### C1.2.1.4.4 Pedestrian

According to the CEQR Technical Manual, average pedestrian space on a sidewalk under the Preferred Alternative with an acceptable LOS C or better (greater than 31.5 square feet per pedestrian [SF/P]) is not considered an impact in CBD areas. If the average pedestrian space under the No Action Alternative is between 6.4 and 39.2 SF/P, then the determination of whether impacts are identified for the Peak Construction Conditions should be determined using the formula in Table C1-9, which shows a slidingscale that identifies what decrease in pedestrian space is considered an impact for a given amount of pedestrian space.

According to the CEQR Technical Manual, average pedestrian space in a corner or crosswalk under the Preferred Alternative is considered acceptable at LOS C or better (greater than 19.5 SF/P). Table C1-10 shows a sliding-scale that identifies what decrease in pedestrian space is considered an impact for a given amount of pedestrian space.

FRA has adopted the criteria described above for purposes of analyzing pedestrian effects of the Preferred Alternative.



# Table C1-9

Baseline Condition Pedestrian Space	Build Alternative(s) Condition Ped Flow Increment to be
(sf/ped)*	Considered a Significant Impact (sf/ped)*
>39.2	Build Alternative Condition < 31.5
38.7 to 39.2	Reduction ≥ 3.8
37.8 to 38.6	Reduction ≥ 3.7
36.8 to 37.7	Reduction ≥ 3.6
35.9 to 36.7	Reduction ≥ 3.5
34.9 to 35.8	Reduction ≥ 3.4
34.0 to 34.8	Reduction ≥ 3.3
33.0 to 33.9	Reduction ≥ 3.2
32.1 to 32.9	Reduction > 3.1
31.1 to 32.0	Reduction > 3.0
30.2 to 31.0	Reduction > 2.9
29.2 to 30.1	Reduction > 2.8
28.3 to 29.1	Reduction > 2.7
27.3 to 28.2	Reduction > 2.6
26.4 to 27.2	Reduction > 2.5
25.4 to 26.3	Reduction > 2.4
24.5 to 25.3	Reduction > 2.3
23.5 to 24.4	Reduction > 2.2
22.6 to 23.4	Reduction > 2.1
21.6 to 22.5	Reduction > 2.0
20.7 to 21.5	Reduction > 1.9
19.7 to 20.6	Reduction > 1.8
18.8 to 19.6	Reduction > 1.7
17.8 to 18.7	Reduction > 1.6
16.9 to 17.7	Reduction > 1.5
15.9 to 16.8	Reduction > 1.4
15.0 to 15.8	Reduction > 1.3
14.0 to 14.9	Reduction > 1.2
13.1 to 13.9	Reduction > 1.1
12.1 to 13.0	Reduction > 1.0
11.2 to 12.0	Reduction > 0.9
10.2 to 11.1	Reduction > 0.8
9.3 to 10.1	Reduction > 0.7
8.3 to 9.2	Reduction > 0.6
7.4 to 8.2	Reduction > 0.5
6.4 to 7.3	Reduction > 0.4
< 6.4	Reduction > 0.3
Note: * sf/ped = square feet per pedestrian	

# Table C1-10

CIUSSWAIK AND CUINEI IMPACT CINEIIA IUI CDD LUCALIU	<b>Crosswalk and</b>	<b>Corner I</b>	mpact Crit	eria for	CBD	Location
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Baseline Condition Pedestrian Space (sf/ped)*	Build Alternative(s) Condition Ped Space Reduction to be Considered Significant Impact (sf/ped)*
>21.5	Build Alternative Condition < 19.5
21.3 to 21.5	Reduction ≥ 2.1
20.4 to 21.2	Reduction ≥ 2.0
19.5 to 20.3	Reduction ≥ 1.9
18.6 to 19.4	Reduction ≥ 1.8
17.7 to 18.5	Reduction ≥ 1.7
16.8 to 17.6	Reduction ≥ 1.6
15.9 to 16.7	Reduction ≥ 1.5
15.0 to 15.8	Reduction ≥ 1.4
14.1 to 14.9	Reduction ≥ 1.3
13.2 to 14.0	Reduction ≥ 1.2
12.3 to 13.1	Reduction ≥ 1.1
11.4 to 12.2	Reduction ≥ 1.0
10.5 to 11.3	Reduction ≥ 0.9
9.6 to 10.4	Reduction ≥ 0.8
8.7 to 9.5	Reduction ≥ 0.7
7.8 to 8.6	Reduction ≥ 0.6
6.9 to 7.7	Reduction ≥ 0.5
6.0 to 6.8	Reduction ≥ 0,4
5.1 to 5.9	Reduction ≥ 0.3
< 5.1	Reduction ≥ 0.2
<b>Note:</b> * sf/ped = square feet per pedestrian	

# C1.2.2 AFFECTED ENVIRONMENT

The Affected Environment Existing Conditions (2016) for pedestrian and transit traffic were established for the Study Area. The LOS analysis developed for transit and pedestrian infrastructure conducted for this EIS is in accordance with the standard procedure prescribed in the *CEQR Technical Manual*, as detailed throughout this section.

