

**A. INTRODUCTION**

The technical analyses presented in Chapters 2 through 11 examine the potential for significant adverse impacts resulting from the proposed school facility. Where significant adverse impacts have been identified, measures that would minimize or avoid them have been considered.

**B. TRAFFIC AND PARKING**

As discussed in Chapter 6, “Traffic and Parking,” a number of intersection turning movements and approaches in the study area would experience significant traffic impacts as a result of vehicular traffic generated by the proposed project. These locations are listed below for both the signalized and unsignalized intersections.

*SIGNALIZED INTERSECTIONS*

- The northbound left-turn movement of the Grand Concourse at East 161st Street during the AM and PM peak hours;
- The eastbound shared through and right-turn movement of East 161st Street at the Grand Concourse during the AM and PM peak hours;
- The westbound left-turn movement of East 161st Street at Concourse Village East/Morris Avenue during the AM peak hour;
- The southbound shared through and right-turn movement of Concourse Village East at East 161st Street during the AM peak hour;
- The southbound left-turn movement of Grand Concourse at East 153rd Street during the AM and PM peak hours;
- The eastbound shared through and right-turn movement of East 149th Street and Grand Concourse during the PM peak hour;
- The westbound shared through and right-turn movement of East 149th Street and Grand Concourse during the PM peak hour; and
- The southbound shared through and right-turn movement of Morris Avenue at East 149th Street during the AM and PM peak hours.

*UNSIGNALIZED INTERSECTIONS*

- The eastbound approach of East 153rd Street at Concourse Village West during the AM and PM peak hours.

*RECOMMENDED MITIGATION MEASURES*

Table 15-1 presents the mitigation measures required for each impacted intersection during the AM and PM peak hours, while Table 15-2 shows the capacity analysis results at the impacted intersections with implementation of the proposed mitigation measures. With the mitigation measures in place, all of the impacted intersection approaches/lane groups would operate at the same or better service conditions than under the No Build conditions, except for the intersection of East 153rd Street and Concourse Village West, which would remain unmitigated during both the AM and PM peak hours. All the traffic mitigation measures proposed are subject to review and approval from New York City Department of Transportation (NYCDOT). Once approved, NYCDOT generally implements the mitigation measures before the project is operational. The SCA will coordinate with NYCDOT on the implementation of all appropriate mitigation measures before the opening of the proposed school facility.

*East 161st Street (WB) at Grand Concourse*

The impacts at the northbound left-turn movement at this intersection during the AM and PM peak hours could be mitigated by revising the signal timing plan as presented in Table 15-1.

*East 161st Street (EB) at Grand Concourse*

The impact at the eastbound shared through and right-turn movement at this intersection during the AM and PM peak hours could be mitigated by revising the signal timing plan as presented in Table 15-1.

*East 161st Street at Concourse Village East/Morris Avenue*

The impacts at the westbound left-turn movement and the southbound shared through and right-turn movement at this intersection during the AM peak hour could be mitigated by revising the signal timing plan as presented in Table 15-1.

*East 153rd Street at Grand Concourse*

The impact at the southbound left-turn movement at this intersection during the AM peak hour could be mitigated by shifting eleven seconds of green time from the westbound phase; and by shifting another six seconds from the northbound/southbound phase to the southbound lead phase.

The impact at the southbound left-turn movement at this intersection during the PM peak hour could be mitigated by shifting ten seconds of green time from the westbound phase.

*East 153rd Street and Concourse Village West*

The impacts at the eastbound approach at this intersection during the AM and PM peak hours could be mitigated by restriping the eastbound approach with one exclusive left-turn lane and a through lane, and by installing a new traffic signal. The installation of a new traffic signal at this intersection was discussed with NYCDOT in June 2005. Based on that discussion, NYCDOT did not approve the installation of a new traffic signal at this intersection, but agreed to install new crosswalks to facilitate pedestrian traffic. (A detailed discussion regarding the new crosswalks is presented in the following section under “Transit and Pedestrians.”) In addition, it is anticipated that NYCDOT would investigate the provision of signage on the 153rd Street Bridge which would instruct motorists not to block the access to Concourse Village West while waiting for green signal indication at the Grand Concourse intersection.

