

A. INTRODUCTION

In accordance with the 2021 *City Environmental Quality Review (CEQR) Technical Manual*, this chapter considers mitigation measures that are intended to eliminate or reduce the significant adverse impacts generated by the Proposed Actions.

PRINCIPAL CONCLUSIONS

Based on the analysis provided in the preceding chapters, the Proposed Actions are anticipated to result in significant adverse impacts related to shadows, transportation, air quality, and construction period noise and traffic. Mitigation measures to address the significant adverse impacts, where feasible and/or practical, are therefore proposed below. The New York City Department of City Planning (DCP), as the lead agency, will coordinate with City agencies and further examine and refine these recommended mitigation measures between the Draft Environmental Impact Statement (DEIS) and Final Environmental Impact Statement (FEIS). If no feasible and practicable mitigation can be identified, the impacts would remain unavoidable significant adverse impacts of the Proposed Actions.

B. SHADOWS

As detailed in Chapter 6, “Shadows,” the Proposed Actions would result in significant adverse shadow impact related to two open space resources: the High Line and the Hudson Yards Public Square and Gardens open space.

The shadows on the High Line are consistent with those anticipated from the new towers on the Development Site in the 2009 FEIS; however, the 2009 FEIS accounted for project-generated shadows from the Site 5 development (current Site A), while the current No Action scenario assumes that Site A would not be developed before 2031, resulting in a larger increment of project-generated shadow from Site A. Subsequent to the 2031 build year, at full build out of the Development Site in accordance with the 2009 approvals, it is expected that shadows on the High Line would be comparable to project-generated shadows as a result of the Proposed Actions, requiring similar mitigation measures as described below.

The final design for the portion of the High Line that extends through the Development Site is still in development. It is expected that any final design will take into account the context of the High Line as an open space resource in an area with multiple tall, large-scale buildings. As a city park, jurisdiction of the High Line falls under the purview of the New York City Department of Parks and Recreation (NYC Parks). Friends of the High Line, a nonprofit organization, undertakes maintenance of, and operations at, the High Line in coordination with NYC Parks, and oversees a staff of professionals and volunteers

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who select and care for the trees, flowers, and plantings on the High Line. Between DEIS and FEIS, the Applicant will work with DCP, NYC Parks, and Friends of the High Line to identify and develop measures to address the incremental shadows cast on the High Line from buildings developed under either With Action scenario and to ensure that appropriate mitigation for the shadow impact is implemented in connection with the future design, construction, and operation of the High Line on the Development Site.

The Hudson Yards Public Square and Gardens is under the control of the Applicant, and the Applicant could monitor and evaluate plant health to determine if and how project-generated shadow affects existing plantings and vegetation. Should changes to the existing plantings and vegetation be warranted, shade-tolerant plant species that thrive in low-light conditions could be introduced, along with a diverse mix of trees, shrubs, and groundcovers with varying tolerances to create visual interest and ecological resilience.

Mitigation for the significant adverse shadow impact to the resources is discussed below.

C. TRANSPORTATION

As detailed in Chapter 14, “Transportation,” the analysis of potential effects to transportation elements concludes that the Proposed Actions would result in significant adverse operational-period impacts to traffic, transit (subway station elements and bus line-haul), and pedestrians. Potential measures to mitigate these impacts to the extent practicable are presented below. Between the DEIS and FEIS, additional refinements to the transportation analysis, review, and evaluation will be undertaken in coordination with DCP, the New York City Department of Transportation (DOT), and New York City Transit (NYCT). Accordingly, some of the transportation analysis and mitigation conclusions presented in this DEIS could change and may be revised, as needed, for the FEIS. These changes could encompass the identification of additional measures to further mitigate projected significant adverse impacts or the determination of certain mitigation measures as infeasible, thereby yielding additional partially mitigated or unmitigated impacts. Furthermore, further coordination would be undertaken with NYCT and DOT between the DEIS and FEIS to determine possible alternate turnaround routes for the M34 SBS under both With Action scenarios. In addition, as previously committed for planned development on the Western Rail Yard, the Applicant or developers for the Proposed Project will, in coordination with DOT, conduct studies under a future transportation monitoring plan (TMP). The TMP studies are expected to evaluate actual project-generated demand and background conditions after project completion and would consider adjusting the identified mitigation strategies as appropriate and practicable to address traffic and pedestrian issues at that future point in time. The implementation of the approved mitigation measures will be subject to the discretion of the implementing agencies as well as the findings from the future TMP.

TRAFFIC

As discussed in Chapter 14, “Transportation,” traffic conditions were evaluated at 75 intersections for the 2031 With Action condition.

Under the Proposed Project, significant adverse traffic impacts were identified at:

- 30 intersections in the weekday AM peak hour;
- 33 intersections in the weekday midday peak hour;
- 41 intersections in the weekday PM peak hour;
- 30 intersections in the weekday evening peak hour;
- 39 intersections in the Saturday midday/afternoon peak hour; and
- 32 intersections in the Saturday evening peak hour.

Under the Alternative Scenario, significant adverse traffic impacts were identified at:

- 29 intersections in the weekday AM peak hour;
- 19 intersections in the weekday midday peak hour;
- 40 intersections in the weekday PM peak hour;
- 20 intersections in the weekday evening peak hour;
- 14 intersections in the Saturday midday/afternoon peak hour; and
- 27 intersections in the Saturday evening peak hour.

Through the implementation of potential changes to signal timing, some of these impacts could be fully mitigated. For others, no practicable mitigation measures were found to eliminate or reduce the significant adverse impacts identified. The 2031 With Action traffic mitigation analysis results are detailed below in **Table 22-1**.

Table 22-1
Summary of Traffic Mitigation Analysis Results

Analysis Peak Hour	With Action Condition		
	No. of Impacted Intersections	No. Fully Mitigated	No. Unmitigated
Proposed Project			
Weekday AM	30	20	10
Weekday Midday	33	20	13
Weekday PM	41	16	25
Weekday Evening	30	16	14
Saturday Midday/Afternoon	39	22	17
Saturday Evening	32	15	17
Alternative Scenario			
Weekday AM	29	17	12
Weekday Midday	19	15	4
Weekday PM	40	19	21
Weekday Evening	20	16	4
Saturday Midday/Afternoon	14	9	5
Saturday Evening	27	20	7

PROPOSED PROJECT

Table 22-2 summarizes the significant adverse traffic impacts identified for the Proposed Project. Measures recommended to address these impacts are detailed in **Tables 22-3a through 22-3f**. Signal timing modifications were recommended where appropriate to fully mitigate projected impacts. These potential mitigation measures are subject to modification and approval of DOT prior to implementation. At certain intersections, where

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no mitigation measures can be identified to address projected impacts, those impacts would remain unmitigated.

Table 22-2
Proposed Project—Significant Adverse Traffic Impacts

Intersection		Analysis Peak Hour					
		Weekday				Saturday	
		AM	MD	PM	EVE	MD/AN	EVE
North-South Roadway	East-West Roadway						
Twelfth Avenue	West 54th Street					NB-TR	
Twelfth Avenue	West 42nd Street		NB-TR	NB-TR	NB-TR	NB-TR	NB-TR
Twelfth Avenue	West 30th Street	SB-L	SB-L	SB-L	SB-L	SB-L	SB-L
Twelfth Avenue	West 29th Street	WB-R	WB-R	WB-R	WB-R	WB-R	WB-R
Eleventh Avenue	West 42nd Street	WB-L	WB-L	WB-L	WB-L	WB-L	WB-L
Eleventh Avenue	West 39th Street			SB-TR		SB-TR	
Eleventh Avenue	West 38th Street		SB-TR	SB-TR		SB-TR	
Eleventh Avenue	West 37th Street		SB-T	SB-T		SB-T	
Eleventh Avenue	West 36th Street		SB-LT	SB-LT		SB-LT	
Eleventh Avenue	West 34th Street		EB-R	EB-R	EB-R	EB-R	EB-R
				WB-L		WB-L	WB-L
		SB-LTR	SB-LTR	SB-LTR		SB-LTR	
Eleventh Avenue	West 33rd Street	EB-R	EB-R	EB-R	EB-R	EB-R	EB-R
			WB-L	WB-L	WB-L	WB-L	WB-L
		WB-LT		WB-LT		WB-LT	WB-LT
Eleventh Avenue	West 32nd Street	SB-LTR	SB-LTR	SB-LTR	SB-LTR	SB-LTR	SB-LTR
Eleventh Avenue	West 31st Street		SB-LT	SB-LT	SB-LT	SB-LT	SB-LT
Eleventh Avenue	West 30th Street	EB-T		EB-T			
		SB-LT	SB-LT	SB-LT	SB-LT	SB-LT	SB-LT
Eleventh Avenue	West 29th Street	SB-TR		SB-TR		SB-TR	
Eleventh Avenue	West 24th Street	SB-TR	SB-TR	SB-TR	SB-TR	SB-TR	SB-TR
Twelfth Avenue	Eleventh Avenue	WB-TR	WB-TR	WB-TR	WB-TR	WB-TR	WB-TR
Tenth Avenue	West 36th Street			NB-TR			
Tenth Avenue	West 35th Street	WB-TR	WB-TR			WB-TR	
Tenth Avenue	West 34th Street	WB-T	WB-T			EB-LT	EB-LT
				NB-LTR			
Tenth Avenue	West 33rd Street	WB-TR	WB-TR	WB-TR	WB-TR		WB-TR
				NB-LT		NB-LT	NB-LT
Tenth Avenue	West 30th Street	EB-L	EB-L	EB-L	EB-L	EB-L	EB-L
		EB-T	EB-T	EB-T	EB-T	EB-T	EB-T
				NB-T			
					NB-R		NB-R
Tenth Avenue	West 29th Street	WB-T		WB-T			
		WB-R	WB-R	WB-R	WB-R	WB-R	WB-R
Tenth Avenue	West 23rd Street	WB-TR	WB-TR	WB-TR	WB-TR	WB-TR	WB-TR
				NB-LTR	NB-LTR	NB-LTR	
Ninth Avenue	West 42nd Street	EB-T	EB-T	EB-T		EB-T	EB-T
Ninth Avenue	West 35th Street			SB-TR			
		EB-T	WB-LT	WB-LT	WB-LT	WB-LT	WB-LT
Ninth Avenue	West 34th Street					EB-T	
			WB-T	WB-T		WB-T	
Ninth Avenue	West 33rd Street			WB-LT	WB-LT	WB-LT	
Ninth Avenue	West 30th Street			EB-T			
			EB-R	EB-R	EB-R	EB-R	EB-R
Ninth Avenue	West 29th Street	WB-T	WB-T	WB-T	WB-T	WB-T	WB-T
Ninth Avenue	West 23rd Street	SB-TR					
		WB-T			WB-T		WB-T
Eighth Avenue	West 42nd Street		WB-T	WB-T			
Eighth Avenue	West 37th Street				WB-TR		WB-TR
		EB-T	EB-T	EB-T	EB-T	EB-T	EB-T
Eighth Avenue	West 36th Street						
			NB-R	NB-R	NB-R	NB-R	

**Table 22-2
Proposed Project—Significant Adverse Traffic Impacts**

Intersection North-South Roadway / East-West Roadway		Analysis Peak Hour					
		Weekday				Saturday	
		AM	MD	PM	EVE	MD/AN	EVE
Eighth Avenue	West 34th Street	EB-T	EB-T	EB-T	EB-T		EB-T
			WB-T	WB-T			WB-TR
Eighth Avenue	West 33rd Street	NB-L	NB-L	NB-L	NB-L	NB-L	NB-L
Eighth Avenue	West 30th Street			EB-L		EB-L	EB-L
		EB-T		EB-T		EB-T	
Eighth Avenue	West 29th Street	WB-TR	WB-TR	WB-TR	WB-TR	WB-TR	WB-TR
		NB-L				NB-L	
Eighth Avenue	West 23rd Street			EB-T	EB-T	EB-T	
			WB-TR		WB-TR	WB-TR	WB-TR
Seventh Avenue	West 30th Street			EB-T		EB-T	
				EB-R			
Seventh Avenue	West 29th Street	WB-T	WB-T	WB-T	WB-T	WB-T	WB-T
Seventh Avenue	West 28th Street	EB-TR		EB-TR		EB-TR	EB-TR
Sixth Avenue	West 29th Street	WB-T		WB-T	WB-T	WB-T	WB-T
		NB-L	NB-L	NB-L	NB-L	NB-L	NB-L
Sixth Avenue	West 28th Street	EB-LT		EB-LT	EB-LT	EB-LT	
Sixth Avenue	West 23rd Street				EB-T		
Lincoln Tunnel	West 33rd Street			SB-R			
Total No. of Impacted Intersections/ Lane Groups		AM	MD	PM	EVE	MD/AN	EVE
		37	40	62	38	53	42
	Totals During Any Analysis Peak Hour				73		60

Notes: MD = Midday; EVE = Evening; AN = Afternoon; EB = Eastbound; WB = Westbound; NB = Northbound; SB = Southbound; L = Left-turn; T = Through; R = Right Turn

**Table 22-3a
Proposed Project—Recommended Traffic Mitigation Measures
Weekday AM Peak Hour**

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
Twelfth Avenue and West 30th Street	EB: Green = 14 s NB/SB: Green = 100 s SB L: Green = 19 s	Shift 4 seconds of green time from the NB/SB phase to the SB L phase	EB: Green = 14 s NB/SB: Green = 96 s SB L: Green = 23 s
Twelfth Avenue and West 29th Street	EB/WB: Green = 27 s NB/SB: Green = 104 s LPI: Green = 7 s	Unmitigated	N/A
Eleventh Avenue and West 42nd Street	EB/WB: Green = 28 s WB: Green = 9 s SB: Green = 31 s LPI: Green = 7 s	Shift 2 seconds of green time from the SB phase to the WB phase	EB/WB: Green = 28 s WB: Green = 11 s SB: Green = 29 s LPI: Green = 7 s
Eleventh Avenue and West 34th Street	EB L/WB L: Green = 9 s EB/WB: Green = 26 s SB: Green = 40 s	Unmitigated	N/A
Eleventh Avenue and West 33rd Street	EB/WB: Green = 19 s SB: Green = 34 s LPI: Green = 27 s	Unmitigated	N/A
Eleventh Avenue and West 32nd Street Extension	EB: Green = 19 s SB: Green = 34 s LPI: Green = 27 s	Shift 1 second of green time from the EB phase to the SB phase	EB: Green = 18 s SB: Green = 35 s LPI: Green = 27 s
Eleventh Avenue and West 30th Street	EB: Green = 35 s SB: Green = 38 s LPI: Green = 7 s	Unmitigated	N/A
Eleventh Avenue and West 29th Street	WB T: Green = 22 s WB L / WB T: Green = 20 s SB: Green = 33 s	Shift 3 seconds of green time from the WB T phase to the SB phase	WB T: Green = 19 s WB L / WB T: Green = 20 s SB: Green = 36 s
Eleventh Avenue and West 24th Street	NB L / SB L / EB R: Green = 24 s SB: Green = 27 s LPI: Green = 29 s	Shift 1 second of green time from the NB L / SB L / EB R phase to the SB phase	NB L / SB L / EB R: Green = 23 s SB: Green = 28 s LPI: Green = 29 s

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Table 22-3a
Proposed Project—Recommended Traffic Mitigation Measures
Weekday AM Peak Hour

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
Twelfth Avenue and Eleventh Avenue	WB: Green = 34 s NB/SB: Green = 93 s SB: Green = 2 s	Shift 1 second of green time from the NB/SB phase to the WB phase	WB: Green = 35 s NB/SB: Green = 92 s SB: Green = 2 s
Tenth Avenue and West 35th Street	WB: Green = 31 s NB: Green = 39 s LPI: Green = 10 s	Shift 1 second of green time from the NB phase to the WB phase	WB: Green = 32 s NB: Green = 38 s LPI: Green = 10 s
Tenth Avenue and West 34th Street	EB/WB: Green = 31 s NB: Green = 42 s LPI: Green = 7 s	Shift 1 second of green time from the NB phase to the EB/WB phase	EB/WB: Green = 32 s NB: Green = 41 s LPI: Green = 7 s
Tenth Avenue and West 33rd Street	WB: Green = 31 s NB: Green = 42 s LPI: Green = 7 s	Shift 1 second of green time from the NB phase to the WB phase	WB: Green = 32 s NB: Green = 41 s LPI: Green = 7 s
Tenth Avenue and West 30th Street	LPI: Green = 7 s EB: Green = 29 s LPI: Green = 7 s NB: Green = 37 s	Unmitigated	N/A
Tenth Avenue and West 29th Street	WB: Green = 31 s NB: Green = 42 s LPI: Green = 7 s	Shift 4 seconds of green time from the NB phase to the WB phase	WB: Green = 35 s NB: Green = 38 s LPI: Green = 7 s
Tenth Avenue and West 23rd Street	EB/WB: Green = 25 s EB: Green = 6s NB: Green = 37 s LPI: Green = 7 s	Shift 2 seconds of green time from the NB phase to the EB/WB phase	EB/WB: Green = 27 s EB: Green = 6s NB: Green = 35 s LPI: Green = 7 s
Ninth Avenue and West 42nd Street	EB/WB: Green = 25 s WB: Green = 12 s SB T / SB R: Green = 22 s SB: Green = 11 s	Shift 1 second of green time from the SB T / SB R phase to the EB/WB phase	EB/WB: Green = 26 s WB: Green = 12 s SB T / SB R: Green = 21 s SB: Green = 11 s
Ninth Avenue and West 34th Street	EB/WB: Green = 31 s SB T/ SB R: Green = 24 s SB: Green = 13 s LPI: Green = 7 s	Shift 1 second of green time from the SB T / SB R phase to the EB/WB phase	EB/WB: Green = 32 s SB T/ SB R: Green = 23 s SB: Green = 13 s LPI: Green = 7 s
Ninth Avenue and West 29th Street	WB: Green = 33s SB: Green = 40 s LPI: Green = 7 s	Unmitigated	N/A
Ninth Avenue and West 23rd Street	EB/WB: Green = 25 s SB T/ SB R: Green = 27 s SB: Green = 15 s LPI: Green = 7 s	Shift 1 second of green time from the SB T / SB R phase to the EB/WB phase	EB/WB: Green = 26 s SB T/ SB R: Green = 26 s SB: Green = 15 s LPI: Green = 7 s
Eighth Avenue and West 36th Street	LPI: Green = 7 s EB: Green = 26 s LPI: Green = 7 s NB: Green = 40 s	Unmitigated	N/A
Eighth Avenue and West 34th Street	EB/WB: Green = 31 s NB T/ NB R: Green = 22 s NB: Green = 12 s LPI: Green = 10 s	Shift 1 second of green time from the NB T / NB R phase to the EB/WB phase	EB/WB: Green = 32 s NB T/ NB R: Green = 21 s SB: Green = 12 s LPI: Green = 10 s
Eighth Avenue and West 33rd Street	WB: Green = 35 s NB T/ NB R: Green = 18 s NB: Green = 15 s LPI: Green = 7 s	Shift 4 seconds of green time from the WB phase to the NB phase	WB: Green = 31 s NB T/ NB R: Green = 18 s NB: Green = 19 s LPI: Green = 7 s
Eighth Avenue and West 30th Street	EB: Green = 30 s NB: Green = 40 s LPI: Green = 10 s	Shift 2 seconds of green time from the NB phase to the EB phase	EB: Green = 32 s NB: Green = 38 s LPI: Green = 10 s
Eighth Avenue and West 29th Street	WB: Green = 36 s NB: Green = 34 s LPI: Green = 10 s	Unmitigated	N/A
Seventh Avenue and West 29th Street	WB: Green = 32 s SB: Green = 41 s LPI: Green = 7 s	Shift 3 seconds of green time from the SB phase to the WB phase	WB: Green = 35 s SB: Green = 38 s LPI: Green = 7 s
Seventh Avenue and West 28th Street	EB: Green = 27 s SB: Green = 46 s LPI: Green = 7 s	Shift 2 seconds of green time from the SB phase to the EB phase	EB: Green = 29 s SB: Green = 44 s LPI: Green = 7 s
Sixth Avenue and West 29th Street	WB: Green = 28 s NB: Green = 45 s LPI: Green = 7 s	Unmitigated	N/A

Table 22-3a

**Proposed Project—Recommended Traffic Mitigation Measures
Weekday AM Peak Hour**

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
Sixth Avenue and West 28th Street	EB: Green = 28 s NB: Green = 45 s LPI: Green = 7 s	Shift 1 second of green time from the NB phase to the EB phase	EB: Green = 29 s NB: Green = 44 s LPI: Green = 7 s
Lincoln Tunnel and West 33rd Street	Unsignalized	Unmitigated	N/A