# C1.2.2.1 TRANSIT

Existing transit services providing access to the Project Site include MTA NYCT subway lines, MTA NYCT bus routes, NJ TRANSIT and MTA LIRR commuter rail services operating from Penn Station, Amtrak intercity passenger rail services also operating from Penn Station, and the New York Waterways ferries operating from Pier 78 at West 39th Street.

Pedestrian volume counts on subway station elements for the Preferred Alternative were collected in September 2016 at the Eleventh Avenue–West 34th Street Station on the Number 7 line and at the West 34th Street station on the Eighth Avenue subway line served by the A, C, and E lines. Routes within the stations that project-generated transit passengers are expected to use to access platforms were identified and counts were conducted on key elements along those routes. In the Eleventh Avenue station, counts were taken at two escalator banks and at two inclined elevators, and on three stairways connecting the mezzanine to the single platform. At the Eighth Avenue station, counts were taken at one street stair and five internal stairways. A small number of project-generated subway riders may walk further to the Seventh Avenue–West 34th Street or Herald Square stations, but the number would be inconsequential in those more distant stations.

**Table C1-11** shows Affected Environment Existing Conditions (2016) pedestrian volumes at subway stations within the Study Area during Weekday AM and PM peak hours.

Three MTA NYCT bus routes serve the Study Area: the M11 and M12 operate uptown and downtown in the area and the M34 operates crosstown on West 34th Street.

LIRR and NJ TRANSIT provide regional rail service to the Study Area from Long Island and New Jersey, respectively, at Penn Station. Access to Penn Station is currently available on West 33rd Street just west of Eighth Avenue. Additional access to most Penn Station platforms is now available through the Moynihan Station Train Hall west of Eighth Avenue, which opened in January 2021.

		AM								
Transit Station Elements	In/Down	Out/Up	Total	In/Down	Out/Up	Total				
ELEVENTH AVENUE-H										
Escalators 621–624 (4 escalators)	476	3,275	3,751	3,558	956	4,514				
Inclined Elevators (2 elevators)	3	10	13	75	15	90				
Escalator 625 (1 escalator)	-	393	393	-	134	134				
Platform Stairs 1/2	2	244	246	15	119	134				
Platform Stairs 3/4	84	921	1,005	1,178	242	1,420				
Platform Stairs 5/6	346	1,408	1,754	1,844	295	2,139				
EIGHTH AVENUE-34	TH STREE	T STATIO	N							
Stairs S4/P3	101	3,536	3,637	1,815	1,267	3,082				
Stairs S1/P1	222	847	1,069	710	390	1,100				
Mezzanine to Downtown Stair M4	385	3,344	3,729	3,772	534	4,306				
Mezzanine to Express Platform Stairs M21/M22	1,009	480	1,489	1,004	229	1,233				
Mezzanine to Express Platform Stairs M23/M24	394	1,858	2,252	913	837	1,750				

#### Table C1-11 2016 Peak Hour Volumes on Subway Station Elements

# C1.2.2.2 *PEDESTRIANS*

Pedestrian volume counts for the Preferred Alternative were collected in September 2016 at locations where project-generated pedestrian activity was anticipated to affect circulation. Counts were taken at 25 corners, 37 crosswalks, and at 21 midblock sidewalk locations in the area between Twelfth Avenue on the west, Eighth Avenue on the east, West 30th Street on the south, and West 33rd Street on the north. As indicated previously, many sidewalks in the area closed for construction activities at that time, and the level of pedestrian activity increased as construction of the Eastern Rail Yard has been completed and buildings became occupied. **Table C1-12 through Table C1-14** provide Affected Environment Existing Conditions (2016) pedestrian volumes present on corners, sidewalks, and crosswalks throughout the pedestrian Study Area, as described in Chapter 6, "Transportation."