**Table 15-1**  
**Recommended Mitigation Measures**

Intersection	Mitigation Measures								
	AM Peak Hour				PM Peak Hour				
East 161st Street & Grand Concourse	Maintain existing signal timings used by NYCDOT.				Maintain existing signal timings used by NYCDOT.				
	<u>Phase</u>			<u>G</u>	<u>A</u>	<u>R</u>	<u>Phase</u>		
	Grand Concourse NB			7	3	4	Grand Concourse NB		
	Grand Concourse NB/SB			57	3	2	Grand Concourse NB/SB		
	East 161st Street EB/WB			38	3	3	East 161st Street EB/WB		
Cycle Length = 120 seconds				Cycle Length = 120 seconds					
East 161st Street & Concourse Village East	Change the phasing order such that Phase 1 is EB only; Phase 2 is EB/WB; Phase 3 is EB L/ WB L; Phase 4 is NB only; and Phase 5 is NB/SB with the following timings.				None Required.				
	<u>Phase</u>			<u>G</u>	<u>A</u>	<u>R</u>			
	East 161st Street EB			20	3				
	East 161st Street EB/WB			8	3	2			
	East 161st Street EB L/WB L			8	3	2			
	Morris Avenue NB			25	3				
	Morris Avenue NB/SB				3	2			
Cycle Length = 90 seconds									
East 153rd Street & Grand Concourse	Shift 11 seconds of green time from the WB phase and 6 seconds from the NB/SB phase to the SB lead phase.				Shift 10 seconds of green time from the WB phase to the SB lead phase.				
East 153rd Street & Concourse Village West	Unmitigated				Unmitigated				
East 149th Street & Grand Concourse	None Required.				Shift 2 seconds of green time from the NB/SB phase to the EB/WB phase.				
East 149th Street & Morris Avenue	Shift 2 seconds of green time from the EB/WB phase to the NB/SB phase.				Shift 3 seconds of green time from the EB/WB phase to the NB/SB phase.				

Table 15-2

2010 No Build, Build, and Build with Mitigation Level of Service Analyses

	2010 No Build				2010 Build				2010 Build with Mitigation				
	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS	
<b>AM Peak Hour</b>													
East 161st Street (WB) & Grand Concourse													
Westbound	L	0.08	29.7	C	L	0.18	31.2	C	L	0.18	30.4	C	
	TR	0.28	32.2	C	TR	0.31	32.6	C	TR	0.30	31.7	C	
Northbound	L	1.61	331.1	F	L	1.79	416.5	F +	L	0.82	46.6	D	
	T	0.28	14.8	B	T	0.30	15.0	B	T	0.25	8.2	A	
Southbound	T	0.36	8.4	A	T	0.39	8.6	A	T	0.48	17.7	B	
	R	0.40	10.7	B	R	0.41	10.9	B	R	0.51	22.0	C	
Intersection		38.0		D	Intersection		42.8		D	Intersection		19.0	
East 161st Street (EB) & Grand Concourse													
Eastbound	L	0.31	33.1	C	L	0.31	33.1	C	L	0.30	32.3	C	
	TR	0.62	39.4	D	TR	0.77	45.8	D +	TR	0.75	43.7	D	
Northbound	TR	0.33	15.4	B	TR	0.35	15.6	B	TR	0.30	8.5	A	
Southbound	L	0.36	12.0	B	L	0.38	13.0	B	T	0.69	37.5	D	
	T	0.46	9.2	A	T	0.51	9.7	A	R	0.62	20.2	C	
Intersection		17.2		B	Intersection		18.6		B	Intersection		21.5	
East 161st Street & Concourse Village East													
Eastbound	L	0.16	13.4	B	L	0.16	13.6	B	L	0.17	14.1	B	
	TR	0.73	30.5	C	TR	0.77	31.8	C	TR	0.77	31.8	C	
Westbound	L	0.67	38.3	D	L	0.73	48.6	D +	L	0.59	36.5	D	
	TR	0.75	40.9	D	TR	0.81	44.5	D	TR	0.77	41.1	D	
Northbound	L	0.22	20.4	C	L	0.23	20.8	C	L	0.22	20.0-	B	
	TR	0.39	21.7	C	TR	0.41	22.1	C	TR	0.40	21.2	C	
Southbound	L	0.12	26.9	C	L	0.12	26.9	C	L	0.11	25.2	C	
	TR	0.80	47.4	D	TR	0.86	54.0	D +	TR	0.79	44.6	D	
Intersection		33.9		C	Intersection		37.2		D	Intersection		34.0	
East 153rd Street & Grand Concourse													
Westbound	L	0.22	33.4	C	L	0.22	33.4	C	L	0.32	43.1	D	
Northbound	TR	0.58	15.3	B	TR	0.67	17.0	B	TR	0.75	23.5	C	
Southbound	L	0.73	20.9	C	L	1.68	337.4	F +	L	0.95	37.8	D	
	T	0.50	6.9	A	T	0.53	7.2	A	T	0.46	1.9	A	
Intersection		12.9		B	Intersection		54.0		D +	Intersection		16.9	
East 153rd Street & Concourse Village West													
	Unsignalized				Unsignalized				Unmitigated				
Eastbound	L	0.37	11.8	B	L	-	-	F- +					
	T	-	-	-	T	-	-	-					
Westbound	TR	-	-	-	TR	-	-	-					
	Intersection				Intersection								