Notes: EB = Eastbound; WB = Westbound; NB = Northbound; SB = Southbound; L = Left; T = Through; R = Right; LPI = Lead Pedestrian Interval

Table 22-3b

**Proposed Project—Recommended Traffic Mitigation Measures
Weekday Midday Peak Hour**

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
Twelfth Avenue and West 42nd Street	EB/WB: Green = 33 s NB/SB: Green = 44 s SB / WB R: Green = 7 s SB L / WB R: Green = 13 s	Shift 1 second of green time from the EB/WB phase to the NB/SB phase	EB/WB: Green = 32 s NB/SB: Green = 45 s SB / WB R: Green = 7 s SB L / WB R: Green = 13 s
Twelfth Avenue and West 30th Street	EB: Green = 14 s NB/SB: Green = 72 s SB L: Green = 17 s	Shift 3 seconds of green time from the NB/SB phase to the SB L phase	EB: Green = 14 s NB/SB: Green = 69 s SB L: Green = 20 s
Twelfth Avenue and West 29th Street	EB/WB: Green = 23 s NB/SB: Green = 75 s LPI: Green = 10 s	Unmitigated	N/A
Eleventh Avenue and West 42nd Street	EB/WB: Green = 25 s WB: Green = 9 s SB: Green = 31 s LPI: Green = 10 s	Shift 2 seconds of green time from the SB phase to the WB phase	EB/WB: Green = 25 s WB: Green = 11 s SB: Green = 29 s LPI: Green = 10 s
Eleventh Avenue and West 38th Street	NB/SB: Green = 47 s LPI: Green = 38 s	Unmitigated	N/A
Eleventh Avenue and West 37th Street	EB/WB: Green = 25 s NB/SB: Green = 45 s LPI: Green = 10 s	Shift 4 seconds of green time from the EB/WB phase to the NB/SB phase	EB/WB: Green = 21 s NB/SB: Green = 49 s LPI: Green = 10 s
Eleventh Avenue and West 36th Street	NB/SB: Green = 46 s LPI: Green = 39 s	Unmitigated	N/A
Eleventh Avenue and West 34th Street	EB L/WB L: Green = 9 s EB/WB: Green = 26 s SB: Green = 40 s	Unmitigated	N/A
Eleventh Avenue and West 33rd Street	EB/WB: Green = 19 s SB: Green = 34 s LPI: Green = 27 s	Unmitigated	N/A
Eleventh Avenue and West 32nd Street Extension	EB: Green = 19 s SB: Green = 34 s LPI: Green = 27 s	Unmitigated	N/A
Eleventh Avenue and West 31st Street Extension	SB: Green = 36 s LPI: Green = 10 s LPI: Green = 34 s	Unmitigated	N/A
Eleventh Avenue and West 30th Street	EB: Green = 34 s SB: Green = 36 s LPI: Green = 7 s	Unmitigated	N/A
Eleventh Avenue and West 24th Street	NB L / SB L / EB R: Green = 24 s SB: Green = 27 s LPI: Green = 29 s	Shift 2 seconds of green time from the NB L / SB L / EB R phase to the SB phase	NB L / SB L / EB R: Green = 22 s SB: Green = 29 s LPI: Green = 29 s
Twelfth Avenue and Eleventh Avenue	WB: Green = 33 s NB/SB: Green = 65 s SB: Green = 2 s	Shift 2 seconds of green time from the NB/SB phase to the WB phase	WB: Green = 35 s NB/SB: Green = 63 s SB: Green = 2 s
Tenth Avenue and West 35th Street	WB: Green = 29 s NB: Green = 41 s LPI: Green = 10 s	Shift 1 second of green time from the NB phase to the WB phase	WB: Green = 30 s NB: Green = 40 s LPI: Green = 10 s
Tenth Avenue and West 34th Street	EB/WB: Green = 31 s NB: Green = 42 s LPI: Green = 7 s	Shift 1 second of green time from the NB phase to the EB/WB phase	EB/WB: Green = 32 s NB: Green = 41 s LPI: Green = 7 s

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**Table 22-3b
Proposed Project—Recommended Traffic Mitigation Measures
Weekday Midday Peak Hour**

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
Tenth Avenue and West 33rd Street	WB: Green = 31 s NB: Green = 42 s LPI: Green = 7 s	Shift 1 second of green time from the NB phase to the WB phase	WB: Green = 32 s NB: Green = 41 s LPI: Green = 7 s
Tenth Avenue and West 30th Street	LPI: Green = 7 s EB: Green: 29 s LPI: Green = 7 s NB: Green = 37 s	Unmitigated	N/A
Tenth Avenue and West 29th Street	WB: Green = 31 s NB: Green = 42 s LPI: Green = 7 s	Shift 4 seconds of green time from the NB phase to the WB phase	WB: Green = 35 s NB: Green = 38 s LPI: Green = 7 s
Tenth Avenue and West 23rd Street	EB/WB: Green = 25 s EB: Green: 6s NB: Green = 37 s LPI: Green = 7 s	Shift 2 seconds of green time from the NB phase to the EB/WB phase	EB/WB: Green = 27 s EB: Green: 6s NB: Green = 35 s LPI: Green = 7 s
Ninth Avenue and West 42nd Street	EB/WB: Green = 25 s WB: Green: 12 s SB T / SB R: Green = 22 s SB: Green = 11 s	Shift 1 second of green time from the SB T / SB R phase to the EB/WB phase	EB/WB: Green = 26 s WB: Green: 12 s SB T / SB R: Green = 21 s SB: Green = 11 s
Ninth Avenue and West 35th Street	WB: Green: 30 s SB: Green = 50 s	Shift 1 second of green time from the SB phase to the WB phase	WB: Green: 31 s SB: Green = 49 s
Ninth Avenue and West 34th Street	EB/WB: Green = 28 s SB T / SB R: Green = 24 s SB: Green = 13 s LPI: Green = 10 s	Shift 1 second of green time from the SB T / SB R phase to the EB/WB phase	EB/WB: Green = 29 s SB T / SB R: Green = 23 s SB: Green = 13 s LPI: Green = 10 s
Ninth Avenue and West 30th Street	LPI: Green = 10 s EB: Green: 24 s LPI: Green = 10 s SB: Green = 36 s	Shift 1 second of green time from the SB phase to the EB phase	LPI: Green = 10 s EB: Green: 25 s LPI: Green = 10 s SB: Green = 35 s
Ninth Avenue and West 29th Street	WB: Green: 32s SB: Green = 38 s LPI: Green = 10 s	Unmitigated	N/A
Eighth Avenue and West 42nd Street	EB/WB: Green = 24 s EB: Green = 20 s NB: Green = 31 s	Shift 2 seconds of green time from the NB phase to the EB/WB phase	EB/WB: Green = 26 s EB: Green = 20 s NB: Green = 29 s
Eighth Avenue and West 36th Street	LPI: Green = 10 s EB: Green: 25 s LPI: Green = 7 s NB: Green = 38 s	Unmitigated	N/A
Eighth Avenue and West 34th Street	EB/WB: Green = 31 s NB T/ NB R: Green = 22 s NB: Green = 12 s LPI: Green = 10 s	Shift 2 seconds of green time from the NB T / NB R phase to the EB/WB phase	EB/WB: Green = 33 s NB T/ NB R: Green = 20 s SB: Green = 12 s LPI: Green = 10 s
Eighth Avenue and West 33rd Street	WB: Green = 34 s NB T/ NB R: Green = 17 s NB: Green = 14 s LPI: Green = 10 s	Shift 3 seconds of green time from the WB phase to the NB phase	WB: Green = 31 s NB T/ NB R: Green = 17 s NB: Green = 17 s LPI: Green = 10 s
Eighth Avenue and West 29th Street	WB: Green = 36 s NB: Green = 34 s LPI: Green = 10 s	Unmitigated	N/A
Eighth Avenue and West 23rd Street	EB/WB: Green = 27 s NB T: Green = 23 s NB: Green = 15 s LPI: Green = 10 s	Shift 2 seconds of green time from the NB T phase to the EB/WB phase	EB/WB: Green = 29 s NB T: Green = 21 s NB: Green = 15 s LPI: Green = 10 s
Seventh Avenue and West 29th Street	WB: Green = 32 s SB: Green = 41 s LPI: Green = 7 s	Shift 2 seconds of green time from the SB phase to the WB phase	WB: Green = 34 s SB: Green = 39 s LPI: Green = 7 s
Sixth Avenue and West 29th Street	WB: Green = 28 s NB: Green = 42 s LPI: Green = 10 s	Unmitigated	N/A

Notes: EB = Eastbound; WB = Westbound; NB = Northbound; SB = Southbound; L = Left; T = Through; R = Right; LPI = Lead Pedestrian Interval

Table 22-3c

**Proposed Project—Recommended Traffic Mitigation Measures
Weekday PM Peak Hour**

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
Twelfth Avenue and West 42nd Street	EB/WB: Green = 33 s NB/SB: Green = 81 s SB / WB R: Green = 6 s SB L / WB R: Green = 7 s	Shift 1 second of green time from the EB/WB phase to the NB/SB phase	EB/WB: Green = 32 s NB/SB: Green = 82 s SB / WB R: Green = 6 s SB L / WB R: Green = 7 s
Twelfth Avenue and West 30th Street	EB: Green = 14 s NB/SB: Green = 100 s SB L: Green = 19 s	Shift 1 second of green time from the EB phase to the SB L phase	EB: Green = 13 s NB/SB: Green = 100 s SB L: Green = 20 s
Twelfth Avenue and West 29th Street	EB/WB: Green = 27 s NB/SB: Green = 104 s LPI: Green = 7 s	Unmitigated	N/A
Eleventh Avenue and West 42nd Street	EB/WB: Green = 26 s WB: Green = 13 s SB: Green = 29 s LPI: Green = 7 s	Shift 2 seconds of green time from the SB phase to the WB phase	EB/WB: Green = 26 s WB: Green = 15 s SB: Green = 27 s LPI: Green = 7 s
Eleventh Avenue and West 39th Street	WB: Green = 28 s NB/SB: Green = 45 s LPI: Green = 7 s	Shift 2 seconds of green time from the WB phase to the NB/SB phase	WB: Green = 26 s NB/SB: Green = 47 s LPI: Green = 7 s
Eleventh Avenue and West 38th Street	NB/SB: Green = 47 s LPI: Green = 38 s	Unmitigated	N/A
Eleventh Avenue and West 37th Street	EB/WB: Green = 26 s NB/SB: Green = 47 s LPI: Green = 10 s	Shift 2 seconds of green time from the EB/WB phase to the NB/SB phase	EB/WB: Green = 24 s NB/SB: Green = 49 s LPI: Green = 10 s
Eleventh Avenue and West 36th Street	NB/SB: Green = 46 s LPI: Green = 39 s	Unmitigated	N/A
Eleventh Avenue and West 34th Street	EB L/WB L: Green = 9 s EB/WB: Green = 26 s SB: Green = 40 s	Unmitigated	N/A
Eleventh Avenue and West 33rd Street	EB/WB: Green = 19 s SB: Green = 34 s LPI: Green = 27 s	Unmitigated	N/A
Eleventh Avenue and West 32nd Street Extension	EB: Green = 19 s SB: Green = 34 s LPI: Green = 27 s	Unmitigated	N/A
Eleventh Avenue and West 31st Street Extension	SB: Green = 38 s LPI: Green = 7 s LPI: Green = 35 s	Unmitigated	N/A
Eleventh Avenue and West 30th Street	EB: Green = 35 s SB: Green = 38 s LPI: Green = 7 s	Unmitigated	N/A
Eleventh Avenue and West 29th Street	WB T: Green = 22 s WB L / WB T: Green = 20 s SB: Green = 33 s	Shift 2 seconds of green time from the WB T phase to the SB phase	WB T: Green = 20 s WB L / WB T: Green = 20 s SB: Green = 35 s
Eleventh Avenue and West 24th Street	NB L / SB L / EB R: Green = 24 s SB: Green = 27 s LPI: Green = 29 s	Shift 2 seconds of green time from the NB L / SB L / EB R phase to the SB phase	NB L / SB L / EB R: Green = 22 s SB: Green = 29 s LPI: Green = 29 s
Twelfth Avenue and Eleventh Avenue	WB: Green = 33 s NB/SB: Green = 94 s SB: Green = 2 s	Shift 2 seconds of green time from the NB/SB phase to the WB phase	WB: Green = 35 s NB/SB: Green = 92 s SB: Green = 2 s
Tenth Avenue and West 36th Street	EB: Green = 31 s NB: Green = 39 s LPI: Green = 10 s	Shift 4 seconds of green time from the EB phase to the NB phase	EB: Green = 27 s NB: Green = 43 s LPI: Green = 10 s
Tenth Avenue and West 34th Street	EB/WB: Green = 31 s NB: Green = 42 s LPI: Green = 7 s	Unmitigated	N/A
Tenth Avenue and West 33rd Street	WB: Green = 31 s NB: Green = 42 s LPI: Green = 7 s	Unmitigated	N/A
Tenth Avenue and West 30th Street	LPI: Green = 7 s EB: Green: 29 s LPI: Green = 7 s NB: Green = 37 s	Unmitigated	N/A
Tenth Avenue and West 29th Street	WB: Green = 31 s NB: Green = 42 s LPI: Green = 7 s	Unmitigated	N/A
Tenth Avenue and West 23rd Street	EB/WB: Green = 25 s EB: Green: 6s	Unmitigated	N/A

Western Rail Yard Modifications

Table 22-3c
Proposed Project—Recommended Traffic Mitigation Measures
Weekday PM Peak Hour

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
	NB: Green = 37 s LPI: Green = 7 s		
Ninth Avenue and West 42nd Street	EB/WB: Green = 25 s WB: Green = 12 s SB T / SB R: Green = 22 s SB: Green = 11 s	Unmitigated	N/A
Ninth Avenue and West 35th Street	WB: Green = 30 s SB: Green = 50 s	Unmitigated	N/A
Ninth Avenue and West 34th Street	EB/WB: Green = 31 s SB T / SB R: Green = 24 s SB: Green = 13 s LPI: Green = 7 s	Shift 2 seconds of green time from the SB T / SB R phase to the EB/WB phase	EB/WB: Green = 33 s SB T / SB R: Green = 22 s SB: Green = 13 s LPI: Green = 7 s
Ninth Avenue and West 33rd Street	WB: Green = 28 s SB: Green = 45 s LPI: Green = 7 s	Shift 3 seconds of green time from the SB phase to the WB phase	WB: Green = 31 s SB: Green = 42 s LPI: Green = 7 s
Ninth Avenue and West 30th Street	LPI: Green = 7 s EB: Green = 25 s LPI: Green = 8 s SB: Green = 40 s	Unmitigated	N/A
Ninth Avenue and West 29th Street	WB: Green = 33s SB: Green = 40 s LPI: Green = 7 s	Unmitigated	N/A
Eighth Avenue and West 42nd Street	EB/WB: Green = 24 s EB: Green = 20 s NB: Green = 31 s	Unmitigated	N/A
Eighth Avenue and West 36th Street	LPI: Green = 7 s EB: Green = 26 s LPI: Green = 7 s NB: Green = 40 s	Unmitigated	N/A
Eighth Avenue and West 34th Street	EB/WB: Green = 31 s NB T / NB R: Green = 22 s NB: Green = 12 s LPI: Green = 10 s	Shift 2 seconds of green time from the NB T / NB R phase to the EB/WB phase	EB/WB: Green = 33 s NB T / NB R: Green = 20 s SB: Green = 12 s LPI: Green = 10 s
Eighth Avenue and West 33rd Street	WB: Green = 35 s NB T / NB R: Green = 18 s NB: Green = 15 s LPI: Green = 7 s	Shift 3 seconds of green time from the WB phase to the NB phase	WB: Green = 32 s NB T / NB R: Green = 18 s NB: Green = 18 s LPI: Green = 7 s
Eighth Avenue and West 30th Street	EB: Green = 30 s NB: Green = 40 s LPI: Green = 10 s	Unmitigated	N/A
Eighth Avenue and West 29th Street	WB: Green = 36 s NB: Green = 34 s LPI: Green = 10 s	Unmitigated	N/A
Eighth Avenue and West 23rd Street	EB/WB: Green = 28 s NB T: Green = 22 s NB: Green = 15 s LPI: Green = 10 s	Shift 1 second of green time from the NB T phase to the EB/WB phase	EB/WB: Green = 29 s NB T: Green = 21 s NB: Green = 15 s LPI: Green = 10 s
Seventh Avenue and West 30th Street	EB: Green = 32 s SB: Green = 41 s LPI: Green = 7 s	Unmitigated	N/A
Seventh Avenue and West 29th Street	WB: Green = 32 s SB: Green = 41 s LPI: Green = 7 s	Unmitigated	N/A
Seventh Avenue and West 28th Street	EB: Green = 27 s SB: Green = 46 s LPI: Green = 7 s	Shift 2 seconds of green time from the SB phase to the EB phase	EB: Green = 29 s SB: Green = 44 s LPI: Green = 7 s
Sixth Avenue and West 29th Street	WB: Green = 28 s NB: Green = 45 s LPI: Green = 7 s	Unmitigated	N/A
Sixth Avenue and West 28th Street	EB: Green = 28 s NB: Green = 45 s LPI: Green = 7 s	Shift 3 seconds of green time from the NB phase to the EB phase	EB: Green = 31 s NB: Green = 42 s LPI: Green = 7 s
Lincoln Tunnel and West 33rd Street	Unsignalized	Unmitigated	N/A

Notes: EB = Eastbound; WB = Westbound; NB = Northbound; SB = Southbound; L = Left; T = Through; R = Right; LPI = Lead Pedestrian Interval

Table 22-3d
Proposed Project—Recommended Traffic Mitigation Measures
Weekday Evening Peak Hour

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
Twelfth Avenue and West 42nd Street	EB/WB: Green = 33 s NB/SB: Green = 81 s SB / WB R: Green = 6 s SB L / WB R: Green = 7 s	Shift 1 second of green time from the EB/WB phase to the NB/SB phase	EB/WB: Green = 32 s NB/SB: Green = 82 s SB / WB R: Green = 6 s SB L / WB R: Green = 7 s
Twelfth Avenue and West 30th Street	EB: Green = 14 s NB/SB: Green = 100 s SB L: Green = 19 s	Shift 2 seconds of green time from the NB/SB phase to the SB L phase	EB: Green = 14 s NB/SB: Green = 98 s SB L: Green = 21 s
Twelfth Avenue and West 29th Street	EB/WB: Green = 27 s NB/SB: Green = 104 s LPI: Green = 7 s	Unmitigated	N/A
Eleventh Avenue and West 42nd Street	EB/WB: Green = 26 s WB: Green = 13 s SB: Green = 29 s LPI: Green = 7 s	Shift 2 seconds of green time from the SB phase to the WB phase	EB/WB: Green = 26 s WB: Green = 15 s SB: Green = 27 s LPI: Green = 7 s
Eleventh Avenue and West 34th Street	EB L/WB L: Green = 9 s EB/WB: Green = 26 s SB: Green = 40 s	Unmitigated	N/A
Eleventh Avenue and West 33rd Street	EB/WB: Green = 19 s SB: Green = 34 s LPI: Green = 27 s	Unmitigated	N/A
Eleventh Avenue and West 32nd Street Extension	EB: Green = 19 s SB: Green = 34 s LPI: Green = 27 s	Shift 4 seconds of green time from the EB phase to the SB phase	EB: Green = 14 s SB: Green = 38 s LPI: Green = 27 s
Eleventh Avenue and West 31st Street Extension	SB: Green = 36 s LPI: Green = 10 s LPI: Green = 34 s	Unmitigated	N/A
Eleventh Avenue and West 30th Street	EB: Green = 35 s SB: Green = 38 s LPI: Green = 7 s	Shift 3 seconds of green time from the EB phase to the SB phase	EB: Green = 32 s SB: Green = 41 s LPI: Green = 7 s
Eleventh Avenue and West 24th Street	NB L / SB L / EB R: Green = 24 s SB: Green = 27 s LPI: Green = 29 s	Shift 2 seconds of green time from the NB L / SB L / EB R phase to the SB phase	NB L / SB L / EB R: Green = 22 s SB: Green = 29 s LPI: Green = 29 s
Twelfth Avenue and Eleventh Avenue	WB: Green = 33 s NB/SB: Green = 94 s SB: Green = 2 s	Shift 2 seconds of green time from the NB/SB phase to the WB phase	WB: Green = 35 s NB/SB: Green = 92 s SB: Green = 2 s
Tenth Avenue and West 33rd Street	WB: Green = 31 s NB: Green = 42 s LPI: Green = 7 s	Unmitigated	N/A
Tenth Avenue and West 30th Street	LPI: Green = 7 s EB: Green = 29 s LPI: Green = 7 s NB: Green = 37 s	Unmitigated	N/A
Tenth Avenue and West 29th Street	WB: Green = 31 s NB: Green = 42 s LPI: Green = 7 s	Shift 4 seconds of green time from the NB phase to the WB phase	WB: Green = 35 s NB: Green = 38 s LPI: Green = 7 s
Tenth Avenue and West 23rd Street	EB/WB: Green = 25 s EB: Green = 6s NB: Green = 37 s LPI: Green = 7 s	Unmitigated	N/A
Ninth Avenue and West 35th Street	WB: Green = 30 s SB: Green = 50 s	Shift 4 seconds of green time from the SB phase to the WB phase	WB: Green = 34 s SB: Green = 46 s
Ninth Avenue and West 33rd Street	WB: Green = 28 s SB: Green = 45 s LPI: Green = 7 s	Shift 1 second of green time from the SB phase to the WB phase	WB: Green = 29 s SB: Green = 44 s LPI: Green = 7 s
Ninth Avenue and West 30th Street	LPI: Green = 7 s EB: Green = 25 s LPI: Green = 8 s SB: Green = 40 s	Shift 1 second of green time from the SB phase to the EB phase	LPI: Green = 7 s EB: Green = 26 s LPI: Green = 8 s SB: Green = 39 s
Ninth Avenue and West 29th Street	WB: Green = 33s SB: Green = 40 s LPI: Green = 7 s	Unmitigated	N/A
Ninth Avenue and West 23rd Street	EB/WB: Green = 25 s SB T / SB R: Green = 27 s	Shift 1 second of green time from the SB T / SB R phase to the EB/WB phase	EB/WB: Green = 26 s SB T / SB R: Green = 26 s