# Table C1-12

		AM			Midday	1	PM		
	NB or	SB or		NB or	SB or		NB or	SB or	
Sidewalks	EB	WB	Total	EB	WB	Total	EB	WB	Total
Tenth Avenue, S of West 33rd Street, East Side	220	1,157	1,377	437	543	980	660	221	881
Eleventh Avenue, S of West 33rd Street, North Side	18	42	60	31	96	127	26	94	120
Eleventh Avenue, S of West 33rd Street, South Side	2	4	6	11	9	20	4	5	9
Eleventh Avenue, S of West 33rd Street, West Side	143	504	647	99	120	219	382	164	546
Eleventh Avenue, S of West 34th Street, West Side	138	549	687	182	273	455	457	346	803
Twelfth Avenue, S of West 33rd Street, East Side	13	11	24	9	17	26	21	6	27
Twelfth Avenue, S of West 34th Street, East Side	14	8	22	23	18	41	27	11	38
West 30th Street, E of Eleventh Avenue, East Side	83	100	183	136	102	238	156	67	223
West 30th Street, E of Eleventh Avenue, North Side	121	129	250	223	148	371	157	100	257
West 30th Street, E of Eleventh Avenue, South Side	26	12	38	20	21	41	19	25	44
West 30th Street, E of Eleventh Avenue, West Side	68	438	506	80	108	188	288	91	379
West 30th Street, W of Tenth Avenue, South Side	350	389	739	388	398	786	396	262	658
West 30th Street, W of Ninth Avenue, North Side	22	152	174	66	45	111	126	47	173
West 30th Street, W of Ninth Avenue, South Side	243	435	678	280	163	443	510	105	615
West 31st Street, W of Eighth Avenue, North Side	120	371	491	190	140	330	407	126	533
West 31st Street, W of Eighth Avenue, South Side	255	650	905	377	297	674	654	254	908
West 31st Street, W of Ninth Avenue, South Side	525	697	1,222	391	230	621	539	290	829
West 33rd Street, W of Eighth Avenue, North Side	389	990	1,379	289	380	669	710	502	1,212
West 33rd Street, W of Eighth Avenue, South Side	74	657	731	235	264	499	676	184	860
West 33rd Street, W of Ninth Avenue, North Side	48	410	458	123	182	305	338	78	416
West 33rd Street, W of Ninth Avenue, South Side	54	1,126	1,180	416	509	925	795	122	917
Tenth Avenue, S of West 33rd Street, East Side	220	1,157	1,377	437	543	980	660	221	881
Eleventh Avenue, S of West 33rd Street, North Side	18	42	60	31	96	127	26	94	120
Eleventh Avenue, S of West 33rd Street, South Side	2	4	6	11	9	20	4	5	9
Eleventh Avenue, S of West 33rd Street, West Side	143	504	647	99	120	219	382	164	546

#### 2016 Peak Hour Pedestrian Volumes on Sidewalks

#### Table C1-13 2016 Peak Hour Pedestrian Volumes on Corners

					0.0				
		AM		Midday			PM		
	NB or	SB or		NB or	SB or		NB or	SB or	
Sidewalks	EB	WB	Total	EB	WB	Total	EB	WB	Total
West 30th Street and Eleventh Avenue, Southeast	35	31	66	43	24	67	23	23	46
West 30th Street and Twelfth Avenue, Southeast	1	1	2	1	1	2	3	2	5
West 31st Street and Tenth Avenue, Northeast	9	14	23	15	15	30	8	19	27
West 31st Street and Tenth Avenue, Southeast	7	121	128	23	27	50	30	5	35
West 31st Street and Eighth Avenue, Northwest	65	17	82	25	17	42	27	21	48
West 31st Street and Eighth Avenue, Southeast	61	52	113	91	73	164	55	25	80
West 31st Street and Eighth Avenue, Southwest	12	17	29	18	53	71	21	17	38
West 31st Street and Ninth Avenue, Northeast	12	16	28	13	20	33	15	11	26
West 31st Street and Ninth Avenue, Southeast	25	47	72	35	28	63	83	25	108
West 31st Street and Ninth Avenue, Southwest	264	12	276	99	88	187	64	100	164
West 33rd Street and Tenth Avenue, Northeast	20	11	31	27	17	44	25	16	41
West 33rd Street and Tenth Avenue, Southeast	26	67	93	68	74	142	23	10	33
West 33rd Street and Eleventh Avenue, Northwest	18	1	19	61	7	68	62	2	64
West 33rd Street and Eleventh Avenue, Southwest	0	0	0	7	2	9	3	0	3
West 33rd Street and Twelfth Avenue, Northeast	4	1	5	11	3	14	4	7	11
West 33rd Street and Twelfth Avenue, Southeast	1	3	4	3	2	5	5	1	6
West 33rd Street and Eighth Avenue, Northwest	64	492	556	62	122	184	335	163	498
West 33rd Street and Ninth Avenue, Northeast	117	38	155	90	37	127	77	91	168
West 33rd Street and Ninth Avenue, Northwest	28	3	31	24	15	39	16	22	38
West 33rd Street and Ninth Avenue, Southeast	5	50	55	27	21	48	9	16	25
West 33rd Street and Ninth Avenue, Southwest	6	5	11	9	8	17	5	1	6
West 34th Street and Eleventh Avenue, Northeast	8	5	13	2	13	15	8	21	29
West 34th Street and Eleventh Avenue, Northwest	19	10	29	11	8	19	19	10	29
West 34th Street and Eleventh Avenue, Southwest	29	16	45	38	24	62	27	47	74
West 34th Street and Twelfth Avenue, Southeast	11	6	17	19	11	30	8	11	19

# Table C1-14

2016 Peak Hour Pedestrian Volumes on Crosswalks

	AM		Midday			PM			
	NB or	SB or		NB or	SB or		NB or	SB or	
Sidewalks	EB	WB	Total	EB	WB	Total	EB	WB	Total
West 30th Street and Eleventh Avenue, East	44	45	89	38	38	76	31	33	64
West 30th Street and Eleventh Avenue, North	37	34	71	39	20	59	27	30	57
West 30th Street and Eleventh Avenue, South	101	138	239	93	105	198	110	80	190
West 30th Street and Eleventh Avenue, West	121	492	613	114	171	285	413	148	561
West 30th Street and Twelfth Avenue, East	18	27	45	17	14	31	21	12	33
West 30th Street and Twelfth Avenue, South	25	11	36	15	14	29	14	16	30
West 31st Street and Tenth Avenue, East	1,100	209	1,309	384	363	747	254	552	806
West 31st Street and Tenth Avenue, North	11	107	118	16	10	26	40	1	41
West 31st Street and Tenth Avenue, South	104	589	693	283	103	386	627	26	653
West 31st Street and Eighth Avenue, East	491	1,567	2,058	973	891	1,864	1,565	942	2,507
West 31st Street and Eighth Avenue, North	209	582	791	324	262	586	878	253	1,131
West 31st Street and Eighth Avenue, South	236	466	702	336	381	717	405	388	793
West 31st Street and Eighth Avenue, West	320	821	1,141	592	610	1,202	916	639	1,555
West 33rd Street and Tenth Avenue, East	284	1,027	1,311	415	498	913	657	194	851
West 33rd Street and Tenth Avenue, Northeast to	1	0	1	12	1	12	0	4	4
Southwest	4	0	4	12	-	15	0	4	4
West 33rd Street and Tenth Avenue, North	227	91	318	124	140	264	109	110	219
West 33rd Street and Tenth Avenue, Northwest to	10	372	301	22	28	50	62	10	81
Southeast	13	512	331	22	20	50	02	13	01
West 33rd Street and Tenth Avenue, South	71	39	110	97	154	251	81	45	126
West 33rd Street and Tenth Avenue, West	71	101	172	88	159	247	167	52	219
West 33rd Street and Eleventh Avenue, West	132	560	692	100	197	297	402	156	558
West 33rd Street and Twelfth Avenue, East	30	18	48	13	5	18	22	13	35
West 33rd Street and Eighth Avenue, East	2,132	860	2,992	1,015	997	2,012	898	2,776	3,674
West 33rd Street and Eighth Avenue, North	585	745	1,330	517	397	914	936	265	1,201
West 33rd Street and Eighth Avenue, South	226	1,036	1,262	366	393	759	931	304	1,235
West 33rd Street and Eighth Avenue, West	623	482	1,105	561	527	1,088	761	584	1,345
West 33rd Street and Ninth Avenue, East	234	506	740	294	304	598	445	279	724
West 33rd Street and Ninth Avenue, North	98	381	479	263	256	519	443	106	549
West 33rd Street and Ninth Avenue, South	88	888	976	222	238	460	648	84	732
West 33rd Street and Ninth Avenue, West	84	382	466	332	420	752	283	157	440
West 34th Street and Eleventh Avenue, East	208	35	243	63	51	114	53	72	125
West 34th Street and Eleventh Avenue, North	53	552	605	122	181	303	248	95	343
West 34th Street and Eleventh Avenue, South	175	883	1,058	421	344	765	535	360	895
West 34th Street and Eleventh Avenue, West	251	140	391	143	94	237	125	159	284
West 34th Street and Twelfth Avenue, East	14	22	36	32	44	76	16	36	52
West 34th Street and Twelfth Avenue, South	61	66	127	169	93	262	80	102	182
West 34th Street and Hudson Boulevard, East	48	25	73	22	11	33	35	37	72
West 34th Street and Hudson Boulevard, West	184	76	260	82	69	151	75	144	219



# **Appendix C2**

**Construction Trip-Generation and Screening Analyses** 



# **Appendix C2:**

# **Construction Trip-Generation and Screening Analyses**

This appendix contains the factors FRA used to develop the trip-generation for the Preferred Alternative's Peak Construction Conditions, and shows how these factors and resulting trip-generation information were used to perform the Level 1 and Level 2 Screening Assessments for traffic, parking, transit and pedestrian conditions.

# **C2.1 INTRODUCTION**

FRA prepared the information contained in this appendix to document the transportation demand factors (TDF) used to develop the trip-generation for construction of the Preferred Alternative. It focuses on peak construction conditions of the Preferred Alternative which are expected to occur in Quarter 2 of 2023,<sup>1</sup> with completion of construction of the Preferred Alternative in 2026. Once completed, the Preferred Alternative would not generate any demand for transportation, but it would enable construction of a privately funded mixed-use development (Overbuild) on the Project Site. The Overbuild was approved in 2009 and the current National Environmental Policy Act (NEPA) analysis assessed the Overbuild as an indirect effect of the Preferred Alternative in Chapter 20, "Indirect, Cumulative, and Other Impacts."