Western Rail Yard Modifications

Table 22-3d
Proposed Project—Recommended Traffic Mitigation Measures
Weekday Evening Peak Hour

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
	SB: Green = 15 s LPI: Green = 7 s		SB: Green = 15 s LPI: Green = 7 s
Eighth Avenue and West 42nd Street	EB/WB: Green = 24 s EB: Green = 20 s NB: Green = 31 s	Unmitigated	N/A
Eighth Avenue and West 36th Street	LPI: Green = 7 s EB: Green = 26 s LPI: Green = 7 s NB: Green = 40 s	Unmitigated	N/A
Eighth Avenue and West 34th Street	EB/WB: Green = 31 s NB T / NB R: Green = 22 s NB: Green = 12 s LPI: Green = 10 s	Shift 2 seconds of green time from the NB T / NB R phase to the EB/WB phase	EB/WB: Green = 33 s NB T / NB R: Green = 20 s SB: Green = 12 s LPI: Green = 10 s
Eighth Avenue and West 33rd Street	WB: Green = 35 s NB T / NB R: Green = 18 s NB: Green = 15 s LPI: Green = 7 s	Shift 3 seconds of green time from the WB phase to the NB phase	WB: Green = 32 s NB T / NB R: Green = 18 s NB: Green = 18 s LPI: Green = 7 s
Eighth Avenue and West 29th Street	WB: Green = 36 s NB: Green = 34 s LPI: Green = 10 s	Unmitigated	N/A
Eighth Avenue and West 23rd Street	EB/WB: Green = 28 s NB T: Green = 22 s NB: Green = 15 s LPI: Green = 10 s	Shift 2 seconds of green time from the NB T phase to the EB/WB phase	EB/WB: Green = 30 s NB T: Green = 20 s NB: Green = 15 s LPI: Green = 10 s
Seventh Avenue and West 29th Street	WB: Green = 32 s SB: Green = 41 s LPI: Green = 7 s	Unmitigated	N/A
Sixth Avenue and West 29th Street	WB: Green = 28 s NB: Green = 45 s LPI: Green = 7 s	Unmitigated	N/A
Sixth Avenue and West 28th Street	EB: Green = 28 s NB: Green = 45 s LPI: Green = 7 s	Shift 3 seconds of green time from the NB phase to the EB phase	EB: Green = 31 s NB: Green = 42 s LPI: Green = 7 s
Sixth Avenue and West 23rd Street	EB: Green = 35 s NB: Green = 38 s LPI: Green = 7 s	Unmitigated	N/A

Notes: EB = Eastbound; WB = Westbound; NB = Northbound; SB = Southbound; L = Left; T = Through; R = Right; LPI = Lead Pedestrian Interval

Table 22-3e
Proposed Project—Recommended Traffic Mitigation Measures
Saturday Midday/Afternoon Peak Hour

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
Twelfth Avenue and West 54th Street	NB/SB: Green = 71 s SB L: Green = 38 s	Shift 1 second of green time from the SB L phase to the NB/SB phase	NB/SB: Green = 72 s SB L: Green = 37 s
Twelfth Avenue and West 42nd Street	EB/WB: Green = 33 s NB/SB: Green = 44 s SB / WB R: Green = 7 s SB L / WB R: Green = 13 s	Shift 1 second of green time from the EB/WB phase to the NB/SB phase	EB/WB: Green = 32 s NB/SB: Green = 45 s SB / WB R: Green = 7 s SB L / WB R: Green = 13 s
Twelfth Avenue and West 30th Street	EB: Green = 14 s NB/SB: Green = 72 s SB L: Green = 17 s	Shift 1 second of green time from the NB/SB phase to the SB L phase	EB: Green = 14 s NB/SB: Green = 71 s SB L: Green = 18 s
Twelfth Avenue and West 29th Street	EB/WB: Green = 23 s NB/SB: Green = 75 s LPI: Green = 10 s	Shift 4 seconds of green time from the NB/SB phase to the EB/WB phase	EB/WB: Green = 27 s NB/SB: Green = 71 s LPI: Green = 10 s
Eleventh Avenue and West 42nd Street	EB/WB: Green = 25 s WB: Green = 9 s SB: Green = 31 s LPI: Green = 10 s	Shift 2 seconds of green time from the SB phase to the WB phase	EB/WB: Green = 25 s WB: Green = 11 s SB: Green = 29 s LPI: Green = 10 s

Table 22-3e
Proposed Project—Recommended Traffic Mitigation Measures
Saturday Midday/Afternoon Peak Hour

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
Eleventh Avenue and West 39th Street	WB: Green = 27 s NB/SB: Green = 43 s LPI: Green = 10 s	Shift 2 seconds of green time from the WB phase to the NB/SB phase	WB: Green = 25 s NB/SB: Green = 45 s LPI: Green = 10 s
Eleventh Avenue and West 38th Street	NB/SB: Green = 47 s LPI: Green = 38 s	Unmitigated	N/A
Eleventh Avenue and West 37th Street	EB/WB: Green = 25 s NB/SB: Green = 45 s LPI: Green = 10 s	Shift 2 seconds of green time from the EB/WB phase to the NB/SB phase	EB/WB: Green = 23 s NB/SB: Green = 47 s LPI: Green = 10 s
Eleventh Avenue and West 36th Street	NB/SB: Green = 46 s LPI: Green = 39 s	Unmitigated	N/A
Eleventh Avenue and West 34th Street	EB L/WB L: Green = 9 s EB/WB: Green = 26 s SB: Green = 40 s	Unmitigated	N/A
Eleventh Avenue and West 33rd Street	EB/WB: Green = 19 s SB: Green = 34 s LPI: Green = 27 s	Unmitigated	N/A
Eleventh Avenue and West 32nd Street Extension	EB: Green = 19 s SB: Green = 34 s LPI: Green = 27 s	Unmitigated	N/A
Eleventh Avenue and West 31st Street Extension	SB: Green = 36 s LPI: Green = 10 s LPI: Green = 34 s	Unmitigated	N/A
Eleventh Avenue and West 30th Street	EB: Green = 34 s SB: Green = 36 s LPI: Green = 10 s	Unmitigated	N/A
Eleventh Avenue and West 29th Street	WB T: Green = 22 s WB L / WB T: Green = 20 s SB: Green = 33 s	Shift 2 seconds of green time from the WB T phase to the SB phase	WB T: Green = 20 s WB L / WB T: Green = 20 s SB: Green = 35 s
Eleventh Avenue and West 24th Street	NB L / SB L / EB R: Green = 24 s SB: Green = 27 s LPI: Green = 29 s	Shift 2 seconds of green time from the NB L / SB L / EB R phase to the SB phase	NB L / SB L / EB R: Green = 22 s SB: Green = 29 s LPI: Green = 29 s
Twelfth Avenue and Eleventh Avenue	WB: Green = 33 s NB/SB: Green = 65 s SB: Green = 2 s	Shift 2 seconds of green time from the NB/SB phase to the WB phase	WB: Green = 35 s NB/SB: Green = 63 s SB: Green = 2 s
Tenth Avenue and West 35th Street	WB: Green = 29 s NB: Green = 41 s LPI: Green = 10 s	Shift 1 second of green time from the NB phase to the WB phase	WB: Green = 30 s NB: Green = 40 s LPI: Green = 10 s
Tenth Avenue and West 34th Street	EB/WB: Green = 31 s NB: Green = 42 s LPI: Green = 7 s	Shift 1 second of green time from the NB phase to the EB/WB phase	EB/WB: Green = 32 s NB: Green = 41 s LPI: Green = 7 s
Tenth Avenue and West 33rd Street	WB: Green = 31 s NB: Green = 42 s LPI: Green = 7 s	Unmitigated	N/A
Tenth Avenue and West 30th Street	LPI: Green = 7 s EB: Green = 29 s LPI: Green = 7 s NB: Green = 37 s	Unmitigated	N/A
Tenth Avenue and West 29th Street	WB: Green = 31 s NB: Green = 42 s LPI: Green = 7 s	Unmitigated	N/A
Tenth Avenue and West 23rd Street	EB/WB: Green = 25 s EB: Green = 6 s NB: Green = 37 s LPI: Green = 7 s	Unmitigated	N/A
Ninth Avenue and West 42nd Street	EB/WB: Green = 25 s WB: Green = 12 s SB T / SB R: Green = 22 s SB: Green = 11 s	Shift 2 seconds of green time from the SB T / SB R phase to the EB/WB phase	EB/WB: Green = 27 s WB: Green = 12 s SB T / SB R: Green = 20 s SB: Green = 11 s
Ninth Avenue and West 35th Street	WB: Green = 30 s SB: Green = 50 s	Shift 4 seconds of green time from the SB phase to the WB phase	WB: Green = 34 s SB: Green = 46 s
Ninth Avenue and West 34th Street	EB/WB: Green = 28 s SB T / SB R: Green = 24 s SB: Green = 13 s LPI: Green = 10 s	Shift 2 seconds of green time from the SB T / SB R phase to the EB/WB phase	EB/WB: Green = 30 s SB T / SB R: Green = 22 s SB: Green = 13 s LPI: Green = 10 s

Western Rail Yard Modifications

**Table 22-3e
Proposed Project—Recommended Traffic Mitigation Measures
Saturday Midday/Afternoon Peak Hour**

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
Ninth Avenue and West 33rd Street	WB: Green = 27 s SB: Green = 43 s LPI: Green = 10 s	Shift 2 seconds of green time from the SB phase to the WB phase	WB: Green = 29 s SB: Green = 41 s LPI: Green = 10 s
Ninth Avenue and West 30th Street	LPI: Green = 10 s EB: Green: 24 s LPI: Green = 10 s SB: Green = 36 s	Shift 3 seconds of green time from the SB phase to the EB phase	LPI: Green = 10 s EB: Green: 27 s LPI: Green = 10 s SB: Green = 33 s
Ninth Avenue and West 29th Street	WB: Green: 32s SB: Green = 38 s LPI: Green = 10 s	Unmitigated	N/A
Eighth Avenue and West 36th Street	LPI: Green = 10 s EB: Green: 25 s LPI: Green = 7 s NB: Green = 38 s	Unmitigated	N/A
Eighth Avenue and West 33rd Street	WB: Green = 34 s NB T/ NB R: Green = 17 s NB: Green = 14 s LPI: Green = 10 s	Shift 3 seconds of green time from the WB phase to the NB phase	WB: Green = 31 s NB T/ NB R: Green = 17 s NB: Green = 17 s LPI: Green = 10 s
Eighth Avenue and West 30th Street	EB: Green = 30 s NB: Green = 40 s LPI: Green = 10 s	Unmitigated	N/A
Eighth Avenue and West 29th Street	WB: Green = 36 s NB: Green = 34 s LPI: Green = 10 s	Unmitigated	N/A
Eighth Avenue and West 23rd Street	EB/WB: Green = 27 s NB T: Green = 23 s NB: Green = 15 s LPI: Green = 10 s	Shift 2 seconds of green time from the NB T phase to the EB/WB phase	EB/WB: Green = 29 s NB T: Green = 21 s NB: Green = 15 s LPI: Green = 10 s
Seventh Avenue and West 30th Street	EB: Green = 32 s SB: Green = 41 s LPI: Green = 7 s	Shift 2 second of green time from the SB phase to the EB phase	EB: Green = 34 s SB: Green = 39 s LPI: Green = 7 s
Seventh Avenue and West 29th Street	WB: Green = 32 s SB: Green = 41 s LPI: Green = 7 s	Unmitigated	N/A
Seventh Avenue and West 28th Street	EB: Green = 27 s SB: Green = 46 s LPI: Green = 7 s	Shift 3 seconds of green time from the SB phase to the EB phase	EB: Green = 30 s SB: Green = 43 s LPI: Green = 7 s
Sixth Avenue and West 29th Street	WB: Green = 28 s NB: Green = 42 s LPI: Green = 10 s	Unmitigated	N/A
Sixth Avenue and West 28th Street	EB: Green = 28 s NB: Green = 42 s LPI: Green = 10 s	Shift 2 seconds of green time from the NB phase to the EB phase	EB: Green = 30 s NB: Green = 40 s LPI: Green = 10 s

Notes: EB = Eastbound; WB = Westbound; NB = Northbound; SB = Southbound; L = Left; T = Through; R = Right; LPI = Lead Pedestrian Interval

**Table 22-3f
Proposed Project—Recommended Traffic Mitigation Measures
Saturday Evening Peak Hour**

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
Twelfth Avenue and West 42nd Street	EB/WB: Green = 33 s NB/SB: Green = 44 s SB / WB R: Green = 7 s SB L / WB R: Green = 13 s	Shift 2 second of green time from the EB/WB phase to the NB/SB phase	EB/WB: Green = 31 s NB/SB: Green = 46 s SB / WB R: Green = 7 s SB L / WB R: Green = 13 s
Twelfth Avenue and West 30th Street	EB: Green = 14 s NB/SB: Green = 72 s SB L: Green = 17 s	Shift 1 second of green time from the NB/SB phase to the SB L phase	EB: Green = 14 s NB/SB: Green = 71 s SB L: Green = 18 s
Twelfth Avenue and West 29th Street	EB/WB: Green = 23 s NB/SB: Green = 75 s LPI: Green = 10 s	Unmitigated	N/A

Table 22-3f
Proposed Project—Recommended Traffic Mitigation Measures
Saturday Evening Peak Hour

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
Eleventh Avenue and West 42nd Street	EB/WB: Green = 25 s WB: Green = 9 s SB: Green = 31 s LPI: Green = 10 s	Shift 2 seconds of green time from the SB phase to the WB phase	EB/WB: Green = 25 s WB: Green = 11 s SB: Green = 29 s LPI: Green = 10 s
Eleventh Avenue and West 34th Street	EB L/WB L: Green = 9 s EB/WB: Green = 26 s SB: Green = 40 s	Unmitigated	N/A
Eleventh Avenue and West 33rd Street	EB/WB: Green = 19 s SB: Green = 34 s LPI: Green = 27 s	Unmitigated	N/A
Eleventh Avenue and West 32nd Street Extension	EB: Green = 19 s SB: Green = 34 s LPI: Green = 27 s	Unmitigated	N/A
Eleventh Avenue and West 31st Street Extension	SB: Green = 36 s LPI: Green = 10 s LPI: Green = 34 s	Unmitigated	N/A
Eleventh Avenue and West 30th Street	EB: Green = 34 s SB: Green = 36 s LPI: Green = 10 s	Unmitigated	N/A
Eleventh Avenue and West 24th Street	NB L / SB L / EB R: Green = 24 s SB: Green = 27 s LPI: Green = 29 s	Shift 2 seconds of green time from the NB L / SB L / EB R phase to the SB phase	NB L / SB L / EB R: Green = 22 s SB: Green = 29 s LPI: Green = 29 s
Twelfth Avenue and Eleventh Avenue	WB: Green = 33 s NB/SB: Green = 65 s SB: Green = 2 s	Shift 2 seconds of green time from the NB/SB phase to the WB phase	WB: Green = 35 s NB/SB: Green = 63 s SB: Green = 2 s
Tenth Avenue and West 34th Street	EB/WB: Green = 31 s NB: Green = 42 s LPI: Green = 7 s	Shift 1 second of green time from the NB phase to the EB/WB phase	EB/WB: Green = 32 s NB: Green = 41 s LPI: Green = 7 s
Tenth Avenue and West 33rd Street	WB: Green = 31 s NB: Green = 42 s LPI: Green = 7 s	Unmitigated	N/A
Tenth Avenue and West 30th Street	LPI: Green = 7 s EB: Green: 29 s LPI: Green = 7 s NB: Green = 37 s	Unmitigated	N/A
Tenth Avenue and West 29th Street	WB: Green = 31 s NB: Green = 42 s LPI: Green = 7 s	Unmitigated	N/A
Tenth Avenue and West 23rd Street	EB/WB: Green = 25 s EB: Green: 6s NB: Green = 37 s LPI: Green = 7 s	Unmitigated	N/A
Ninth Avenue and West 42nd Street	EB/WB: Green = 25 s WB: Green: 12 s SB T / SB R: Green = 22 s SB: Green = 11 s	Shift 2 seconds of green time from the SB T / SB R phase to the EB/WB phase	EB/WB: Green = 27 s WB: Green: 12 s SB T / SB R: Green = 20 s SB: Green = 11 s
Ninth Avenue and West 35th Street	WB: Green: 30 s SB: Green = 50 s	Shift 3 seconds of green time from the SB phase to the WB phase	WB: Green: 33 s SB: Green = 47 s
Ninth Avenue and West 30th Street	LPI: Green = 10 s EB: Green: 24 s LPI: Green = 10 s SB: Green = 36 s	Shift 3 seconds of green time from the SB phase to the EB phase	LPI: Green = 10 s EB: Green: 27 s LPI: Green = 10 s SB: Green = 33 s
Ninth Avenue and West 29th Street	WB: Green: 32s SB: Green = 38 s LPI: Green = 10 s	Unmitigated	N/A
Ninth Avenue and West 23rd Street	EB/WB: Green = 24 s SB T / SB R: Green = 25 s SB: Green = 15 s LPI: Green = 10 s	Shift 3 seconds of green time from the SB T / SB R phase to the EB/WB phase	EB/WB: Green = 27 s SB T / SB R: Green = 22 s SB: Green = 15 s LPI: Green = 10 s
Eighth Avenue and West 42nd Street	EB/WB: Green = 24 s EB: Green = 18 s NB: Green = 33 s	Unmitigated	N/A
Eighth Avenue and West 37th Street	WB: Green = 26 s NB T: Green = 22 s NB: Green = 17 s LPI: Green = 10 s	Shift 3 seconds of green time from the NB T phase to the WB phase	WB: Green = 29 s NB T: Green = 19 s NB: Green = 17 s LPI: Green = 10 s

Table 22-3f
Proposed Project—Recommended Traffic Mitigation Measures
Saturday Evening Peak Hour

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
Eighth Avenue and West 36th Street	LPI: Green = 10 s EB: Green = 25 s LPI: Green = 7 s NB: Green = 38 s	Unmitigated	N/A
Eighth Avenue and West 34th Street	EB/WB: Green = 31 s NB T / NB R: Green = 22 s NB: Green = 12 s LPI: Green = 10 s	Shift 2 seconds of green time from the NB T / NB R phase to the EB/WB phase	EB/WB: Green = 33 s NB T / NB R: Green = 20 s NB: Green = 12 s LPI: Green = 10 s
Eighth Avenue and West 33rd Street	WB: Green = 34 s NB T / NB R: Green = 17 s NB: Green = 14 s LPI: Green = 10 s	Unmitigated	N/A
Eighth Avenue and West 30th Street	EB: Green = 30 s NB: Green = 40 s LPI: Green = 10 s	Shift 2 second of green time from the NB phase to the EB phase	EB: Green = 32 s NB: Green = 38 s LPI: Green = 10 s
Eighth Avenue and West 29th Street	WB: Green = 36 s NB: Green = 34 s LPI: Green = 10 s	Unmitigated	N/A
Eighth Avenue and West 23rd Street	EB/WB: Green = 27 s NB T: Green = 23 s NB: Green = 15 s LPI: Green = 10 s	Shift 3 second of green time from the NB T phase to the EB/WB phase	EB/WB: Green = 30 s NB T: Green = 20 s NB: Green = 15 s LPI: Green = 10 s
Seventh Avenue and West 29th Street	WB: Green = 32 s SB: Green = 41 s LPI: Green = 7 s	Unmitigated	N/A
Seventh Avenue and West 28th Street	EB: Green = 27 s SB: Green = 46 s LPI: Green = 7 s	Shift 2 seconds of green time from the SB phase to the EB phase	EB: Green = 29 s SB: Green = 44 s LPI: Green = 7 s
Sixth Avenue and West 29th Street	WB: Green = 28 s NB: Green = 42 s LPI: Green = 10 s	Unmitigated	N/A
Notes: EB = Eastbound; WB = Westbound; NB = Northbound; SB = Southbound; L = Left; T = Through; R = Right; LPI = Lead Pedestrian Interval			

As shown in **Table 22-4**, the following impacts identified for the Proposed Project could not be fully mitigated:

- 10 intersections in the weekday AM peak hour;
- 13 intersections in the weekday midday peak hour;
- 25 intersections in the weekday PM peak hour;
- 14 intersections in the weekday evening peak hour;
- 17 intersections in the Saturday midday/afternoon peak hour; and
- 17 intersections in the Saturday evening peak hour.