# C2.2 LEVEL 1 SCREENING ASSESSMENT (TRIP GENERATION PROJECTION)

Level 1 Screening Assessment involves a trip generation projection to determine the number of person trips by mode and vehicle trips to/from the proposed project site during the morning and afternoon peak hours. For this project, FRA identified the 6–7 AM hour as the time period when the proposed construction would generate its highest travel demand, but the peak hours of the adjacent road network: 8–9 AM, 12–1 PM, 5–6 PM, and 12–1 PM Saturday, were analyzed as peak traffic conditions. For the purposes of this memo, the 6–7 AM hour, when both construction workers and construction trucks entering the Project Site are at a maximum, determined potential CEQR impacts. Additionally, FRA analyzed 3–4 PM as the peak construction PM hour, which includes most construction workers leaving the Project Site. Below are the transportation planning factors used to develop peak hour travel demand.

<sup>&</sup>lt;sup>1</sup> The Level 1 and Level 2 Screening Analysis is based on original construction truck and worker estimates calculated prior to revisions to the High Line underpinning component. The overall effects remain similar as that originally analyzed although somewhat reduce based on the number and size of trucks. Therefore, the numbers used in this EIS are conservative.

# C2.2.1 TRANSPORTATION PLANNING ASSUMPTIONS

The transportation planning factors proposed to forecast weekday and Saturday travel demand for the Construction Condition are summarized in **Table C2-1 and Table C2-2** and discussed below. The trip generation rates, temporal distributions, and mode splits for the uses shown in **Tables C2-1 and Table C2-2** were based on accepted *CEQR Technical Manual* criteria, rates that were developed for the *No. 7 Subway Extension – Hudson Yards Rezoning and Development Program FGEIS* (updated where appropriate with 2000 Census journey-to-work and reverse journey-to-work data for census tracts in the Study Area), factors developed for other EISs for similar development proposals in Manhattan as well as other New York City boroughs with similar levels of transit access, and standard professional references.

# C2.2.2 TRIP GENERATION

As shown in **Table C2-1**, 1.1 percent of the 227 construction workers would walk to/from the Project Site, 28.9 percent would drive their own private auto, 0 percent would be dropped-off/picked-up in private autos, 47.7 percent would take the subway, zero percent would take a dedicated van, 8.9 percent would take the railroad, and 13.3 percent of the workers would take New York City Transit (NYCT) buses, based on a *New York Times Building Survey*. FRA used a vehicle occupancy rate of 2.04 workers per auto for auto trips based on a *New York Times Building Survey*.

As shown in **Table C2-1**, 25 percent of the 89 daily truck trips would arrive to the Project Site and 25 percent would exit during the 6-7 AM hour. This is based on a directive from WRY Tenant LLC<sup>2</sup> (who developed the overall construction phasing and sequencing plan) and AKRF, Inc, the lead EIS consultant that converted the construction phasing plan to generation of daily worker and truck trips.

The assumptions and results of the Level 1 Screening Assessment are presented in **Table C2-1** and **Table C2-2**, specifically for the Peak Construction hours of 6-7 AM and 3-4 PM. **Table C2-3** and **Table C2-4** show the hourly trip distribution for constructions workers and truck trips as well as a summary of trips for the construction and traffic analysis peak hours.

The *CEQR Technical Manual* requires a detailed traffic and parking analysis if new vehicle trips exceed the threshold of 50 trips per hour. Based on the Level 1 Screening analysis results, the Preferred Alternative would generate more than 50 trips during the AM peak hour. Therefore, FRA conducted a Level 2 Screening Assessment for the traffic network in the Study Area to determine if a threshold of 50 vehicles at any one intersection is reached.

The *CEQR Technical Manual* requires a detailed pedestrian analysis if new pedestrian trips are expected to threshold of 200 pedestrians per hour. Based on the trip generation analysis, incremental pedestrian trips are expected to generate more than 200 pedestrian trips as all 227 person trips as summarized in **Table C2-2** would ultimately be considered as walk trips to and from the Project Site regardless of whether their trip starts as an auto, transit, or walk-only trip. Thus, FRA conducted a Level 2 Screening Assessment for the pedestrian Study Area.

CEQR requires a detailed transit analysis if new transit trips are expected to exceed the threshold of 200 subway or local bus trips per hour. As summarized in **Table C2-1 and Table C2-2**, incremental subway and local bus trips are not expected to be above these thresholds. Thus, a Level 2 Screening Assessment is not required.