Detailed comparisons of the levels-of-service (LOS), volume-to-capacity (v/c) ratios, and lane group delays for the impacted intersections under the No Action, With Action, and Mitigation conditions for each analysis peak hour are presented in **Appendix G**.

Table 22-4
Proposed Project—Intersections with Unmitigated Impacts

Intersection		Analysis Peak Hour					
		Weekday				Saturday	
North-South Roadway	East-West Roadway	AM	MD	PM	EVE	MD/AN	EVE
Twelfth Avenue	West 29th Street	X	X	X	X		X

Eleventh Avenue	West 38th Street			X		X	
Eleventh Avenue	West 36th Street			X		X	
Eleventh Avenue	West 34th Street	X		X	X	X	X
Eleventh Avenue	West 33rd Street	X		X	X	X	X
Eleventh Avenue	West 32nd Street			X		X	X
Eleventh Avenue	West 31st Street			X	X	X	X
Eleventh Avenue	West 30th Street	X		X		X	X
Tenth Avenue	West 34th Street			X			
Tenth Avenue	West 33rd Street			X	X	X	X
Tenth Avenue	West 30th Street	X		X	X	X	X
Tenth Avenue	West 29th Street			X		X	X
Tenth Avenue	West 23rd Street			X	X	X	X
Ninth Avenue	West 42nd Street			X			
Ninth Avenue	West 35th Street			X			
Ninth Avenue	West 30th Street			X			
Ninth Avenue	West 29th Street	X		X	X	X	X
Eighth Avenue	West 42nd Street			X	X		X
Eighth Avenue	West 36th Street	X		X	X	X	X
Eighth Avenue	West 33rd Street						X
Eighth Avenue	West 30th Street			X		X	
Eighth Avenue	West 29th Street	X		X	X	X	X
Seventh Avenue	West 30th Street			X			
Seventh Avenue	West 29th Street			X	X	X	X
Sixth Avenue	West 29th Street	X		X	X	X	X
Sixth Avenue	West 23rd Street				X		
Lincoln Tunnel	West 33rd Street	X		X			

Notes: MD = Midday; EVE = Evening; AN = Afternoon; "X" = impacts at the intersection would be unmitigated in the corresponding peak hour.

ALTERNATIVE SCENARIO

Table 22-5 summarizes the significant adverse traffic impacts identified for the Alternative Scenario. Measures recommended to address these impacts are detailed in Tables 22-6a through 22-6f. Signal timing modifications were recommended where appropriate to fully mitigate projected impacts. These potential mitigation measures are subject to modification and approval of DOT prior to implementation. At certain intersections, where no mitigation measures can be identified to address projected impacts, those impacts would remain unmitigated.

Table 22-5
Alternative Scenario—Significant Adverse Traffic Impacts

Intersection		Analysis Peak Hour					
		Weekday				Saturday	
North-South Roadway	East-West Roadway	AM	MD	PM	EVE	MD/AN	EVE
Twelfth Avenue	West 42nd Street			NB-TR	NB-TR		NB-TR
		SB-T		SB-T			SB-T
Twelfth Avenue	West 30th Street			NB-TR			
		SB-L	SB-L	SB-L	SB-L	SB-L	SB-L
Twelfth Avenue	West 29th Street	WB-R	WB-R	WB-R	WB-R		WB-R
Eleventh Avenue	West 42nd Street	WB-L	WB-L	WB-L	WB-L	WB-L	WB-L
Eleventh Avenue	West 39th Street	SB-TR	SB-TR	SB-TR			
Eleventh Avenue	West 38th Street	SB-TR		SB-TR			
Eleventh Avenue	West 37th Street	SB-T		SB-T			
Eleventh Avenue	West 34th Street			SB-LT			
				EB-L			
				EB-R			EB-R
				WB-L			WB-L
			WB-TR	WB-TR			
Eleventh Avenue	West 33rd Street			SB-T			
				EB-R	EB-R		EB-R
		SB-TR		WB-L			WB-L

Western Rail Yard Modifications

Table 22-5
Alternative Scenario—Significant Adverse Traffic Impacts

Intersection		Analysis Peak Hour					
		Weekday				Saturday	
North-South Roadway	East-West Roadway	AM	MD	PM	EVE	MD/AN	EVE
Eleventh Avenue	West 32nd Street	SB-LT	SB-LT	SB-LT		SB-LT	SB-LT
Eleventh Avenue	West 31st Street			SB-LT			
Eleventh Avenue	West 30th Street	EB-T		EB-T			
		SB-LT		SB-LT			
Eleventh Avenue	West 29th Street	SB-TR		SB-TR			
Eleventh Avenue	West 24th Street	SB-TR	SB-TR	SB-TR	SB-TR		SB-TR
Twelfth Avenue	Eleventh Avenue	WB-TR	WB-TR	WB-TR	WB-TR		WB-TR
Tenth Avenue	West 36th Street			NB-TR			
Tenth Avenue	West 35th Street	WB-TR					
Tenth Avenue	West 34th Street	WB-T					
Tenth Avenue	West 33rd Street	WB-TR		WB-TR			WB-TR
				NB-LT			
Tenth Avenue	West 30th Street	EB-L	EB-L	EB-L	EB-L		EB-L
		EB-T	EB-T	EB-T	EB-T	EB-T	EB-T
				NB-T			
				NB-R			NB-R
Tenth Avenue	West 29th Street	WB-T		WB-T			
			WB-R	WB-R			NB-R
Tenth Avenue	West 23rd Street	WB-TR	WB-TR	WB-TR	WB-TR	WB-TR	WB-TR
				NB-LTR			
Ninth Avenue	West 42nd Street	EB-T	EB-T	EB-T			EB-T
				SB-TR			
Ninth Avenue	West 35th Street		WB-LT	WB-LT	WB-LT	WB-LT	WB-LT
Ninth Avenue	West 34th Street			EB-R			
				WB-T			
Ninth Avenue	West 33rd Street			WB-LT			
				EB-T			
Ninth Avenue	West 30th Street			EB-R			EB-R
		WB-T	WB-T	WB-T	WB-T	WB-T	WB-T
Ninth Avenue	West 29th Street	SB-TR					
							WB-T
Eighth Avenue	West 42nd Street			WB-T			
					WB-TR		WB-TR
Eighth Avenue	West 37th Street						WB-T
		EB-T		EB-T	EB-T	EB-T	EB-T
Eighth Avenue	West 36th Street			NB-R	NB-R		
				EB-T	EB-T		EB-T
			WB-T	WB-T			
Eighth Avenue	West 34th Street				WB-TR		WB-TR
			NB-L	NB-L	NB-L	NB-L	NB-L
Eighth Avenue	West 30th Street			EB-L			
		EB-T		EB-T			
Eighth Avenue	West 29th Street	WB-TR	WB-TR	WB-TR	WB-TR	WB-TR	WB-TR
		NB-L		NB-L		NB-L	
Eighth Avenue	West 23rd Street			EB-T	EB-T		
			WB-TR		WB-TR	WB-TR	WB-TR
Seventh Avenue	West 30th Street			EB-T			
Seventh Avenue	West 29th Street	WB-T		WB-T	WB-T	WB-T	WB-T
Seventh Avenue	West 28th Street	EB-TR		EB-TR		EB-TR	
		WB-T		WB-T	WB-T		WB-T
Sixth Avenue	West 29th Street	NB-L	NB-L	NB-L		NB-L	NB-L
		EB-LT		EB-LT	EB-LT		
Sixth Avenue	West 23rd Street				EB-T		
Lincoln Tunnel	West 33rd Street	SB-R		SB-R			
Total No. of Impacted Intersections/ Lane Groups		AM	MD	PM	EVE	MD/AN	EVE
		34	21	62	25	15	34
Totals During Any Analysis Peak Hour					70		36

Notes: MD = Midday; EVE = Evening; AN = Afternoon; EB = Eastbound; WB = Westbound; NB = Northbound; SB = Southbound; L = Left-turn; T = Through; R = Right Turn

Table 22-6a

Alternative Scenario—Recommended Traffic Mitigation Measures
Weekday AM Peak Hour

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
Twelfth Avenue and West 42nd Street	EB/WB: Green = 33 s NB/SB: Green = 68 s SB / WB R: Green = 16 s SB L / WB R: Green = 10 s	Shift 1 second of green time from the EB/WB phase to the NB/SB phase	EB/WB: Green = 32 s NB/SB: Green = 69 s SB / WB R: Green = 16 s SB L / WB R: Green = 10 s
Twelfth Avenue and West 30th Street	EB: Green = 14 s NB/SB: Green = 100 s SB L: Green = 19 s	Shift 4 seconds of green time from the NB/SB phase to the SB L phase	EB: Green = 14 s NB/SB: Green = 96 s SB L: Green = 23 s
Twelfth Avenue and West 29th Street	EB/WB: Green = 27 s NB/SB: Green = 104 s LPI: Green = 7 s	Unmitigated	N/A
Eleventh Avenue and West 42nd Street	EB/WB: Green = 28 s WB: Green = 9 s SB: Green = 31 s LPI: Green = 7 s	Shift 1 second of green time from the SB phase to the WB phase	EB/WB: Green = 28 s WB: Green = 10 s SB: Green = 30 s LPI: Green = 7 s
Eleventh Avenue and West 39th Street	WB: Green = 28 s NB/SB: Green = 45 s LPI: Green = 7 s	Shift 1 second of green time from the WB phase to the NB/SB phase	WB: Green = 27 s NB/SB: Green = 46 s LPI: Green = 7 s
Eleventh Avenue and West 38th Street	NB/SB: Green = 47 s LPI: Green = 38 s	Unmitigated	N/A
Eleventh Avenue and West 37th Street	EB/WB: Green = 26 s NB/SB: Green = 47 s LPI: Green = 7 s	Shift 1 second of green time from the EB/WB phase to the NB/SB phase	EB/WB: Green = 25 s NB/SB: Green = 48 s LPI: Green = 7 s
Eleventh Avenue and West 33rd Street	EB/WB: Green = 19 s SB: Green = 34 s LPI: Green = 27 s	Unmitigated	N/A
Eleventh Avenue and West 32nd Street Extension	LPI: Green = 19 s SB: Green = 34 s LPI: Green = 27 s	Unmitigated	N/A
Eleventh Avenue and West 30th Street	EB: Green = 35 s SB: Green = 38 s LPI: Green = 7 s	Unmitigated	N/A
Eleventh Avenue and West 29th Street	WB T: Green = 22 s WB L / WB T: Green = 20 s SB: Green = 33 s	Shift 3 seconds of green time from the WB T phase to the SB phase	WB T: Green = 19 s WB L / WB T: Green = 20 s SB: Green = 36 s
Eleventh Avenue and West 24th Street	NB L / SB L / EB R: Green = 24 s SB: Green = 27 s LPI: Green = 29 s	Shift 1 second of green time from the NB L / SB L / EB R phase to the SB phase	NB L / SB L / EB R: Green = 23 s SB: Green = 28 s LPI: Green = 29 s
Twelfth Avenue and Eleventh Avenue	WB: Green = 34 s NB/SB: Green = 93 s SB: Green = 2 s	Shift 1 second of green time from the NB/SB phase to the WB phase	WB: Green = 35 s NB/SB: Green = 92 s SB: Green = 2 s
Tenth Avenue and West 35th Street	WB: Green = 31 s NB: Green = 39 s LPI: Green = 10 s	Shift 1 second of green time from the NB phase to the WB phase	WB: Green = 32 s NB: Green = 38 s LPI: Green = 10 s
Tenth Avenue and West 34th Street	EB/WB: Green = 31 s NB: Green = 42 s LPI: Green = 7 s	Shift 1 second of green time from the NB phase to the EB/WB phase	EB/WB: Green = 32 s NB: Green = 41 s LPI: Green = 7 s
Tenth Avenue and West 33rd Street	WB: Green = 31 s NB: Green = 42 s LPI: Green = 7 s	Shift 1 second of green time from the NB phase to the WB phase	WB: Green = 32 s NB: Green = 41 s LPI: Green = 7 s
Tenth Avenue and West 30th Street	LPI: Green = 7 s EB: Green = 29 s LPI: Green = 7 s NB: Green = 37 s	Unmitigated	N/A
Tenth Avenue and West 29th Street	WB: Green = 31 s NB: Green = 42 s LPI: Green = 7 s	Unmitigated	N/A
Tenth Avenue and West 23rd Street	EB/WB: Green = 25 s EB: Green = 6s NB: Green = 37 s LPI: Green = 7 s	Shift 1 second of green time from the NB phase to the EB/WB phase	EB/WB: Green = 26 s EB: Green = 6s NB: Green = 36 s LPI: Green = 7 s
Ninth Avenue and West 42nd Street	EB/WB: Green = 25 s WB: Green = 12 s SB T / SB R: Green = 22 s SB: Green = 11 s	Shift 1 second of green time from the SB T / SB R phase to the EB/WB phase	EB/WB: Green = 26 s WB: Green = 12 s SB T / SB R: Green = 21 s SB: Green = 11 s

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Table 22-6a
Alternative Scenario—Recommended Traffic Mitigation Measures
Weekday AM Peak Hour

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
Ninth Avenue and West 29th Street	WB: Green = 33s SB: Green = 40 s LPI: Green = 7 s	Unmitigated	N/A
Eighth Avenue and West 36th Street	LPI: Green = 7 s EB: Green = 26 s LPI: Green = 7 s NB: Green = 40 s	Unmitigated	N/A
Eighth Avenue and West 30th Street	EB: Green = 30 s NB: Green = 40 s LPI: Green = 10 s	Shift 1 second of green time from the NB phase to the EB phase	EB: Green = 31 s NB: Green = 39 s LPI: Green = 10 s
Eighth Avenue and West 29th Street	WB: Green = 36 s NB: Green = 34 s LPI: Green = 10 s	Unmitigated	N/A
Seventh Avenue and West 29th Street	WB: Green = 32 s SB: Green = 41 s LPI: Green = 7 s	Shift 3 seconds of green time from the SB phase to the WB phase	WB: Green = 35 s SB: Green = 38 s LPI: Green = 7 s
Seventh Avenue and West 28th Street	EB: Green = 27 s SB: Green = 46 s LPI: Green = 7 s	Shift 1 second of green time from the SB phase to the EB phase	EB: Green = 28 s SB: Green = 45 s LPI: Green = 7 s
Sixth Avenue and West 29th Street	WB: Green = 28 s NB: Green = 45 s LPI: Green = 7 s	Unmitigated	N/A
Sixth Avenue and West 28th Street	EB: Green = 28 s NB: Green = 45 s LPI: Green = 7 s	Shift 1 second of green time from the NB phase to the EB phase	EB: Green = 29 s NB: Green = 44 s LPI: Green = 7 s
Lincoln Tunnel and West 33rd Street	Unsignalized	Unmitigated	N/A

Notes: EB = Eastbound; WB = Westbound; NB = Northbound; SB = Southbound; L = Left; T = Through; R = Right; LPI = Lead Pedestrian Interval

Table 22-6b
Alternative Scenario—Recommended Traffic Mitigation Measures
Weekday Midday Peak Hour

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
Twelfth Avenue and West 30th Street	EB: Green = 14 s NB/SB: Green = 72 s SB L: Green = 17 s	Shift 3 seconds of green time from the NB/SB phase to the SB L phase	EB: Green = 14 s NB/SB: Green = 69 s SB L: Green = 20 s
Twelfth Avenue and West 29th Street	EB/WB: Green = 23 s NB/SB: Green = 75 s LPI: Green = 10 s	Unmitigated	N/A
Eleventh Avenue and West 42nd Street	EB/WB: Green = 25 s WB: Green = 9 s SB: Green = 31 s LPI: Green = 10 s	Shift 1 second of green time from the SB phase to the WB phase	EB/WB: Green = 25 s WB: Green = 10 s SB: Green = 30 s LPI: Green = 10 s
Eleventh Avenue and West 39th Street	WB: Green = 27 s NB/SB: Green = 43 s LPI: Green = 10 s	Shift 1 second of green time from the WB phase to the NB/SB phase	WB: Green = 27 s NB/SB: Green = 43 s LPI: Green = 10 s
Eleventh Avenue and West 34th Street	EB L/WB L: Green = 9 s EB/WB: Green = 26 s SB: Green = 40 s	Unmitigated	N/A
Eleventh Avenue and West 32nd Street Extension	EB: Green = 19 s SB: Green = 34 s LPI: Green = 27 s	Unmitigated	N/A
Eleventh Avenue and West 24th Street	NB L / SB L / EB R: Green = 24 s SB: Green = 27 s LPI: Green = 29 s	Shift 1 second of green time from the NB L / SB L / EB R phase to the SB phase	NB L / SB L / EB R: Green = 23 s SB: Green = 28 s LPI: Green = 29 s
Twelfth Avenue and Eleventh Avenue	WB: Green = 33 s NB/SB: Green = 65 s SB: Green = 2 s	Shift 1 second of green time from the NB/SB phase to the WB phase	WB: Green = 34 s NB/SB: Green = 64 s SB: Green = 2 s
Tenth Avenue and West 30th Street	LPI: Green = 7 s EB: Green = 29 s	Unmitigated	N/A

Table 22-6b
Alternative Scenario—Recommended Traffic Mitigation Measures
Weekday Midday Peak Hour

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
	LPI: Green = 7 s NB: Green = 37 s		
Tenth Avenue and West 29th Street	WB: Green = 31 s NB: Green = 42 s LPI: Green = 7 s	Shift 2 seconds of green time from the NB phase to the WB phase	WB: Green = 33 s NB: Green = 40 s LPI: Green = 7 s
Tenth Avenue and West 23rd Street	EB/WB: Green = 25 s EB: Green: 6s NB: Green = 37 s LPI: Green = 7 s	Shift 1 second of green time from the NB phase to the EB/WB phase	EB/WB: Green = 26 s EB: Green: 6s NB: Green = 36 s LPI: Green = 7 s
Ninth Avenue and West 42nd Street	EB/WB: Green = 25 s WB: Green: 12 s SB T / SB R: Green = 22 s SB: Green = 11 s	Shift 1 second of green time from the SB T / SB R phase to the EB/WB phase	EB/WB: Green = 26 s WB: Green: 12 s SB T / SB R: Green = 21 s SB: Green = 11 s
Ninth Avenue and West 35th Street	WB: Green: 30 s SB: Green = 50 s	Shift 1 second of green time from the SB phase to the WB phase	WB: Green: 31 s SB: Green = 49 s
Ninth Avenue and West 29th Street	WB: Green: 32s SB: Green = 38 s LPI: Green = 10 s	Shift 2 seconds of green time from the SB phase to the WB phase	WB: Green: 34s SB: Green = 36 s LPI: Green = 10 s
Eighth Avenue and West 42nd Street	EB/WB: Green = 24 s EB: Green = 20 s NB: Green = 31 s	Shift 2 seconds of green time from the NB phase to the EB/WB phase	EB/WB: Green = 26 s EB: Green = 20 s NB: Green = 29 s
Eighth Avenue and West 34th Street	EB/WB: Green = 31 s NB T / NB R: Green = 22 s NB: Green = 12 s LPI: Green = 10 s	Shift 1 seconds of green time from the NB T / NB R phase to the EB/WB phase	EB/WB: Green = 32 s NB T / NB R: Green = 21 s SB: Green = 12 s LPI: Green = 10 s
Eighth Avenue and West 33rd Street	WB: Green = 34 s NB T / NB R: Green = 17 s NB: Green = 14 s LPI: Green = 10 s	Shift 1 second of green time from the WB phase to the NB phase	WB: Green = 33 s NB T / NB R: Green = 17 s NB: Green = 15 s LPI: Green = 10 s
Eighth Avenue and West 29th Street	WB: Green = 36 s NB: Green = 34 s LPI: Green = 10 s	Shift 2 seconds of green time from the NB phase to the WB phase	WB: Green = 38 s NB: Green = 32 s LPI: Green = 10 s
Eighth Avenue and West 23rd Street	EB/WB: Green = 27 s NB T: Green = 23 s NB: Green = 15 s LPI: Green = 10 s	Shift 1 second of green time from the NB T phase to the EB/WB phase	EB/WB: Green = 28 s NB T: Green = 22 s NB: Green = 15 s LPI: Green = 10 s
Sixth Avenue and West 29th Street	WB: Green = 28 s NB: Green = 42 s LPI: Green = 10 s	Shift 1 second of green time from the WB phase to the NB phase	WB: Green = 27 s NB: Green = 43 s LPI: Green = 10 s

Notes: EB = Eastbound; WB = Westbound; NB = Northbound; SB = Southbound; L = Left; T = Through; R = Right; LPI = Lead Pedestrian Interval

Table 22-6c
Alternative Scenario—Recommended Traffic Mitigation Measures
Weekday PM Peak Hour

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
Twelfth Avenue and West 42nd Street	EB/WB: Green = 33 s NB/SB: Green = 81 s SB / WB R: Green = 6 s SB L / WB R: Green = 7 s	Shift 1 second of green time from the EB/WB phase to the NB/SB phase	EB/WB: Green = 32 s NB/SB: Green = 82 s SB / WB R: Green = 6 s SB L / WB R: Green = 7 s
Twelfth Avenue and West 30th Street	EB: Green = 14 s NB/SB: Green = 100 s SB L: Green = 19 s	Shift 2 seconds of green time from the EB phase to the NB/SB phase and the SB L phase (1 second each)	EB: Green = 13 s NB/SB: Green = 100 s SB L: Green = 20 s
Twelfth Avenue and West 29th Street	EB/WB: Green = 27 s NB/SB: Green = 104 s LPI: Green = 7 s	Unmitigated	N/A
Eleventh Avenue and West 42nd Street	EB/WB: Green = 26 s WB: Green = 13 s SB: Green = 29 s LPI: Green = 7 s	Shift 1 second of green time from the SB phase to the WB phase	EB/WB: Green = 26 s WB: Green = 14 s SB: Green = 28 s LPI: Green = 7 s

Western Rail Yard Modifications

**Table 22-6c
Alternative Scenario—Recommended Traffic Mitigation Measures
Weekday PM Peak Hour**

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
Eleventh Avenue and West 39th Street	WB: Green = 28 s NB/SB: Green = 45 s LPI: Green = 7 s	Shift 2 seconds of green time from the WB phase to the NB/SB phase	WB: Green = 26 s NB/SB: Green = 47 s LPI: Green = 7 s
Eleventh Avenue and West 38th Street	NB/SB: Green = 47 s LPI: Green = 38 s	Unmitigated	N/A
Eleventh Avenue and West 37th Street	EB/WB: Green = 26 s NB/SB: Green = 47 s LPI: Green = 10 s	Shift 2 seconds of green time from the EB/WB phase to the NB/SB phase	EB/WB: Green = 24 s NB/SB: Green = 49 s LPI: Green = 10 s
Eleventh Avenue and West 36th Street	NB/SB: Green = 46 s LPI: Green = 39 s	Unmitigated	N/A
Eleventh Avenue and West 34th Street	EB L/WB L: Green = 9 s EB/WB: Green = 26 s SB: Green = 40 s	Unmitigated	N/A
Eleventh Avenue and West 33rd Street	EB/WB: Green = 19 s SB: Green = 34 s LPI: Green = 27 s	Unmitigated	N/A
Eleventh Avenue and West 32nd Street Extension	EB: Green = 19 s SB: Green = 34 s LPI: Green = 27 s	Unmitigated	N/A
Eleventh Avenue and West 31st Street Extension	SB: Green = 38 s LPI: Green = 7 s LPI: Green = 35 s	Unmitigated	N/A
Eleventh Avenue and West 30th Street	EB: Green = 35 s SB: Green = 38 s LPI: Green = 7 s	Unmitigated	N/A
Eleventh Avenue and West 29th Street	WB T: Green = 22 s WB L / WB T: Green = 20 s SB: Green = 33 s	Shift 2 seconds of green time from the WB T phase to the SB phase	WB T: Green = 20 s WB L / WB T: Green = 20 s SB: Green = 35 s
Eleventh Avenue and West 24th Street	NB L / SB L / EB R: Green = 24 s SB: Green = 27 s LPI: Green = 29 s	Shift 2 seconds of green time from the NB L / SB L / EB R phase to the SB phase	NB L / SB L / EB R: Green = 22 s SB: Green = 29 s LPI: Green = 29 s
Twelfth Avenue and Eleventh Avenue	WB: Green = 33 s NB/SB: Green = 94 s SB: Green = 2 s	Shift 2 seconds of green time from the NB/SB phase to the WB phase	WB: Green = 35 s NB/SB: Green = 92 s SB: Green = 2 s
Tenth Avenue and West 36th Street	EB: Green = 31 s NB: Green = 39 s LPI: Green = 10 s	Shift 3 seconds of green time from the EB phase to the NB phase	EB: Green = 28 s NB: Green = 42 s LPI: Green = 10 s
Tenth Avenue and West 33rd Street	WB: Green = 31 s NB: Green = 42 s LPI: Green = 7 s	Unmitigated	N/A
Tenth Avenue and West 30th Street	LPI: Green = 7 s EB: Green = 29 s LPI: Green = 7 s NB: Green = 37 s	Unmitigated	N/A
Tenth Avenue and West 29th Street	WB: Green = 31 s NB: Green = 42 s LPI: Green = 7 s	Shift 4 seconds of green time from the NB phase to the WB phase	WB: Green = 35 s NB: Green = 38 s LPI: Green = 7 s
Tenth Avenue and West 23rd Street	EB/WB: Green = 25 s EB: Green = 6s NB: Green = 37 s LPI: Green = 7 s	Unmitigated	N/A
Ninth Avenue and West 42nd Street	EB/WB: Green = 25 s WB: Green = 12 s SB T / SB R: Green = 22 s SB: Green = 11 s	Unmitigated	N/A
Ninth Avenue and West 35th Street	WB: Green = 30 s SB: Green = 50 s	Shift 4 seconds of green time from the SB phase to the WB phase	WB: Green = 34 s SB: Green = 46 s
Ninth Avenue and West 34th Street	EB/WB: Green = 31 s SB T / SB R: Green = 24 s SB: Green = 13 s LPI: Green = 7 s	Shift 1 second of green time from the SB T / SB R phase to the EB/WB phase	EB/WB: Green = 32 s SB T / SB R: Green = 23 s SB: Green = 13 s LPI: Green = 7 s
Ninth Avenue and West 33rd Street	WB: Green = 28 s SB: Green = 45 s LPI: Green = 7 s	Shift 2 seconds of green time from the SB phase to the WB phase	WB: Green = 30 s SB: Green = 43 s LPI: Green = 7 s
Ninth Avenue and West 30th Street	LPI: Green = 7 s EB: Green = 25 s	Shift 3 seconds of green time from the SB phase to the EB phase	LPI: Green = 7 s EB: Green = 28 s

Table 22-6c

**Alternative Scenario—Recommended Traffic Mitigation Measures
Weekday PM Peak Hour**

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
	LPI: Green = 8 s SB: Green = 40 s		LPI: Green = 8 s SB: Green = 37 s
Ninth Avenue and West 29th Street	WB: Green: 33s SB: Green = 40 s LPI: Green = 7 s	Unmitigated	N/A
Eighth Avenue and West 42nd Street	EB/WB: Green = 24 s EB: Green = 20 s NB: Green = 31 s	Unmitigated	N/A
Eighth Avenue and West 36th Street	LPI: Green = 7 s EB: Green: 26 s LPI: Green = 7 s NB: Green = 40 s	Unmitigated	N/A
Eighth Avenue and West 34th Street	EB/WB: Green = 31 s NB T/ NB R: Green = 22 s NB: Green = 12 s LPI: Green = 10 s	Shift 2 seconds of green time from the NB T / NB R phase to the EB/WB phase	EB/WB: Green = 33 s NB T/ NB R: Green = 20 s SB: Green = 12 s LPI: Green = 10 s
Eighth Avenue and West 33rd Street	WB: Green = 35 s NB T/ NB R: Green = 18 s NB: Green = 15 s LPI: Green = 7 s	Shift 2 seconds of green time from the WB phase to the NB phase	WB: Green = 33 s NB T/ NB R: Green = 18 s NB: Green = 17 s LPI: Green = 7 s
Eighth Avenue and West 30th Street	EB: Green = 30 s NB: Green = 40 s LPI: Green = 10 s	Unmitigated	N/A
Eighth Avenue and West 29th Street	WB: Green = 36 s NB: Green = 34 s LPI: Green = 10 s	Unmitigated	N/A
Eighth Avenue and West 23rd Street	EB/WB: Green = 28 s NB T: Green = 22 s NB: Green = 15 s LPI: Green = 10 s	Shift 1 second of green time from the NB T phase to the EB/WB phase	EB/WB: Green = 29 s NB T: Green = 21 s NB: Green = 15 s LPI: Green = 10 s
Seventh Avenue and West 30th Street	EB: Green = 32 s SB: Green = 41 s LPI: Green = 7 s	Unmitigated	N/A
Seventh Avenue and West 29th Street	WB: Green = 32 s SB: Green = 41 s LPI: Green = 7 s	Unmitigated	N/A
Seventh Avenue and West 28th Street	EB: Green = 27 s SB: Green = 46 s LPI: Green = 7 s	Shift 1 second of green time from the SB phase to the EB phase	EB: Green = 28 s SB: Green = 45 s LPI: Green = 7 s
Sixth Avenue and West 29th Street	WB: Green = 28 s NB: Green = 45 s LPI: Green = 7 s	Unmitigated	N/A
Sixth Avenue and West 28th Street	EB: Green = 28 s NB: Green = 45 s LPI: Green = 7 s	Shift 1 second of green time from the NB phase to the EB phase	EB: Green = 29 s NB: Green = 44 s LPI: Green = 7 s
Lincoln Tunnel and West 33rd Street	Unsignalized	Unmitigated	N/A

Notes: EB = Eastbound; WB = Westbound; NB = Northbound; SB = Southbound; L = Left; T = Through; R = Right; LPI = Lead Pedestrian Interval

Table 22-6d

**Alternative Scenario—Recommended Traffic Mitigation Measures
Weekday Evening Peak Hour**

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
Twelfth Avenue and West 42nd Street	EB/WB: Green = 33 s NB/SB: Green = 81 s SB / WB R: Green = 6 s SB L / WB R: Green = 7 s	Shift 1 second of green time from the EB/WB phase to the NB/SB phase	EB/WB: Green = 32 s NB/SB: Green = 82 s SB / WB R: Green = 6 s SB L / WB R: Green = 7 s
Twelfth Avenue and West 30th Street	EB: Green = 14 s NB/SB: Green = 100 s SB L: Green = 19 s	Shift 2 seconds of green time from the NB/SB phase to the SB L phase	EB: Green = 14 s NB/SB: Green = 98 s SB L: Green = 21 s

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**Table 22-6d
Alternative Scenario—Recommended Traffic Mitigation Measures
Weekday Evening Peak Hour**

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
Twelfth Avenue and West 29th Street	EB/WB: Green = 27 s NB/SB: Green = 104 s LPI: Green = 7 s	Shift 4 seconds of green time from the NB/SB phase to the EB/WB phase	EB/WB: Green = 31 s NB/SB: Green = 100 s LPI: Green = 7 s
Eleventh Avenue and West 42nd Street	EB/WB: Green = 26 s WB: Green = 13 s SB: Green = 29 s LPI: Green = 7 s	Shift 1 second of green time from the SB phase to the WB phase	EB/WB: Green = 26 s WB: Green = 14 s SB: Green = 28 s LPI: Green = 7 s
Eleventh Avenue and West 24th Street	NB L / SB L / EB R: Green = 24 s SB: Green = 27 s LPI: Green = 29 s	Shift 2 seconds of green time from the NB L / SB L / EB R phase to the SB phase	NB L / SB L / EB R: Green = 22 s SB: Green = 29 s LPI: Green = 29 s
Twelfth Avenue and Eleventh Avenue	WB: Green = 33 s NB/SB: Green = 94 s SB: Green = 2 s	Shift 2 seconds of green time from the NB/SB phase to the WB phase	WB: Green = 35 s NB/SB: Green = 92 s SB: Green = 2 s
Tenth Avenue and West 30th Street	LPI: Green = 7 s EB: Green = 29 s LPI: Green = 7 s NB: Green = 37 s	Unmitigated	N/A
Tenth Avenue and West 23rd Street	EB/WB: Green = 25 s EB: Green = 6s NB: Green = 37 s LPI: Green = 7 s	Unmitigated	N/A
Ninth Avenue and West 35th Street	WB: Green = 30 s SB: Green = 50 s	Shift 1 second of green time from the SB phase to the WB phase	WB: Green = 31 s SB: Green = 49 s
Ninth Avenue and West 29th Street	WB: Green = 33 s SB: Green = 40 s LPI: Green = 7 s	Shift 2 seconds of green time from the SB phase to the WB phase	WB: Green = 35 s SB: Green = 38 s LPI: Green = 7 s
Eighth Avenue and West 42nd Street	EB/WB: Green = 24 s EB: Green = 20 s NB: Green = 31 s	Shift 1 second of green time from the EB phase to the EB/WB phase	EB/WB: Green = 25 s EB: Green = 19 s NB: Green = 31 s
Eighth Avenue and West 36th Street	LPI: Green = 7 s EB: Green = 26 s LPI: Green = 7 s NB: Green = 40 s	Unmitigated	N/A
Eighth Avenue and West 34th Street	EB/WB: Green = 31 s NB T / NB R: Green = 22 s NB: Green = 12 s LPI: Green = 10 s	Shift 1 second of green time from the NB T / NB R phase to the EB/WB phase	EB/WB: Green = 32 s NB T / NB R: Green = 21 s SB: Green = 12 s LPI: Green = 10 s
Eighth Avenue and West 33rd Street	WB: Green = 35 s NB T / NB R: Green = 18 s NB: Green = 15 s LPI: Green = 7 s	Shift 1 second of green time from the WB phase to the NB phase	WB: Green = 34 s NB T / NB R: Green = 18 s NB: Green = 16 s LPI: Green = 7 s
Eighth Avenue and West 29th Street	WB: Green = 36 s NB: Green = 34 s LPI: Green = 10 s	Shift 2 seconds of green time from the NB phase to the WB phase	WB: Green = 38 s NB: Green = 32 s LPI: Green = 10 s
Eighth Avenue and West 23rd Street	EB/WB: Green = 28 s NB T: Green = 22 s NB: Green = 15 s LPI: Green = 10 s	Shift 1 second of green time from the NB T phase to the EB/WB phase	EB/WB: Green = 29 s NB T: Green = 21 s NB: Green = 15 s LPI: Green = 10 s
Seventh Avenue and West 29th Street	WB: Green = 32 s SB: Green = 41 s LPI: Green = 7 s	Shift 2 seconds of green time from the SB phase to the WB phase	WB: Green = 34 s SB: Green = 39 s LPI: Green = 7 s
Sixth Avenue and West 29th Street	WB: Green = 28 s NB: Green = 45 s LPI: Green = 7 s	Shift 1 second of green time from the NB phase to the WB phase	WB: Green = 29 s NB: Green = 44 s LPI: Green = 7 s
Sixth Avenue and West 28th Street	EB: Green = 28 s NB: Green = 45 s LPI: Green = 7 s	Shift 1 second of green time from the NB phase to the EB phase	EB: Green = 29 s NB: Green = 44 s LPI: Green = 7 s
Sixth Avenue and West 23rd Street	EB: Green = 35 s NB: Green = 38 s LPI: Green = 7 s	Unmitigated	N/A

Notes: EB = Eastbound; WB = Westbound; NB = Northbound; SB = Southbound; L = Left; T = Through; R = Right; LPI = Lead Pedestrian Interval

Table 22-6e
Alternative Scenario—Recommended Traffic Mitigation Measures
Saturday Midday/Afternoon Peak Hour

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
Twelfth Avenue and West 30th Street	EB: Green = 14 s NB/SB: Green = 72 s SB L: Green = 17 s	Shift 1 second of green time from the NB/SB phase to the SB L phase	EB: Green = 14 s NB/SB: Green = 71 s SB L: Green = 18 s
Eleventh Avenue and West 42nd Street	EB/WB: Green = 25 s WB: Green = 9 s SB: Green = 31 s LPI: Green = 10 s	Shift 1 second of green time from the SB phase to the WB phase	EB/WB: Green = 25 s WB: Green = 10 s SB: Green = 30 s LPI: Green = 10 s
Eleventh Avenue and West 32nd Street Extension	EB: Green = 19 s SB: Green = 34 s LPI: Green = 27 s	Shift 1 second of green time from the EB phase to the SB phase	EB: Green = 18 s SB: Green = 35 s LPI: Green = 27 s
Tenth Avenue and West 30th Street	LPI: Green = 7 s EB: Green = 29 s LPI: Green = 7 s NB: Green = 37 s	Unmitigated	N/A
Tenth Avenue and West 23rd Street	EB/WB: Green = 25 s EB: Green = 6 s NB: Green = 37 s LPI: Green = 7 s	Unmitigated	N/A
Ninth Avenue and West 35th Street	WB: Green = 30 s SB: Green = 50 s	Shift 1 second of green time from the SB phase to the WB phase	WB: Green = 31 s SB: Green = 49 s
Ninth Avenue and West 29th Street	WB: Green = 32 s SB: Green = 38 s LPI: Green = 10 s	Shift 1 second of green time from the SB phase to the WB phase	WB: Green = 33 s SB: Green = 37 s LPI: Green = 10 s
Eighth Avenue and West 36th Street	LPI: Green = 10 s EB: Green = 25 s LPI: Green = 7 s NB: Green = 38 s	Unmitigated	N/A
Eighth Avenue and West 33rd Street	WB: Green = 34 s NB T/ NB R: Green = 17 s NB: Green = 14 s LPI: Green = 10 s	Shift 1 second of green time from the WB phase to the NB phase	WB: Green = 33 s NB T/ NB R: Green = 17 s NB: Green = 15 s LPI: Green = 10 s
Eighth Avenue and West 29th Street	WB: Green = 36 s NB: Green = 34 s LPI: Green = 10 s	Unmitigated	N/A
Eighth Avenue and West 23rd Street	EB/WB: Green = 27 s NB T: Green = 23 s NB: Green = 15 s LPI: Green = 10 s	Shift 1 second of green time from the NB T phase to the EB/WB phase	EB/WB: Green = 28 s NB T: Green = 22 s NB: Green = 15 s LPI: Green = 10 s
Seventh Avenue and West 29th Street	WB: Green = 32 s SB: Green = 41 s LPI: Green = 7 s	Shift 1 second of green time from the SB phase to the WB phase	WB: Green = 33 s SB: Green = 40 s LPI: Green = 7 s
Seventh Avenue and West 28th Street	EB: Green = 27 s SB: Green = 46 s LPI: Green = 7 s	Shift 1 second of green time from the SB phase to the EB phase	EB: Green = 28 s SB: Green = 45 s LPI: Green = 7 s
Sixth Avenue and West 29th Street	WB: Green = 28 s NB: Green = 42 s LPI: Green = 10 s	Unmitigated	N/A

Notes: EB = Eastbound; WB = Westbound; NB = Northbound; SB = Southbound; L = Left; T = Through; R = Right; LPI = Lead Pedestrian Interval

Table 22-6f
Alternative Scenario—Recommended Traffic Mitigation Measures
Saturday Evening Peak Hour

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
Twelfth Avenue and West 42nd Street	EB/WB: Green = 33 s NB/SB: Green = 44 s SB / WB R: Green = 7 s SB L / WB R: Green = 13 s	Shift 1 second of green time from the EB/WB phase to the NB/SB phase	EB/WB: Green = 31 s NB/SB: Green = 45 s SB / WB R: Green = 7 s SB L / WB R: Green = 13 s
Twelfth Avenue and West 30th Street	EB: Green = 14 s NB/SB: Green = 72 s SB L: Green = 17 s	Shift 1 second of green time from the NB/SB phase to the SB L phase	EB: Green = 14 s NB/SB: Green = 71 s SB L: Green = 18 s