<sup>&</sup>lt;sup>2</sup> WRY Tenant LLC is the Overbuild Developer.

	manoport		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	mptions				
	Platform		Tunnel Cond	rete Casing				
C	onstruction W	orkers	Construction Worker					
	(1)		(1	0				
Brois et Componente:	117		11	10				
Project Components:	117		1	10				
Attendance Rate:	-							
	(1)		(1	0				
Daily Trip Constant	2.0		2	0				
Daily http Generation.	2.0		Ζ.	0				
	per employee	e	per em	ployee				
Temporal Distribution:	(1)		(1	1)				
6-7 AM	50.0%		50.	0%				
3-4 PM	50.0%		50	0%				
0	001070			• • • •				
	(4)							
	(1)		(1	)				
In/Out Splits:	In Ou	t	In	Out				
AM	40% 0%	D	80%	0%				
PM	40% 40%	6	0%	80%				
	(2)		(2	2)				
Modal Splits			ΔM/	-, /PM				
			20					
Auto	20.9%		20.	9%				
Dropott/Pickup	-			-				
Walk	1.1%		1.1	%				
Subway	47.7%		47.	7%				
Bus (Transit)	13.3%		13.	3%				
Van (HOV)	-			-				
Pailroad	8 0%		9.0	10/_				
Railloau	0.9%		0.8	176				
	100%		100	)%				
Vehicle Occupancy:	(2)		(2	2)				
Auto	2.04		2.0	04				
Dropoff/Pickup	2 04		2	04				
	2.0.							
Daily Truck Trip Copora	tion							
Daily Huck http Genera								
	(1)		(1					
	55		3	4				
	per day		per	day				
Truck Peak Hour Distrib	ution:	(1)	(1	)				
	IN	Out	1	N Out				
АМ	25.0%	25.0%	25	0% 25.0%				
DM	5 0%	5.0%	20.	0% <u>0</u> 0%				
E IVI	5.0 %	5.070	0.0	0.070				

#### Table C2-1 Transportation Planning Assumptions

# Notes:

Supplied by WRY TENANT LLC
 NY Times Building Survey

	Co	Platforn nstruction V	n <b>Norkers</b>	Tunnel Concre Construction	te Casing <b>Workers</b>	Tab Trip Gen <sub>Tota</sub> Construction	le C2-2 eration / Workers
Project C	Components:	1	17		110		227
Daily Tri Wee Wee	<b>ps:</b> ekday AM ekday PM	1	17 17		110 110		227 227
In/Out Sj Wee Wee	<b>blits:</b> ekday AM ekday PM	In 47 47	<b>Out</b> 0 47	<b>In</b> 88 0	<b>Out</b> 0 88	In 135 47	<b>Out</b> 0 135
Peak Ho Person T	ur Trips:	In	Out	In	Out	In	Out
AM	Auto	14	-	25	-	39	-
	Dropoff/Picku	р - а	-	-	-	-	-
	Walk	1	-	1	-	1	-
	Subway	22	-	42	-	64	-
	Bus (Transit)	6	-	12	-	18	-
	Van (HOV)	-	-	-	-	-	-
	Railroad	4	-	8	-	12	-
	Total	47	-	88	-	135	-
PM	Auto	14	14	-	25	- 14	- 39
	Dropoff/Picku	р -	-	-	-	-	-
	Walk	1	1	-	1	1	1
	Subway	22	22	-	42	22	64
	Bus (Transit)	6	6	-	12	6	18
	Van (HOV)	-	-	-	-	-	-
	Railroad	4	4		8	4	12
	Total	47	47	-	88	47	135
Peak Ho	ur						
Vehicle	Trips:	In	Out	In	Out	In	Out
6-7 AM	Auto	7	-	12	-	19	-
	Dropoff/Picku	р -	-	-	-	-	-
	Van (HOV)	-	-	-	-	-	-
	Truck	14	14	9	9	22	22
3-4 PM	Auto	7	7	0	12	7	19
<b>3 -</b> 1 101	Dropoff/Picku	η η Ο	0	0	0	, 0	0
	Van (HOV)	- U	õ	0	Õ	0	õ
	Truck	3	3	-	-	3	3

		Platf	orm		Concrete Casing				
Hours	Workers Auto Trips		Truck Trips		Workers Auto Trips		Truck Trips		
6-7 AM	40%	0	25%	25%	80%	0	25%	25%	
7-8 AM	10%	0	5%	5%	20%	0	10%	10%	
8-9 AM	0	0	5%	5%	0	0	10%	10%	
9-10 AM	0	0	5%	5%	0	0	10%	10%	
10-11 AM	0	0	5%	5%	0	0	10%	10%	
11-12 PM	0	0	5%	5%	0	0	10%	10%	
12-1 PM	0	0	5%	5%	0	0	10%	10%	
1-2 PM	0	0	5%	5%	0	0	10%	10%	
2-3 PM	5%	5%	5%	5%	0	10%	5%	5%	
3-4 PM	40%	40%	5%	5%	0	80%	0	0	
4-5 PM	5%	5%	5%	5%	0	10%	0	0	
5-6 PM	0	0	5%	5%	0	0	0	0	
6-7 PM	0	0	5%	5%	0	0	0	0	
7-8 PM	0	0	5%	5%	0	0	0	0	
8-9 PM	0	0	5%	5%	0	0	0	0	
9-10 PM	0	0	5%	5%	0	0	0	0	
10-11 PM	0	0	0	0	0	0	0	0	
11-12 PM	0	10%	0	0	0	0	0	0	
12-1 AM	0	40%	0	0	0	0	0	0	
1-2 AM	0	0	0	0	0	0	0	0	
2-3 AM	0	0	0	0	0	0	0	0	
3-4 AM	0	0	0	0	0	0	0	0	
4-5 AM	0	0	0	0	0	0	0	0	
5-6 AM	0	0	0	0	0	0	0	0	
	100%	100%	100%	100%	100%	100%	100%	100%	