Table 22-6f

**Alternative Scenario—Recommended Traffic Mitigation Measures
Saturday Evening Peak Hour**

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
Twelfth Avenue and West 29th Street	EB/WB: Green = 23 s NB/SB: Green = 75 s LPI: Green = 10 s	Unmitigated	N/A
Eleventh Avenue and West 42nd Street	EB/WB: Green = 25 s WB: Green = 9 s SB: Green = 31 s LPI: Green = 10 s	Shift 1 second of green time from the SB phase to the WB phase	EB/WB: Green = 25 s WB: Green = 10 s SB: Green = 30 s LPI: Green = 10 s
Eleventh Avenue and West 34th Street	EB L/WB L: Green = 9 s EB/WB: Green = 26 s SB: Green = 40 s	Unmitigated	N/A
Eleventh Avenue and West 33rd Street	EB/WB: Green = 19 s SB: Green = 34 s LPI: Green = 27 s	Unmitigated	N/A
Eleventh Avenue and West 32nd Street Extension	EB: Green = 19 s SB: Green = 34 s LPI: Green = 27 s	Shift 2 seconds of green time from the EB phase to the SB Phase	EB: Green = 17 s SB: Green = 36 s LPI: Green = 27 s
Eleventh Avenue and West 24th Street	NB L / SB L / EB R: Green = 24 s SB: Green = 27 s LPI: Green = 29 s	Shift 1 second of green time from the NB L / SB L / EB R phase to the SB phase	NB L / SB L / EB R: Green = 23 s SB: Green = 28 s LPI: Green = 29 s
Twelfth Avenue and Eleventh Avenue	WB: Green = 33 s NB/SB: Green = 65 s SB: Green = 2 s	Shift 1 second of green time from the NB/SB phase to the WB phase	WB: Green = 34 s NB/SB: Green = 64 s SB: Green = 2 s
Tenth Avenue and West 33rd Street	WB: Green = 31 s NB: Green = 42 s LPI: Green = 7 s	Shift 1 second of green time from the NB phase to the WB phase	WB: Green = 32 s NB: Green = 41 s LPI: Green = 7 s
Tenth Avenue and West 30th Street	LPI: Green = 7 s EB: Green: 29 s LPI: Green = 7 s NB: Green = 37 s	Unmitigated	N/A
Tenth Avenue and West 29th Street	WB: Green = 31 s NB: Green = 42 s LPI: Green = 7 s	Shift 3 seconds of green time from the NB phase to the WB phase	WB: Green = 34 s NB: Green = 39 s LPI: Green = 7 s
Tenth Avenue and West 23rd Street	EB/WB: Green = 25 s EB: Green: 6 s NB: Green = 37 s LPI: Green = 7 s	Unmitigated	N/A
Ninth Avenue and West 42nd Street	EB/WB: Green = 25 s WB: Green: 12 s SB T / SB R: Green = 22 s SB: Green = 11 s	Shift 1 second of green time from the SB T / SB R phase to the EB/WB phase	EB/WB: Green = 26 s WB: Green: 12 s SB T / SB R: Green = 21 s SB: Green = 11 s
Ninth Avenue and West 35th Street	WB: Green: 30 s SB: Green = 50 s	Shift 1 second of green time from the SB phase to the WB phase	WB: Green: 31 s SB: Green = 49 s
Ninth Avenue and West 30th Street	LPI: Green = 10 s EB: Green: 24 s LPI: Green = 10 s SB: Green = 36 s	Shift 1 second of green time from the SB phase to the EB phase	LPI: Green = 10 s EB: Green: 25 s LPI: Green = 10 s SB: Green = 35 s
Ninth Avenue and West 29th Street	WB: Green: 32 s SB: Green = 38 s LPI: Green = 10 s	Shift 3 seconds of green time from the SB phase to the WB phase	WB: Green: 35s SB: Green = 35 s LPI: Green = 10 s
Ninth Avenue and West 23rd Street	EB/WB: Green = 24 s SB T / SB R: Green = 25 s SB: Green = 15 s LPI: Green = 10 s	Shift 2 seconds of green time from the SB T / SB R phase to the EB/WB phase	EB/WB: Green = 26 s SB T / SB R: Green = 23 s SB: Green = 15 s LPI: Green = 10 s
Eighth Avenue and West 42nd Street	EB/WB: Green = 24 s EB: Green = 18 s NB: Green = 33 s	Shift 1 second of green time from the EB phase to the EB/WB phase	EB/WB: Green = 25 s EB: Green = 17 s NB: Green = 33 s
Eighth Avenue and West 37th Street	WB: Green = 26 s NB T: Green = 22 s NB: Green = 17 s LPI: Green = 10 s	Shift 2 seconds of green time from the NB T phase to the WB phase	WB: Green = 28 s NB T: Green = 20 s NB: Green = 17 s LPI: Green = 10 s
Eighth Avenue and West 36th Street	LPI: Green = 10 s EB: Green: 25 s LPI: Green = 7 s NB: Green = 38 s	Shift 1 second of green time from the NB phase to the EB phase	LPI: Green = 10 s EB: Green: 26 s LPI: Green = 7 s NB: Green = 37 s

Table 22-6f

**Alternative Scenario—Recommended Traffic Mitigation Measures
Saturday Evening Peak Hour**

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
Eighth Avenue and West 34th Street	EB/WB: Green = 31 s NB T / NB R: Green = 22 s NB: Green = 12 s LPI: Green = 10 s	Shift 1 second of green time from the NB T / NB R phase to the EB/WB phase	EB/WB: Green = 32 s NB T / NB R: Green = 21 s NB: Green = 12 s LPI: Green = 10 s
Eighth Avenue and West 33rd Street	WB: Green = 34 s NB T / NB R: Green = 17 s NB: Green = 14 s LPI: Green = 10 s	Shift 2 seconds of green time from the WB phase to the NB phase	WB: Green = 32 s NB T / NB R: Green = 17 s NB: Green = 16 s LPI: Green = 10 s
Eighth Avenue and West 29th Street	WB: Green = 36 s NB: Green = 34 s LPI: Green = 10 s	Unmitigated	N/A
Eighth Avenue and West 23rd Street	EB/WB: Green = 27 s NB T: Green = 23 s NB: Green = 15 s LPI: Green = 10 s	Shift 2 seconds of green time from the NB T phase to the EB/WB phase	EB/WB: Green = 29 s NB T: Green = 21 s NB: Green = 15 s LPI: Green = 10 s
Seventh Avenue and West 29th Street	WB: Green = 32 s SB: Green = 41 s LPI: Green = 7 s	Shift 1 second of green time from the SB phase to the WB phase	WB: Green = 33 s SB: Green = 40 s LPI: Green = 7 s
Sixth Avenue and West 29th Street	WB: Green = 28 s NB: Green = 42 s LPI: Green = 10 s	Unmitigated	N/A
Notes: EB = Eastbound; WB = Westbound; NB = Northbound; SB = Southbound; L = Left; T = Through; R = Right; LPI = Lead Pedestrian Interval			

As shown in **Table 22-7**, the following impacts identified for the Alternative Scenario could not be fully mitigated:

- 12 intersections in the weekday AM peak hour;
- Four intersections in the weekday midday peak hour;
- 21 intersections in the weekday PM peak hour;
- Four intersections in the weekday evening peak hour;
- Five intersections in the Saturday midday/afternoon peak hour; and
- Seven intersections in the Saturday evening peak hour.

Detailed comparisons of the levels-of-service (LOS), volume-to-capacity (v/c) ratios, and lane group delays for the impacted intersections under the 2031 No Action, With Action, and Mitigation conditions for each analysis peak hour are presented in **Appendix G**.

Table 22-7

Alternative Scenario—Intersections with Unmitigated Impacts

Intersection		Analysis Peak Hour					
North-South Roadway	East-West Roadway	Weekday				Saturday	
		AM	MD	PM	EVE	MD/AN	EVE
Twelfth Avenue	West 29th Street	X	X	X			X
Eleventh Avenue	West 38th Street	X		X			
Eleventh Avenue	West 36th Street			X			
Eleventh Avenue	West 34th Street		X	X			X
Eleventh Avenue	West 33rd Street	X		X			X
Eleventh Avenue	West 32nd Street	X	X	X			
Eleventh Avenue	West 31st Street			X			
Eleventh Avenue	West 30th Street	X		X			
Tenth Avenue	West 33rd Street			X			
Tenth Avenue	West 30th Street	X	X	X	X	X	X
Tenth Avenue	West 29th Street	X					
Tenth Avenue	West 23rd Street			X	X	X	X
Ninth Avenue	West 42nd Street			X			
Ninth Avenue	West 29th Street	X		X			
Eighth Avenue	West 42nd Street			X			
Eighth Avenue	West 36th Street	X		X	X	X	
Eighth Avenue	West 30th Street			X			
Eighth Avenue	West 29th Street	X		X		X	X
Seventh Avenue	West 30th Street			X			
Seventh Avenue	West 29th Street			X			
Sixth Avenue	West 29th Street	X		X		X	X
Sixth Avenue	West 23rd Street				X		
Lincoln Tunnel	West 33rd Street	X		X			

Notes: MD = Midday; EVE = Evening; AN = Afternoon; "X" = impacts at the intersection would be unmitigated in the corresponding peak hour.

EFFECTS OF TRAFFIC MITIGATION ON PEDESTRIAN OPERATIONS

Intersection operations would improve overall with the implementation of the recommended traffic mitigation measures. A review of the effects of these changes on pedestrian circulation and service levels at intersection corners and crosswalks will be conducted between the DEIS and FEIS to determine whether they would alter the conclusions made for the pedestrian impact analyses. Accordingly, some of the analyses and mitigation conclusions presented in this DEIS could change and may be revised, as needed, for the FEIS.

TRANSIT

As discussed in Chapter 14, "Transportation," neither the Proposed Project nor the Alternative Scenario is expected to result in significant adverse subway line-haul impacts to the No. 7 subway line. However, significant adverse impacts to some vertical circulation elements at the 34th Street-Hudson Yards subway station and line-haul impacts to the M23 and M34 Select Bus Service (SBS) routes may potentially occur.

Mitigation measures will be explored in consultation with DCP and NYCT and will be refined between the DEIS and FEIS, but potential mitigation measures, as described more fully below, could include, for subway station vertical circulation elements, stairway widenings and changing escalator operating directions. Regarding line-haul impacts concluded for the M23 and M34 SBS routes, service improvements have been identified and could be implemented by NYCT. These potential measures and their expected effects on mitigating the identified significant adverse impacts are described below.

SUBWAY STATION OPERATIONS

In the With Action condition, project-generated subway trips under the Proposed Project and the Alternative Scenario would both result in significant adverse impacts for street-level escalators, mezzanine escalators, and platform stairs at the 34th Street-Hudson Yards station, as summarized in **Table 22-8**.

**Table 22-8
With Action Condition—
Summary of Significant Adverse Subway Station Impacts**

Analysis Element		Proposed Project		Alternative Scenario	
		Weekday AM	Weekday PM	Weekday AM	Weekday PM
Stairways	P3/P4		X		X
	P5/P6	X	X	X	X
Escalators	ES621-ES622		X		X
	ES623-ES624	X		X	
	ES626-ES627	X		X	
	ES628-ES629		X		X

Proposed Project

With increased ridership demand, pedestrian flows may disperse away from the impacted P3/P4 and P5/P6 stairways and gravitate toward lesser utilized platform stairs that were projected to have additional capacity (P1/P2, P7, P10, P13/P14, P15/P16, and P17/P18 stairs). A wayfinding signage program at both ends of the stairs could be explored to direct subway passengers to these other stairways to reduce congestion and mitigate the impacts under the Proposed Project at the P3/P4 and P5/P6 stairways. Alternatively, these impacts could be mitigated by widening the effective widths of the P3/P4 and P5/P6 platform stairways from their current widths of 17 feet and 17.25 feet, respectively, to achieve increased widths of 20 feet each, as shown in **Table 22-9a**.

**Table 22-9a
34th Street – Hudson Yards
Stairway Analysis - With Action Mitigation Condition
Proposed Project**

Subway Stair	With Action Width (ft)	Mitigation Width (ft)	No Action V/C Ratio	With Action V/C Ratio	Mitigation V/C Ratio	Potential Mitigation Measures
Weekday PM Peak Hour						
P3/P4	17.00	20.00	1.03	1.10	0.92	Reconstruct as a 20' wide stair
P5/P6	17.25	20.00	1.28	1.35	1.15	Reconstruct as a 20' wide stair

In order to mitigate the significant adverse escalator impacts under the Proposed Project, the direction of adjacent escalators traveling in the off-peak direction, which include the ES622 mezzanine escalator and the ES628 street escalator in the weekday AM peak hour and the ES623 mezzanine escalator and the ES627 street escalator in the weekday PM peak hour, could be reversed to serve the peak direction of passenger flow, thereby resulting in one escalator serving the off-peak direction and three escalators serving the

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peak direction. As shown in **Table 22-9b**, the escalator impacts could be fully mitigated under the Proposed Project with implementation of these operational changes. Implementation of operational changes to escalators is subject to the approval by NYCT's escalator maintenance group.

**Table 22-9b
34th Street – Hudson Yards
Escalator Analysis - With Action Mitigation Condition
Proposed Project**

Escalator	Tread Width (in.)	No Action V/C Ratio	With Action V/C Ratio	Mitigation V/C Ratio	Potential Mitigation Measures
Weekday AM Peak Hour					
ES621/ES622	40	0.35	0.30	0.59	Convert ES622 to up direction in the AM peak hour
ES623/ES624	40	1.15	1.19	0.79	Convert ES622 to up direction in the AM peak hour
ES626/ES627	40	1.16	1.20	0.80	Convert ES628 to up direction in the AM peak hour
ES628/ES629	40	0.33	0.28	0.55	Convert ES628 to up direction in the AM peak hour
Weekday PM Peak Hour					
ES621/ES622	40	1.13	1.21	0.81	Convert ES623 to down direction in the PM peak hour
ES623/ES624	40	0.38	0.46	0.92	Convert ES623 to down direction in the PM peak hour
ES626/ES627	40	0.36	0.45	0.89	Convert ES627 to down direction in the PM peak hour
ES628/ES629	40	1.03	1.11	0.74	Convert ES627 to down direction in the PM peak hour

Alternative Scenario

As shown in **Table 22-10a**, the stairway impacts could also be fully mitigated under the Alternative Scenario in the weekday AM and PM peak hours, using the same wayfinding or stairway widening mitigations described above for the Proposed Project. As shown in **Table 22-10b**, the escalator impacts could likewise be fully mitigated under the Alternative Scenario in the weekday AM peak hour, using the same operational adjustments described above for the Proposed Project. In the weekday PM peak hour, the impacts to the ES621/ES622 and ES628/ES629 could not be fully mitigated by these measures.

**Table 22-10a
34th Street – Hudson Yards
Stairway Analysis - With Action Mitigation Condition
Alternative Scenario**

Subway Stair	With Action Width (ft)	Mitigation Width (ft)	No Action V/C Ratio	With Action V/C Ratio	Mitigation V/C Ratio	Potential Mitigation Measures
Weekday AM Peak Hour						
P5/P6	17.25	20.00	1.16	1.20	1.02	Reconstruct as a 20' wide stair
Weekday PM Peak Hour						
P3/P4	17.00	20.00	1.03	1.19	1.00	Reconstruct as a 20' wide stair
P5/P6	17.25	20.00	1.28	1.46	1.25	Reconstruct as a 20' wide stair

Table 22-10b
34th Street – Hudson Yards
Escalator Analysis - With Action Mitigation Condition
Alternative Scenario

Escalator	Tread Width (in.)	No Action V/C Ratio	With Action V/C Ratio	Mitigation V/C Ratio	Potential Mitigation Measures
Weekday AM Peak Hour					
ES621/ES622	40	0.35	0.33	0.67	Convert ES622 to up direction in the AM peak hour
ES623/ES624	40	1.15	1.40	0.93	Convert ES622 to up direction in the AM peak hour
ES626/ES627	40	1.16	1.41	0.94	Convert ES628 to up direction in the AM peak hour
ES628/ES629	40	0.33	0.31	0.63	Convert ES628 to up direction in the AM peak hour
Weekday PM Peak Hour					
ES621/ES622	40	1.13	1.37	1.37	Unmitigated
ES623/ES624	40	0.38	0.52	0.52	N/A
ES626/ES627	40	0.36	0.50	0.50	N/A
ES628/ES629	40	1.03	1.26	1.26	Unmitigated

As described in Chapter 14, “Transportation,” although subway ridership at the 34th Street-Hudson Yards station has not recovered to 2019 levels, passenger volumes used for the subway station analysis were nonetheless conservatively based on 2019 levels to establish the baseline by adjusting the collected 2023 data up by 12 percent (peak direction) and 30 percent (off-peak direction), by comparing collected 2023 data to 2019 turnstile data at the R550 fare control area. If these projected increases in station ridership were to materialize and if some or all of the above mitigation measures were deemed infeasible, then the corresponding station element impacts would remain unmitigated.

BUS LINE-HAUL LEVELS

In the With Action condition, the Proposed Project and the Alternative Scenario would both result in significant adverse impacts on the westbound M23 SBS and westbound M34 SBS routes in the weekday AM peak period and the eastbound M34 SBS route in the weekday PM peak period. To mitigate these significant adverse impacts, the M23 SBS route would require one additional bus (increasing from seven to eight total buses) in the westbound direction during the weekday AM peak period, and the M34 SBS route would require one additional bus (increasing from seven to eight total buses) in the westbound direction during the weekday AM peak period; and one additional bus (increasing from six to seven total buses) in the eastbound direction during the weekday PM peak period. The numbers of buses required to fully mitigate the identified significant adverse bus line-haul impacts are summarized in **Tables 22-11a and 22-11b** for the Proposed Project and the Alternative Scenario, respectively. As a standard practice, NYCT routinely conducts periodic ridership counts and adjusts bus frequency to meet its service criteria. The implementation of these service improvements would be subject to NYCT’s discretion as well as fiscal and operational constraints and is likely to materialize over time. If the necessary service improvements are not implemented, the identified significant adverse bus line-haul impacts could remain unmitigated. Furthermore, as discussed in Chapter 14, “Transportation,” the proposed West 33rd Street grade change would elevate West 33rd Street between Eleventh and Twelfth Avenues and eliminate the existing M34 SBS turnaround route using West 33rd Street. Between the DEIS and

Western Rail Yard Modifications

FEIS, further coordination would be undertaken with NYCT and DOT to determine possible alternate turnaround routes for the M34 SBS.

Table 22-11a
Proposed Project—Mitigated Condition: Bus Line-Haul Levels

Route	Number of Buses per Hour		Passengers per Bus		
	Existing	Mitigation	No Action	With Action	Mitigation
Weekday AM Peak Period					
M23 SBS WB	7	8*	88	89	78
M34 SBS WB	7	8*	96	98	86
Weekday PM Peak Period					
M34 SBS EB	6	7*	145	153	131
Notes: M23 SBS and M34 SBS operate articulated buses with a guideline capacity of 85 passengers per bus. * Bus routes would operate beyond guideline capacity in the 2031 No Action Condition. Nine buses per hour would be needed for M34 SBS Westbound to operate within guideline capacity in AM peak period; 11 buses per hour would be needed for M34 SBS Eastbound to operate within guideline capacity in PM peak period.					

Table 22-11b
Alternative Scenario—Mitigated Condition: Bus Line-Haul Levels

Route	Number of Buses per Hour		Passengers per Bus		
	Existing	Mitigation	No Action	With Action	Mitigation
Weekday AM Peak Period					
M23 SBS WB	7	8*	88	91	79
M34 SBS WB	7	8*	96	104	91
Weekday PM Peak Period					
M34 SBS EB	6	7*	145	163	140
Notes: M23 SBS and M34 SBS operate articulated buses with a guideline capacity of 85 passengers per bus. * Bus routes would operate beyond guideline capacity in the 2031 No Action Condition. Nine buses per hour would be needed for M34 SBS Westbound to operate within guideline capacity in AM peak period; 11 buses per hour would be needed for M34 SBS Eastbound to operate within guideline capacity in PM peak period.					

PEDESTRIANS

As discussed in Chapter 14, “Transportation,” detailed analyses of pedestrian conditions were prepared for study areas consisting of 52 sidewalk segments, 77 corner reservoirs, and 41 crosswalks for the Proposed Project, and 53 sidewalk segments, 75 corner reservoirs, and 40 crosswalks for the Alternative Scenario.

PROPOSED PROJECT

Under the Proposed Project, significant adverse pedestrian impacts were identified at:

- Three sidewalks, two corners, and six crosswalks in the weekday AM peak hour;
- Three sidewalks, zero corners, and nine crosswalks in the weekday midday peak hour;
- Eight sidewalks, four corners, and 10 crosswalks in the weekday PM peak hour;
- Four sidewalks, one corner, and seven crosswalks in the weekday evening peak hour;
- Five sidewalks, one corner, and six crosswalks in the Saturday midday/afternoon peak hour; and

- Six sidewalks, two corners, and seven crosswalks in the Saturday evening peak hour.