# Table C2-3 Hourly Transportation Assumptions

# Table C2-4 Hourly Trip Generation

	Workers								
Hours	Person Trips		Vehicl	e Trips	Truck Trips				
	In	Out	In	Out	In	Out			
6-7 AM	135	0	19	0	22	22			
8-9 AM	0	0	0	0	6	6			
12-1 PM	0	0	0	0	6	6			
3-4 PM	47	135	7	19	3	3			
5-6 PM	0	0	0	0	3	3			

# C2.3 LEVEL 2 SCREENING ASSESSMENT (PROJECT GENERATED TRIP ASSIGNMENT)

For a Level 2 Screening Assessment, FRA assigned person trips or vehicle trips to specific intersections, bus routes, subway lines, or parking spaces. FRA used the number of person or vehicle trips that would be generated by the Preferred Alternative for a specific location or transit element to determine if a detailed transportation analysis was warranted and to identify the locations or elements to be analyzed.

# C2.3.1 TRAFFIC AND PARKING

FRA assigned the forecasted volume of traffic to be generated by the additional workers and trucks for each analysis peak hour to the approach and departure routes likely to be used, to determine if a detailed traffic and parking analysis is required for the Preferred Alternative. FRA assigned the project generated vehicle trips to principal routes to/from the Project Site and to Study Area intersections. The Study Area for this resource category includes the Project Site and extends outward to include routes for travel of construction workers, materials, and services, and represents the distance that, based on *CEQR Technical Manual* guidelines, defines the area in which the Preferred Alternative could cause impacts. The Study Area determined for the Preferred Alternative is bounded by West 34th Street to the north, Sixth Avenue to the east, West 29th Street to the south, and Twelfth Avenue (Route 9A) to the west (see **Figure C2-1**). The Study Area is consistent with study areas for the environmental analysis of similar projects in New York City. The entrance to the Project Site would be on West 33rd Street between Eleventh Avenue and Twelfth Avenue, and it is assumed that West 33rd Street would be used for pick-up/drop-offs. Trip distributions for each traffic component, established from the previous Western Rail Yard development, are presented below.

FRA developed the auto trip distributions based upon 2000 Census Journey to Work data for the AM peak period. The distribution was based upon Journey to Work "Residence of Worker" data and the Reverse Journey to Work "Place of Work" data for origins and destinations in the Manhattan Central Business District (CBD). FRA included the Manhattan CBD, geographic areas of Manhattan outside the CBD, the other four New York City boroughs, upstate New York east and west of the Hudson River, New Jersey and Connecticut as trip origins and destinations. FRA defined the general travel patterns of work trips by auto from Manhattan CBD residences to employment destinations outside the Manhattan CBD and of work trips by auto to Manhattan CBD work destinations considering the trip geographic origins or destinations and the area highway system. FRA derived the trip distributions of taxi trips from taxi trip distributions developed for the Moynihan/Penn Station Project based upon the *New York City Fact Book* by Schaller Consulting. Lastly, FRA derived truck trip distributions from the truck trip distributions used for the *No. 7 Subway Extension – Hudson Yards Rezoning and Development FGEIS*.

**Table C2-5** provides the resulting trip distributions by percent into and out of the area by direction (north, south, east, and the Lincoln Tunnel) for auto and taxi trips. FRA projected most auto trips to depart and approach the area to and from the east, primarily due to the volume of auto trips to and from Queens and Long Island, though some would use the FDR Drive to and from the Study Area for points north and south. Taxi trip distributions indicate a more predominate pattern to and from the north, likely attributed to the dense residential development on the Upper West Side.



Study Intersections

# Table C2-5 Auto and Taxi Trip Distribution

		Auto Trips <sup>1</sup>							
		Direction							
Source:	North	South	East	Lincoln Tunnel	Total				
Construction Workers <sup>2</sup>	26%	17%	44%	13%	100%				

	Taxi Trips <sup>3</sup>								
		Direction							
Source:	North	South	East	Lincoln Tunnel	Total				
Construction Workers <sup>2</sup>	45%	20%	35%	0%	100%				

Notes:

<sup>1</sup> Based upon 2000 Census Journey to Work data regional distribution of Manhattan CBD auto trips.

Manhattan CBD is defined as the area bounded by 23rd Street, 59th Street, Third Avenue, and Eighth Avenue (Census Tracts 56, 58, 68, 72, 74, 76, 80, 82, 84, 91, 92, 94, 95, 96, 100, 101, 102, 104, 109, 112.01, 112.02, 112.03, 113, 119, 125, 131, and 137)

<sup>2</sup> Based upon 2000 Census Reverse Journey to Work "Place of Work" data

<sup>3</sup> Estimates developed for the *Moynihan/Penn Station Redevelopment Project*, based upon *The New York City Fact Book*, Schaller Consulting, March 2006

**Table C2-6** provides the trip distributions by percentage into and out of the area by crossing (George Washington Bridge, Lincoln Tunnel, Brooklyn-Battery Tunnel, Manhattan Bridge, Williamsburg Bridge, Queens Midtown Tunnel, and Bronx) for truck trips. For purposes of environmental impact analyses, FRA used reasonable worst-case assumptions, including to what materials are being transported, regarding probable truck origin/destination and route assignments.

FRA distributed cars, trucks, and taxis dropping-off and picking-up workers to the local street network based on these trip distributions. FRA assigned the auto trips to the parking lots on West 30th Street between Tenth Avenue and Eleventh Avenue, while drop-off/pick-up and truck trips were assigned to West 33rd Street between Eleventh Avenue and Twelfth Avenue.

#### Table C2-6 Truck Trip Distribution

					HUCK	пр візс	insución		
	Truck Trips								
	<u>GWB</u>	LT	<u>BBT</u>	MB	<u>WB</u>	QMT	<u>Bx</u>		
In/Out	23%	23%	0%	11%	11%	11%	20%		

Results of the trip generation and traffic assignments show that none of the intersections would see an increase of 50 vehicle trips as a result of the proposed construction during the peak 6–7 AM construction hour. The highest number of vehicle trips per hour during the 6–7 AM peak construction hour would be 40<sup>3</sup> at the intersection of Eleventh Avenue and West 34th Street, shown below in **Figure C2-2**. Therefore, this screening analysis demonstrates that a detailed traffic analysis is not warranted.

<sup>&</sup>lt;sup>3</sup> Trip Assignment based on the Trip Generation applies percent splits to approach volumes and due to rounding, may occasionally be off by plus or minus one vehicle.



Source: WSP USA

# C2.3.2 PEDESTRIANS AND TRANSIT

To determine if a detailed pedestrian analysis is required for the Preferred Alternative, FRA assigned the forecasted volume of walk trips generated by the anticipated number of construction workers for each analysis peak hour to the elements in the immediate vicinity of the Project Site that are expected to be used by concentrations of pedestrians as they enter and exit the Project Site. The pedestrian Study Area identified for the Preferred Alternative is bounded by West 34th Street to the north, West 29th Street to the south, Seventh Avenue to the east, and Twelfth Avenue to the west. Pedestrian assignments for each walk component (including walk-only trips, workers walking to/from mass transit, and all drop-offs/pick-ups adjacent to the Project Site) are presented below.

FRA assigned project generated construction worker-trips by each mode to the pedestrian network in the vicinity of the Western Rail Yard Project Site using the following assumptions.

- **Bus:** NYCT data will be utilized to identify the peak load point of each bus route. Trip distribution will be based on the 2000 Census Reverse Journey-to-Work origin-destination data. Bus-walk trips will be traced along the intersection elements (sidewalks, corners, and crosswalks) from the bus stops to/from development sites.
- **Subway:** Construction worker-trips at the existing and proposed subway stations will be assigned to entrances/exits based on the logical walking paths from the platforms (using stairways, escalators, and elevators) to the street level and the proposed development sites.
- Auto: Auto-walk construction trips will be assigned to the pedestrian street network based on logical walking paths from parking garages located on West 30th Street in between Tenth Avenue and Eleventh Avenue
- **Taxi:** It was assumed that taxi passengers would be dropped off at the closest corner adjacent to the construction site. Therefore, taxi-walk trips were added to the pedestrian street network.
- **Walk-Only**: Walk-Only trips will be assigned to/from every block within half a mile of the development site. Walk trips will be assigned to each block where potential trips would originate.

Based on the Level 2 screening analysis, the Preferred Alternative is not expected to generate more than 200 walk trips in the peak hour at any pedestrian element. The highest number of pedestrian trips would occur on the south sidewalk of West 33rd Street in between Twelfth Avenue and Eleventh Avenue with 135 pedestrians, shown in **Figure C2-3**. Therefore, this screening analysis demonstrates that a detailed pedestrian analysis is not warranted.

# C2.4 CONCLUSION

Based on the results of the Level 1 and Level 2 screening assessments, a traffic, pedestrian and traffic analysis was not warranted.

Under the worst-case construction hour, 6–7 AM, there are no CEQR impacts or additional analyses warranted and, therefore, our construction conditions analysis hours: 8–9 AM, 12–1 PM, and 5–6 PM, as shown in **Table C2-4**, would not have any impacts either.