Potential measures explored to mitigate these impacts include signal timing changes, crosswalk widening, corner bulbouts, and sidewalk clear width improvements. As summarized in **Table 22-12**, the majority of the crosswalk impacts identified for the Proposed Project were determined to be fully mitigated in the weekday midday and PM peak hours, while the majority of pedestrian impacts identified in the other peak hours were determined to not be fully mitigated. The pedestrian mitigation analysis results for the Proposed Project are detailed below.

Table 22-12
Proposed Project—Summary of Pedestrian Mitigation Analysis Results

Analysis Peak Hour	Sidewalks			Corners			Crosswalks		
	No. of Impacted Elements	No. Fully Mitigated	No. Partially Mitigated or Unmitigated	No. of Impacted Elements	No. Fully Mitigated	No. Partially Mitigated or Unmitigated	No. of Impacted Elements	No. Fully Mitigated	No. Partially Mitigated or Unmitigated
Weekday AM	3	1	2	2	0	2	6	3	3
Weekday Midday	3	0	3	0	0	0	9	5	4
Weekday PM	8	1	7	4	2	2	10	8	2
Weekday Evening	4	0	4	1	1	0	7	2	5
Saturday Midday/Afternoon	5	0	5	1	1	0	6	1	5
Saturday Evening	6	0	6	2	1	1	7	2	5

Table 22-13 itemize the mitigation measures recommended to address the identified impacts under the Proposed Project. Signal timing modifications, crosswalk widenings, corner bulbouts, and sidewalk clear width improvements were recommended to fully mitigate impacts where appropriate. With the implementation of these measures, which are subject to modification and approval of DOT prior to implementation, most of the significant adverse pedestrian impacts identified could be fully mitigated. Detailed comparisons of the LOS and SFPs for the impacted pedestrian elements under the 2031 No Action, With Action, and Mitigation conditions are presented in **Appendix G**.

Western Rail Yard Modifications

Table 22-13

Proposed Project—Recommended Pedestrian Mitigation Measures

Intersection	Element	Recommended Mitigation Measures	Mitigation Effectiveness
Weekday AM Peak Hour			
Sidewalk			
Eleventh Avenue and West 33rd Street	East sidewalk along Eleventh Avenue between West 33rd Street and West 32nd Street	Remove flower pot	Fully Mitigated
Eleventh Avenue and West 31st Street	West sidewalk along Eleventh Avenue between West 31st Street and Site B Entrance	None	Unmitigated
Tenth Avenue and West 31st Street	East sidewalk along Tenth Avenue between West 31st Street and Dyer Avenue	None	Unmitigated
Corner			
Tenth Avenue and West 31st Street	Southeast Corner	Shift 3 seconds from FDW to Walk for North and South Crosswalks (Crosswalk Mitigation)	Partially Mitigated
Dyer Avenue and West 31st Street	Southeast Corner	Shift 2 seconds from FDW to Walk for North and South Crosswalks (Crosswalk Mitigation); Shift 3 seconds from FDW to Walk for East and West Crosswalks	Partially Mitigated
Crosswalk			
Eleventh Avenue and West 32nd Street	West Crosswalk	Widen crosswalk by 9.5-feet to 22.5 feet	Fully Mitigated
Eleventh Avenue and West 30th Street	North Crosswalk	Widen crosswalk by 3.5-feet to 13 feet	Partially Mitigated
	East Crosswalk	None	Unmitigated
Tenth Avenue and West 31st Street	South Crosswalk	Shift 3 seconds from FDW to Walk for North and South Crosswalks	Fully Mitigated
Dyer Avenue and West 31st Street	South Crosswalk	Widen crosswalk by 2.5-feet to 10.5 feet; Shift 2 seconds from FDW to Walk for North and South Crosswalks	Fully Mitigated
Ninth Avenue and West 31st Street	South Crosswalk	Shift 6 seconds from FDW to Walk for North and South Crosswalks	Partially Mitigated
Weekday Midday Peak Hour			
Sidewalk			
Eleventh Avenue and West 33rd Street	South sidewalk along West 33rd Street between Eleventh Avenue and Hudson Boulevard East	None	Unmitigated
	South sidewalk along West 33rd Street between With Action Site Entrance and Eleventh Avenue	None	Unmitigated
Tenth Avenue and West 33rd Street	South sidewalk along West 33rd Street between Tenth Avenue and Ninth Avenue	None	Unmitigated

Table 22-13

Proposed Project—Recommended Pedestrian Mitigation Measures

Intersection	Element	Recommended Mitigation Measures	Mitigation Effectiveness
Weekday Midday Peak Hour			
Crosswalk			
Eleventh Avenue and West 33rd Street	East Crosswalk	Widen crosswalk by 1-foot to 17 feet	Fully Mitigated
	West Crosswalk	Widen crosswalk by 3.5-feet to 18.5 feet	Fully Mitigated
Eleventh Avenue and West 30th Street	North Crosswalk	Widen crosswalk by 3.5-feet to 13 feet	Fully Mitigated
	East Crosswalk	None	Unmitigated
Eleventh Avenue and West 24th Street	East Crosswalk	None	Unmitigated
Hudson Boulevard East and West 33rd Street	West Crosswalk	Shift 3 seconds from FDW to Walk for West Crosswalk	Partially Mitigated
Tenth Avenue and West 33rd Street	South Crosswalk	None	Unmitigated
Tenth Avenue and West 30th Street	North Crosswalk	Shift 4 seconds from FDW to Walk for North and South Crosswalks	Fully Mitigated
Ninth Avenue and West 31st Street	South Crosswalk	Shift 3 seconds from FDW to Walk for North and South Crosswalks	Fully Mitigated
Weekday PM Peak Hour			
Sidewalk			
Eleventh Avenue and West 33rd Street	North sidewalk along West 33rd Street between Eleventh Avenue and Hudson Boulevard East	None	Unmitigated
	East sidewalk along Eleventh Avenue between West 33rd Street and West 32nd Street	Remove flower pot	Fully Mitigated
	South sidewalk along West 33rd Street between Eleventh Avenue and Hudson Boulevard East	None	Unmitigated
	South sidewalk along West 33rd Street between With Action Site Entrance and Eleventh Avenue	None	Unmitigated
Tenth Avenue and West 31st Street	East sidewalk along Tenth Avenue between West 31st Street and Dyer Avenue	None	Unmitigated
Tenth Avenue and West 28th Street	West sidewalk along Tenth Avenue between West 28th Street and West 27th Street	None	Unmitigated

Western Rail Yard Modifications

Table 22-13

Proposed Project—Recommended Pedestrian Mitigation Measures

Intersection	Element	Recommended Mitigation Measures	Mitigation Effectiveness
Weekday PM Peak Hour			
Sidewalk			
Dyer Avenue and West 31st Street	South sidewalk along West 31st Street between Dyer Avenue and Ninth Avenue	None	Unmitigated
Ninth Avenue and West 31st Street	South sidewalk along West 31st Street between Ninth Avenue and Eighth Avenue	None	Unmitigated
Corner			
Eleventh Avenue and West 33rd Street	Northwest Corner	Add 9-foot bulbout on Eleventh Avenue; Shift 3 seconds from FDW to Walk in Phase B for east/west/south crosswalks (Crosswalk Mitigation)	Fully Mitigated
	Southeast Corner	Add 10-foot bulbout on Eleventh Avenue; Shift 3 seconds from FDW to Walk in Phase B for east/west/south crosswalks (Crosswalk Mitigation)	Fully Mitigated
Tenth Avenue and West 31st Street	Southeast Corner	Shift 3 seconds from FDW to Walk for North and South Crosswalks (Crosswalk Mitigation)	Partially Mitigated
Dyer Avenue and West 31st Street	Southwest Corner	Shift 2 seconds from FDW to Walk for North and South Crosswalks (Crosswalk Mitigation); Shift 3 seconds from FDW to Walk for West and East Crosswalks	Partially Mitigated
Crosswalk			
Eleventh Avenue and West 33rd Street	East Crosswalk	Widen crosswalk by 1-foot to 17 feet; Shift 3 seconds from FDW to Walk in Phase B for East, West, and South Crosswalks	Fully Mitigated
	West Crosswalk	Widen crosswalk by 3.5-foot to 18.5 feet; Shift 3 seconds from FDW to Walk in Phase B for East, West, and South Crosswalks	Fully Mitigated
Eleventh Avenue and West 32nd Street	West Crosswalk	Widen crosswalk by 9.5-foot to 22.5 feet	Fully Mitigated
Eleventh Avenue and West 30th Street	North Crosswalk	Widen crosswalk by 3.5-foot to 13 feet	Fully Mitigated
	East Crosswalk	None	Unmitigated
Hudson Boulevard East and West 33rd Street	West Crosswalk	Shift 1 second from FDW to Walk for West Crosswalk	Fully Mitigated
Tenth Avenue and West 31st Street	South Crosswalk	Shift 3 seconds from FDW to Walk for North and South Crosswalks	Fully Mitigated
Tenth Avenue and West 30th Street	North Crosswalk	Shift 2 seconds from FDW to Walk for North and South Crosswalks	Fully Mitigated
Dyer Avenue and West 31st Street	South Crosswalk	Widen crosswalk by 2.5-foot to 10.5 feet; Shift 2 seconds from FDW to Walk for North and South Crosswalks	Fully Mitigated
Ninth Avenue and West 31st Street	South Crosswalk	Shift 6 seconds from FDW to Walk for North and South Crosswalks	Partially Mitigated

Table 22-13

Proposed Project—Recommended Pedestrian Mitigation Measures

Intersection	Element	Recommended Mitigation Measures	Mitigation Effectiveness
Weekday Evening Peak Hour			
Sidewalk			
Eleventh Avenue and West 33rd Street	North sidewalk along West 33rd Street between Eleventh Avenue and Hudson Boulevard East	None	Unmitigated
	South sidewalk along West 33rd Street between Eleventh Avenue and Hudson Boulevard East	None	Unmitigated
	South sidewalk along West 33rd Street between With Action Site Entrance and Eleventh Avenue	None	Unmitigated
Tenth Avenue and West 33rd Street	South sidewalk of West 33rd Street between Tenth Avenue and Ninth Avenue	None	Unmitigated
Corner			
Eleventh Avenue and West 33rd Street	Southeast Corner	Add 10-foot bulbout on Eleventh Avenue; Shift 3 seconds from FDW to Walk in Phase B for east/west/south crosswalks (Crosswalk Mitigation)	Fully Mitigated
Crosswalk			
Eleventh Avenue and West 33rd Street	South Crosswalk	Add two 10-foot bulbouts on Eleventh Avenue (corner mitigation); Shift 3 seconds from FDW to Walk in Phase B for east/west/south crosswalks	Partially Mitigated
	West Crosswalk	Widen crosswalk by 3.5-feet to 18.5 feet; Shift 3 seconds from FDW to Walk in Phase B for east/west/south crosswalks	Fully Mitigated
Eleventh Avenue and West 30th Street	East Crosswalk	None	Unmitigated
Hudson Boulevard East and West 33rd Street	West Crosswalk	Shift 3 seconds from FDW to Walk for West Crosswalk	Partially Mitigated
Tenth Avenue and West 33rd Street	South Crosswalk	None	Unmitigated
Dyer Avenue and West 31st Street	South Crosswalk	Widen crosswalk by 2.5-feet to 10.5 feet	Fully Mitigated
Ninth Avenue and West 33rd Street	South Crosswalk	None	Unmitigated

Western Rail Yard Modifications

Table 22-13

Proposed Project—Recommended Pedestrian Mitigation Measures

Intersection	Element	Recommended Mitigation Measures	Mitigation Effectiveness
Saturday Midday/Afternoon Peak Hour			
Sidewalk			
Eleventh Avenue and West 33rd Street	South sidewalk along West 33rd Street between Eleventh Avenue and Hudson Boulevard East	None	Unmitigated
	South sidewalk along West 33rd Street between With Action Site Entrance and Eleventh Avenue	None	Unmitigated
Tenth Avenue and West 33rd Street	South sidewalk of West 33rd Street between Tenth Avenue and Ninth Avenue	None	Unmitigated
	South sidewalk of West 33rd Street between Hudson Boulevard East and Tenth Avenue	None	Unmitigated
Tenth Avenue and West 28th Street	West sidewalk along Tenth Avenue between West 28th Street and West 27th Street	None	Unmitigated
Corner			
Eleventh Avenue and West 33rd Street	Southeast Corner	Add 10-foot bulbout on Eleventh Avenue; Shift 3 seconds from FDW to Walk in Phase B for east/west/south crosswalks (Crosswalk Mitigation)	Fully Mitigated
Crosswalk			
Eleventh Avenue and West 33rd Street	South Crosswalk	Add two 10-foot bulbouts on Eleventh Avenue (corner mitigation); Shift 3 seconds from FDW to Walk in Phase B for east/west/south crosswalks	Partially Mitigated
	West Crosswalk	Widen crosswalk by 3.5-feet to 18.5 feet; Shift 3 seconds from FDW to Walk in Phase B for east/west/south crosswalks	Fully Mitigated
Eleventh Avenue and West 30th Street	East Crosswalk	None	Unmitigated
Eleventh Avenue and West 24th Street	East Crosswalk	None	Unmitigated
Hudson Boulevard East and West 33rd Street	West Crosswalk	Shift 3 seconds from FDW to Walk for West Crosswalk	Partially Mitigated
Tenth Avenue and West 33rd Street	South Crosswalk	None	Unmitigated

Table 22-13

Proposed Project—Recommended Pedestrian Mitigation Measures

Intersection	Element	Recommended Mitigation Measures	Mitigation Effectiveness
Saturday Evening Peak Hour			
Sidewalk			
Eleventh Avenue and West 33rd Street	North sidewalk along West 33rd Street between Eleventh Avenue and Hudson Boulevard East	None	Unmitigated
	South sidewalk along West 33rd Street between Eleventh Avenue and Hudson Boulevard East	None	Unmitigated
	South sidewalk along West 33rd Street between With Action Site Entrance and Eleventh Avenue	None	Unmitigated
Tenth Avenue and West 33rd Street	South sidewalk of West 33rd Street between Tenth Avenue and Ninth Avenue	None	Unmitigated
	South sidewalk of West 33rd Street between Hudson Boulevard East and Tenth Avenue	None	Unmitigated
Tenth Avenue and West 28th Street	West sidewalk along Tenth Avenue between West 28th Street and West 27th Street	None	Unmitigated
Corner			
Eleventh Avenue and West 33rd Street	Southwest Corner	Add 10-foot bulbout on Eleventh Avenue; Shift 3 seconds from FDW to Walk in Phase B for east/west/south crosswalks (Crosswalk Mitigation)	Fully Mitigated
	Southeast Corner	Add 10-foot bulbout on Eleventh Avenue; Shift 3 seconds from FDW to Walk in Phase B for east/west/south crosswalks (Crosswalk Mitigation)	Partially Mitigated

Table 22-13

Proposed Project—Recommended Pedestrian Mitigation Measures

Intersection	Element	Recommended Mitigation Measures	Mitigation Effectiveness
Crosswalk			
Eleventh Avenue and West 33rd Street	South Crosswalk	Add two 10-foot bulbouts on Eleventh Avenue (corner mitigation); Shift 3 seconds from FDW to Walk in Phase B for east/west/south crosswalks	Partially Mitigated
	West Crosswalk	Widen crosswalk by 3.5-feet to 18.5 feet; Shift 3 seconds from FDW to Walk in Phase B for east/west/south crosswalks	Fully Mitigated
Eleventh Avenue and West 30th Street	East Crosswalk	None	Unmitigated
	West Crosswalk	None	Unmitigated
Hudson Boulevard East and West 33rd Street	West Crosswalk	Shift 3 seconds from FDW to Walk for West Crosswalk	Partially Mitigated
Tenth Avenue and West 33rd Street	South Crosswalk	None	Unmitigated
Dyer Avenue and West 31st Street	North Crosswalk	Shift 1 second from FDW to Walk for north and south crosswalks	Fully Mitigated

ALTERNATIVE SCENARIO

Under the Alternative Scenario, significant adverse pedestrian impacts were identified at:

- Four sidewalks, three corners, and 10 crosswalks in the weekday AM peak hour;
- Five sidewalks, two corners, and 16 crosswalks in the weekday midday peak hour;
- 10 sidewalks, six corners, and 16 crosswalks in the weekday PM peak hour;
- Three sidewalks, zero corners, and four crosswalks in the weekday evening peak hour;
- Two sidewalks, zero corners, and two crosswalks in the Saturday midday/afternoon peak hour; and
- Seven sidewalks, one corner, and seven crosswalks in the Saturday evening peak hour.

Potential measures explored to mitigate these impacts include signal timing changes, crosswalk widening, corner bulbouts, and sidewalk clear width improvements. As summarized in **Table 22-14**, the majority of the crosswalk impacts identified for the Alternative Scenario were determined to be fully mitigated in the weekday AM, weekday midday, and weekday evening peak hours and all of the corner impacts were determined to be fully mitigated in the weekday midday peak hour, while the majority of pedestrian impacts identified in the other peak hours were determined to not be fully mitigated. The pedestrian mitigation analysis results for the Alternative Scenario are detailed below.

**Table 22-14
Alternative Scenario—Summary of Pedestrian Mitigation Analysis Results**

Analysis Peak Hour	Sidewalks			Corners			Crosswalks		
	No. of Impacted Elements	No. Fully Mitigated	No. Partially Mitigated or Unmitigated	No. of Impacted Elements	No. Fully Mitigated	No. Partially Mitigated or Unmitigated	No. of Impacted Elements	No. Fully Mitigated	No. Partially Mitigated or Unmitigated
Weekday AM	4	1	3	3	0	3	10	8	2
Weekday Midday	5	0	5	2	2	0	16	10	6
Weekday PM	10	1	9	6	1	5	16	5	11
Weekday Evening	3	0	3	0	0	0	4	3	1
Saturday Midday/Afternoon	2	0	2	0	0	0	2	0	2
Saturday Evening	7	0	7	1	0	1	7	1	6

Table 22-15 itemize the mitigation measures recommended to address the identified impacts under the Alternative Scenario. Signal timing modifications, crosswalk widenings, corner bulbouts, and sidewalk clear width improvements were recommended to fully mitigate impacts where appropriate. With the implementation of these measures, which are subject to modification and approval of DOT prior to implementation, most of the significant adverse pedestrian impacts identified could be fully mitigated. Detailed comparisons of the LOS and SFPs for the impacted pedestrian elements under the 2031 No Action, With Action, and Mitigation conditions are presented in **Appendix G**.

**Table 22-15
Alternative Scenario—Recommended Pedestrian Mitigation Measures**

Intersection	Element	Recommended Mitigation Measures	Mitigation Effectiveness
<i>Weekday AM Peak Hour</i>			
Sidewalk			
Eleventh Avenue and West 33rd Street	North sidewalk along West 33rd Street between Eleventh Avenue and Hudson Boulevard East	None	Unmitigated
	East sidewalk along Eleventh Avenue between West 33rd Street and West 32nd Street	Remove flower pot	Fully Mitigated
	South sidewalk along West 33rd Street between Eleventh Avenue and Hudson Boulevard East	None	Unmitigated
Tenth Avenue and West 31st Street	East sidewalk along Tenth Avenue between West 31st Street and Dyer Avenue	None	Unmitigated

Western Rail Yard Modifications

Table 22-15

Alternative Scenario—Recommended Pedestrian Mitigation Measures

Intersection	Element	Recommended Mitigation Measures	Mitigation Effectiveness
Corner			
Tenth Avenue and West 31st Street	Southeast Corner	Shift 3 seconds from FDW to Walk for North, East, and South Crosswalks (Crosswalk Mitigation)	Partially Mitigated
Dyer Avenue and West 31st Street	Northeast Corner	Shift 2 seconds from FDW to Walk for North and South Crosswalks (Crosswalk Mitigation); Shift 3 seconds from FDW to Walk for East and West Crosswalks	Partially Mitigated
	Southeast Corner	Shift 2 seconds from FDW to Walk for North and South Crosswalks (Crosswalk Mitigation); Shift 3 seconds from FDW to Walk for East and West Crosswalks	Partially Mitigated
Crosswalk			
Eleventh Avenue and West 33rd Street	East Crosswalk	Widen crosswalk by 4-feet to 20 feet	Fully Mitigated
	West Crosswalk	Widen crosswalk by 6-feet to 21 feet	Fully Mitigated
Eleventh Avenue and West 30th Street	North Crosswalk	Widen crosswalk by 3.5-feet to 13 feet	Partially Mitigated
Hudson Boulevard East and West 33rd Street	West Crosswalk	Shift 3 seconds from FDW to Walk for West Crosswalk	Fully Mitigated
Tenth Avenue and West 31st Street	East Crosswalk	Shift 3 seconds from FDW to Walk for East Crosswalk	Fully Mitigated
	South Crosswalk	Shift 3 seconds from FDW to Walk for North and South Crosswalks	Fully Mitigated
Dyer Avenue and West 31st Street	North Crosswalk	Widen crosswalk by 0.5-feet to 8.5 feet; Shift 2 seconds from FDW to Walk for North and South Crosswalks	Partially Mitigated
	South Crosswalk	Widen crosswalk by 2.5-feet to 10.5 feet; Shift 2 seconds from FDW to Walk for North and South Crosswalks	Fully Mitigated
Ninth Avenue and West 31st Street	North Crosswalk	Shift 5 seconds from FDW to Walk for North and South Crosswalks	Fully Mitigated
	South Crosswalk	Shift 5 seconds from FDW to Walk for North and South Crosswalks	Fully Mitigated

Table 22-15

Alternative Scenario—Recommended Pedestrian Mitigation Measures

Intersection	Element	Recommended Mitigation Measures	Mitigation Effectiveness
<i>Weekday Midday Peak Hour</i>			
Sidewalk			
Eleventh Avenue and West 33rd Street	South sidewalk along West 33rd Street between Eleventh Avenue and Hudson Boulevard East	None	Unmitigated
Eleventh Avenue and West 30th Street	West sidewalk along Eleventh Avenue between West 30th Street and West 29th Street	None	Unmitigated
Eleventh Avenue and West 29th Street	West sidewalk along Eleventh Avenue between West 29th Street and West 28th Street	None	Unmitigated
Tenth Avenue and West 29th Street	West sidewalk along Tenth Avenue between West 29th Street and West 28th Street	None	Unmitigated
Tenth Avenue and West 28th Street	West sidewalk along Tenth Avenue between West 28th Street and West 27th Street	None	Unmitigated
Corner			
Tenth Avenue and West 35th Street	Northeast Corner	Shift 3 seconds from FDW to Walk for West and East Crosswalks	Fully Mitigated
Tenth Avenue and West 31st Street	Southeast Corner	Shift 3 seconds from FDW to Walk for North, East, and South Crosswalks	Fully Mitigated

Western Rail Yard Modifications

Table 22-15

Alternative Scenario—Recommended Pedestrian Mitigation Measures

Intersection	Element	Recommended Mitigation Measures	Mitigation Effectiveness
Crosswalk			
Eleventh Avenue and West 34th Street	East Crosswalk	Widen crosswalk by 0.5-feet to 16 feet	Fully Mitigated
Eleventh Avenue and West 33rd Street	East Crosswalk	Widen crosswalk by 4-feet to 20 feet	Fully Mitigated
	West Crosswalk	Widen crosswalk by 6-feet to 21 feet	Fully Mitigated
Eleventh Avenue and West 30th Street	North Crosswalk	Widen crosswalk by 3.5-feet to 13 feet	Partially Mitigated
	East Crosswalk	None	Unmitigated
	West Crosswalk	None	Unmitigated
Eleventh Avenue and West 29th Street	West Crosswalk	None	Unmitigated
Eleventh Avenue and West 24th Street	East Crosswalk	None	Unmitigated
Tenth Avenue and West 30th Street	North Crosswalk	Shift 4 seconds from FDW to Walk for North and South Crosswalks	Fully Mitigated
Tenth Avenue and West 29th Street	West Crosswalk	Shift 2 seconds from FDW to Walk for West and East Crosswalks	Fully Mitigated
Tenth Avenue and West 28th Street	East Crosswalk	Shift 3 seconds from FDW to Walk for West and East Crosswalks	Partially Mitigated
	West Crosswalk	Shift 3 seconds from FDW to Walk for West and East Crosswalks	Fully Mitigated
Dyer Avenue and West 31st Street	North Crosswalk	Widen crosswalk by 0.5-feet to 8.5 feet	Fully Mitigated
	South Crosswalk	Widen crosswalk by 2.5-feet to 10.5 feet	Fully Mitigated
Ninth Avenue and West 34th Street	South Crosswalk	Shift 2 seconds from FDW to Walk for North and South Crosswalks	Fully Mitigated
Ninth Avenue and West 31st Street	South Crosswalk	Shift 3 seconds from FDW to Walk for North and South Crosswalks	Fully Mitigated
Weekday PM Peak Hour			
Sidewalk			
Eleventh Avenue and West 33rd Street	South sidewalk along West 33rd Street between Site C2 and Site C1	None	Unmitigated
	North sidewalk along West 33rd Street between Eleventh Avenue and Hudson Boulevard East	None	Unmitigated
	East sidewalk along Eleventh Avenue between West 33rd Street and West 32nd Street	Remove flower pot	Fully Mitigated
	South sidewalk along West 33rd Street between Eleventh Avenue and Hudson Boulevard East	None	Unmitigated

Table 22-15

Alternative Scenario—Recommended Pedestrian Mitigation Measures

Intersection	Element	Recommended Mitigation Measures	Mitigation Effectiveness
Eleventh Avenue and West 33rd Street, CONT'D	South sidewalk along West 33rd Street between Site Entrance and Eleventh Avenue	None	Unmitigated
Tenth Avenue and West 33rd Street	South sidewalk along West 33rd Street between Hudson Boulevard East and Tenth Avenue	None	Unmitigated
Tenth Avenue and West 31st Street	North sidewalk along West 31st Street between Tenth Avenue and Dyer Avenue	None	Unmitigated
Tenth Avenue and West 28th Street	West sidewalk along Tenth Avenue between West 28th Street and West 27th Street	None	Unmitigated
Dyer Avenue and West 31st Street	South sidewalk along West 31st Street between Dyer Avenue and Ninth Avenue	None	Unmitigated
Ninth Avenue and West 31st Street	South sidewalk along West 31st Street between Ninth Avenue and Eighth Avenue	None	Unmitigated
Corner			
Eleventh Avenue and West 33rd Street	Northwest Corner	Add 9-foot bulbout on Eleventh Avenue; Shift 1 second from FDW to Walk for North Crosswalk (Crosswalk Mitigation)	Fully Mitigated
	Southeast Corner	Add 10-foot bulbout on Eleventh Avenue	Partially Mitigated
Tenth Avenue and West 31st Street	Southeast Corner	Shift 3 seconds from FDW to Walk for North, East, and South Crosswalks (Crosswalk Mitigation)	Partially Mitigated
Dyer Avenue and West 31st Street	Northwest Corner	Shift 2 seconds from FDW to Walk for North and South Crosswalks (Crosswalk Mitigation); Shift 3 seconds from FDW to Walk for East and West Crosswalks	Partially Mitigated
	Northeast Corner	Shift 2 seconds from FDW to Walk for North and South Crosswalks (Crosswalk Mitigation); Shift 3 seconds from FDW to Walk for East and West Crosswalks	Partially Mitigated
	Southwest Corner	Shift 2 seconds from FDW to Walk for North and South Crosswalks (Crosswalk Mitigation); Shift 3 seconds from FDW to Walk for East and West Crosswalks	Partially Mitigated
Crosswalk			
Eleventh Avenue and West 33rd Street	North Crosswalk	Add 9-foot bulbout on northwest corner on Eleventh Avenue; Shift 1 second from FDW to Walk for North Crosswalk (corner mitigation)	Unmitigated
	East Crosswalk	Widen crosswalk by 4-feet to 20 feet	Partially Mitigated
	South Crosswalk	Add 10-foot bulbout on southeast corner on Eleventh Avenue (corner mitigation)	Unmitigated
	West Crosswalk	Widen crosswalk by 6-feet to 21 feet	Partially Mitigated
	North Crosswalk	Widen crosswalk by 3.5-feet to 13 feet	Fully Mitigated

Western Rail Yard Modifications

Table 22-15

Alternative Scenario—Recommended Pedestrian Mitigation Measures

Intersection	Element	Recommended Mitigation Measures	Mitigation Effectiveness
Eleventh Avenue and West 30th Street	East Crosswalk	None	Unmitigated
	West Crosswalk	None	Unmitigated
Eleventh Avenue and West 29th Street	West Crosswalk	None	Unmitigated
Hudson Boulevard East and West 33rd Street	West Crosswalk	Shift 3 seconds from FDW to Walk for West Crosswalk	Fully Mitigated
Tenth Avenue and West 33rd Street	South Crosswalk	None	Unmitigated
Tenth Avenue and West 31st Street	South Crosswalk	Shift 3 seconds from FDW to Walk for North and South Crosswalks	Partially Mitigated
Tenth Avenue and West 30th Street	North Crosswalk	Shift 4 seconds from FDW to Walk for North and South Crosswalks	Fully Mitigated
Dyer Avenue and West 31st Street	North Crosswalk	Widen crosswalk by 0.5 feet to 8.5 feet; Shift 2 seconds from FDW to Walk for North and South crosswalks	Partially Mitigated
	South Crosswalk	Widen crosswalk by 2.5 feet to 10.5 feet; Shift 2 seconds from FDW to Walk for North and South crosswalks	Fully Mitigated
Ninth Avenue and West 31st Street	North Crosswalk	Shift 6 seconds from FDW to Walk for North and South Crosswalks	Fully Mitigated
	South Crosswalk	Shift 6 seconds from FDW to Walk for North and South Crosswalks	Partially Mitigated
Weekday Evening Peak Hour			
Sidewalk			
Eleventh Avenue and West 33rd Street	South sidewalk along West 33rd Street between Site C2 and Site C1	None	Unmitigated
	South sidewalk along West 33rd Street between Eleventh Avenue and Hudson Boulevard East	None	Unmitigated
	South sidewalk along West 33rd Street between Site Entrance and Eleventh Avenue	None	Unmitigated
Crosswalk			
Eleventh Avenue and West 33rd Street	South Crosswalk	Add 10-foot bulbout on southeast corner on Eleventh Avenue (corner mitigation)	Unmitigated
Hudson Boulevard East and West 33rd Street	West Crosswalk	Shift 2 seconds from FDW to Walk for West Crosswalk	Fully Mitigated
Dyer Avenue and West 31st Street	North Crosswalk	Widen crosswalk by 0.5-feet to 8.5 feet; Shift 1 second from FDW to Walk for North and South crosswalks	Fully Mitigated
	South Crosswalk	Widen crosswalk by 2.5-feet to 10.5 feet; Shift 1 seconds from FDW to Walk for North and South crosswalks	Fully Mitigated

Table 22-15

Alternative Scenario—Recommended Pedestrian Mitigation Measures

Intersection	Element	Recommended Mitigation Measures	Mitigation Effectiveness
Saturday Midday/Afternoon Peak Hour			
Sidewalk			
Eleventh Avenue and West 33rd Street	South sidewalk along West 33rd Street between Site C2 and Site C1	None	Unmitigated
Tenth Avenue and West 28th Street	West sidewalk along Tenth Avenue between West 28th Street and West 27th Street	None	Unmitigated
Crosswalk			
Eleventh Avenue and West 30th Street	East Crosswalk	None	Unmitigated
Eleventh Avenue and West 24th Street	East Crosswalk	None	Unmitigated
Saturday Evening Peak Hour			
Sidewalk			
Eleventh Avenue and West 33rd Street	South sidewalk along West 33rd Street between Site C2 and Site C1	None	Unmitigated
	North sidewalk along West 33rd Street between Eleventh Avenue and Hudson Boulevard East	None	Unmitigated
	South sidewalk along West 33rd Street between Eleventh Avenue and Hudson Boulevard East	None	Unmitigated
	South sidewalk along West 33rd Street between Site Entrance and Eleventh Avenue	None	Unmitigated
Tenth Avenue and West 33rd Street	South sidewalk along West 33rd Street between Tenth Avenue and Ninth Avenue	None	Unmitigated
	South sidewalk along West 33rd Street between Hudson Boulevard East and Tenth Avenue	None	Unmitigated
Tenth Avenue and West 28th Street	West sidewalk along Tenth Avenue between	None	Unmitigated

Table 22-15

Alternative Scenario—Recommended Pedestrian Mitigation Measures

Intersection	Element	Recommended Mitigation Measures	Mitigation Effectiveness
	West 28th Street and West 27th Street		
Corner			
Eleventh Avenue and West 33rd Street	Southeast Corner	Add 10-foot bulbout on Eleventh Avenue	Partially Mitigated
Crosswalk			
Eleventh Avenue and West 33rd Street	South Crosswalk	Add 10-foot bulbout on southeast corner on Eleventh Avenue (corner mitigation)	Unmitigated
	West Crosswalk	Widen crosswalk by 6-feet to 21 feet	Fully Mitigated
Eleventh Avenue and West 30th Street	East Crosswalk	None	Unmitigated
	West Crosswalk	None	Unmitigated
Hudson Boulevard East and West 33rd Street	West Crosswalk	Shift 3 seconds from FDW to Walk for West Crosswalk	Partially Mitigated
Tenth Avenue and West 33rd Street	South Crosswalk	None	Unmitigated
Dyer Avenue and West 31st Street	North Crosswalk	Widen crosswalk by 0.5 feet to 8.5 feet; Shift 2 seconds from FDW to Walk for North and South crosswalks	Partially Mitigated

EFFECTS OF PEDESTRIAN MITIGATION ON TRAFFIC OPERATIONS

Since most of the recommended pedestrian mitigation measures involve crosswalk widenings and shifts of signal timing from ‘flashing don’t-walk’ (FDW) to ‘walk’ phases, they would not have any effect on traffic operations. Therefore, these pedestrian mitigation measures were determined to not result in any new significant adverse traffic impacts.

D. AIR QUALITY

MOBILE SOURCES

As described in Chapter 15, “Air Quality,” the mobile source air quality analysis determined that compared to the No Action condition, the maximum annual incremental particulate matter (PM_{2.5}) concentration is predicted to potentially exceed the annual *de minimis* criterion at Eleventh Avenue and West 33rd Street, Eleventh Avenue and West 30th Street and Tenth Avenue and West 30th Street in the With Action condition for the Proposed Project, and at Eleventh Avenue and West 30th Street in the With Action condition for the Alternative Scenario.

Of the intersections analyzed, traffic mitigation measures were determined to be feasible at one location, Eleventh Avenue and West 30th Street for the weekday evening peak period for the Proposed Project. Based on the magnitude of the predicted PM_{2.5} incremental concentrations at this location for the With Action condition and the traffic mitigation measures that are proposed, a significant reduction in annual PM_{2.5} concentrations is not expected with the proposed traffic mitigation measures in place. Feasible traffic mitigation measures were not identified for the other analyzed

intersections analyzed for the Proposed Project, as well as the affected intersection for the Alternative Scenario. Therefore, for the DEIS, at these locations, the significant adverse air quality impact is deemed as unavoidable, as discussed in Chapter 23, "Unavoidable Adverse Impacts."

Between the DEIS and FEIS, additional review and evaluation will be performed which is expected to determine that the identified impacts related to mobile source annual average PM_{2.5} increments will be avoided. Additional modeling of PM_{2.5} concentrations (Grid Analysis) will be performed using more refined or comprehensive analysis procedures to determine the magnitude and extent of neighborhood-scale PM_{2.5} impacts from mobile sources. Other updates may include the use of newer vehicle emissions model data and projections. It is anticipated that these additional measures will reduce PM_{2.5} concentrations below the annual *de minimis* criterion threshold.

LIRR PLATFORM VENTILATION SYSTEM

In terms of stationary sources, maximum concentrations from the LIRR ventilation exhaust system are predicted to occur on Site C podium locations closest to the exhaust. These concentrations, which require further evaluation and refinement, would potentially constitute a significant adverse impact on air quality. However, design modifications, including restrictions on the location of air intakes and operable windows on the Building C podium, could preclude the potential for any significant adverse impact associated with the LIRR ventilation exhaust system. Between the Draft and Final EIS, further evaluation and refinement will be performed to confirm this finding. As necessary, based on this review, measures, such as building design modifications, would be developed and implemented by the Applicant to address any significant adverse impact associated with emissions from the LIRR ventilation exhaust system.

E. CONSTRUCTION TRANSPORTATION

As discussed in Chapter 20, "Construction," significant adverse construction-period traffic impacts are anticipated for the Proposed Project and the Alternative Scenario. These impacts are expected to be of equal or lesser magnitude as those identified for corresponding morning and afternoon peak hours from the full occupancy (i.e., operational conditions) of either With Action scenario. Similar mitigation strategies to those developed to address the operational impacts could be undertaken to mitigate the temporary construction impacts to the extent practicable; however, like the operational conditions, some of these temporary impacts could remain unmitigated. Between the DEIS and FEIS, additional mitigation strategies such as the deployment of Traffic Enforcement Agents (TEAs) and the placements of Variable Message Signs (VMSs) would be considered and described where appropriate to potentially improve traffic operations during construction.

F. CONSTRUCTION NOISE

Chapter 20, "Construction," identifies the potential for construction activities generated by the Proposed Actions to result in significant adverse construction noise impacts at ten sensitive receptors under either With Action scenario in the vicinity of the construction work areas, including the High Line and one additional receptor under the Alternative Scenario. At these receptors, construction would produce noise level increases that

Western Rail Yard Modifications

would be noticeable and potentially intrusive during the most noise-intensive nearby construction activities; however, the predicted maximum levels would not persist throughout construction, and the noise levels would fluctuate over the course of the construction period. While the greatest levels of construction noise would not persist throughout construction, these locations would experience construction noise levels whose magnitude and duration could constitute significant adverse impacts, as shown in Figure 20-2.

However, construction would comply with New York City Noise Control Code regulations as well as commit to avoidance of impact pile driving and additional path controls for concrete operations as a Project Component Related to the Environment (PCRE) that goes beyond these regulations. Specific noise control measures would be incorporated in noise mitigation plan(s) required under the New York City Noise Control Code. These measures would include a variety of source and path controls. The results of the construction noise analysis presented in Chapter 20, "Construction," assume that each of the measures described below would be implemented.

Mitigation measures to control noise at the receptors predicted to experience impacts could also be offered during construction of the Proposed Project or Alternative Scenario. While all of the impacted buildings appear to feature modern façade construction, including insulated glass windows and an alternative means of ventilation that would allow for the maintenance of a closed-window condition, it is not possible to definitively determine the presence of these features at all receptors that would have the potential to experience temporary significant adverse construction noise impacts. As described in Chapter 20, "Construction," ten receptors under either With Action scenario (i.e., the High Line north of West 30th Street, Hudson Yards Public Square and Gardens, the Vessel, Hudson River Park between West 26th Street and West 30th Street, Bella Abzug Park, 311 Eleventh Avenue, 606 West 30th Street, the west façade of 553 West 30th Street, the west façade of 34 Hudson Yards, and the west façade of 380 Eleventh Avenue) and one additional receptor (i.e., Site C1) under the Alternative Scenario are predicted to experience a temporary significant adverse construction noise impact. Possible mitigation measures would be explored by the Applicants in more detail between the DEIS and FEIS, in consultation with the lead agency, but could include an offer to make available, at no cost for purchase and installation, storm windows for affected façades that do not already have insulated glass windows and/or one window air conditioner per living room or bedroom at residences or any other noise sensitive spaces that do not already have alternative means of ventilation. These mitigation measures could be implemented prior to the start of construction. Building façades with insulated glass windows or storm windows and alternative ventilation would provide sound attenuation such that even during warm weather conditions, interior noise levels would be approximately 30 dBA less than exterior noise levels. However, the most noise-intensive construction activity nearest the receptors experiencing significant adverse impacts would result in interior noise levels up to 55 dBA L₁₀, which is 10 dBA greater than the level considered acceptable according to CEQR Technical Manual noise exposure guidelines. Consequently, the temporary significant adverse noise impacts predicted to occur at the above-mentioned receptors would be only partially mitigated and thus unavoidable as discussed in Chapter 23, "Unavoidable Adverse Impacts."

For the open space areas where significant adverse construction noise impacts are predicted to occur (i.e., The High Line north of West 30th Street, Hudson Yards Public

Square and Gardens and the Vessel, Hudson River Park between West 26th Street and West 30th Street, and Bella Abzug Park), noise levels near where construction activities are taking place would increase above the construction noise impact criteria and would result in significant adverse noise impacts on these locations. Noise levels at these open space areas are currently above the recommended *CEQR Technical Manual* noise level for outdoor areas and proposed construction activities would exacerbate these exceedances of the recommended level. No practical and feasible mitigation measures have been identified that could be implemented to reduce noise levels below threshold. Therefore, at these receptors, the significant adverse construction noise would be unavoidable during periods of time when construction is occurring. *