**Table 15-2 (cont'd)**  
**2010 No Build, Build, and Build with Mitigation Level of Service Analyses**

	2010 No Build				2010 Build				2010 Build with Mitigation			
	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS
<b>East 149th Street &amp; Morris Avenue</b>												
Eastbound	L	0.10	16.9	B	L	0.11	17.0	B	L	0.11	18.2	
	TR	0.47	21.4	C	TR	0.47	21.4	C	TR	0.49	22.9	
Westbound	L	0.47	26.1	C	L	0.47	26.1	C	L	0.49	28.7	B
	TR	0.27	18.3	B	TR	0.30	18.7	B	TR	0.31	20.0-	C
Northbound	L	0.37	28.8	C	L	0.41	30.7	C	L	0.38	27.8	C
	TR	0.48	28.0	C	TR	0.51	28.5	C	TR	0.49	26.7	B
Southbound	L	0.17	22.7	C	L	0.29	25.2	C	L	0.27	23.5	C
	TR	0.91	55.1	E	TR	0.95	61.4	E +	TR	0.91	53.0	C
	Intersection		30.0	C	Intersection		31.6	C	Intersection		30.2	C
<b>PM Peak Hour</b>												
<b>East 161st Street (WB) &amp; Grand Concourse</b>												
Westbound	L	0.07	22.5	C	L	0.13	23.2	C	L	0.17	31.1	C
	TR	0.43	35.9	D	TR	0.47	36.6	D	TR	0.44	34.7	C
Northbound	L	1.11	110.1	F	L	1.18	137.4	F +	L	1.02	75.2	E
	T	0.39	21.8	C	T	0.43	22.3	C	T	0.31	8.0	A
Southbound	T	0.36	21.5	C	T	0.39	21.8	C	T	0.34	15.4	B
	R	0.45	25.5	C	R	0.49	27.2	C	R	0.40	18.4	B
	Intersection		34.6	C	Intersection		37.4	D	Intersection		22.8	C
<b>East 161st Street (EB) &amp; Grand Concourse</b>												
Eastbound	L	0.38	26.9	C	L	0.38	26.9	C	L	0.49	36.9	D
	TR	0.66	42.2	D	TR	0.77	47.6	D +	TR	0.73	43.9	D
Northbound	TR	0.47	22.9	C	TR	0.51	23.4	C	TR	0.36	8.4	A
Southbound	L	0.3	20.0+	C	L	0.31	21.8	C	T	0.55	30.4	C
	T	0.47	23.1	C	T	0.53	23.9	C	R	0.45	16.9	B
	Intersection		26.1	C	Intersection		27.5	C	Intersection		19.6	B
<b>East 153rd Street &amp; Grand Concourse</b>												
Westbound	L	0.27	34.1	C	L	0.27	34.1	C	L	0.38	43.3	D
Northbound	TR	0.62	16.0	B	TR	0.69	17.2	B	TR	0.69	17.2	B
Southbound	L	0.72	22.2	C	L	1.45	245.5	F +	L	0.93	37.9	D
	T	0.33	5.7	A	T	0.38	6.0	A	T	0.34	1.7	A
	Intersection		14.4	B	Intersection		39.6	D	Intersection		16.1	B
<b>East 153rd Street &amp; Concourse Village West</b>												
	<b>Unsignalized</b>				<b>Unsignalized</b>							
Eastbound	L	0.28	12.0	B	L	-	-	F +	Unmitigated			
	T	-	--	-	T	-	-					
Westbound	TR	-	-	-	TR	-	-	-				
	Intersection		-	-	Intersection		-	-				

Table 15-2 (cont'd)

2010 No Build, Build, and Build with Mitigation Level of Service Analyses

	2010 No Build				2010 Build				2010 Build with Mitigation			
	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS
East 149th Street & Grand Concourse												
Eastbound	TR	0.93	61.9	E	TR	0.98	70.5	E +	TR	0.92	58.4	E
Westbound	TR	0.88	55.4	E	TR	0.95	65.4	E +	TR	0.89	55.3	E
Northbound	LTR	0.40	4.8	A	LTR	0.42	4.9	A	LTR	0.43	6.0	A
Southbound	LTR	0.46	5.2	A	LTR	0.53	5.8	A	LTR	0.54	7.0	A
	Intersection		26.8	C	Intersection		30.2	C	Intersection		26.4	C
East 149th Street & Morris Avenue												
Eastbound	L	0.13	17.7	B	L	0.14	17.8	B	L	0.15	19.7	B
	TR	0.39	20.0-	B	TR	0.39	20.0-	B	TR	0.41	22.0	C
Westbound	L	0.33	21.6	C	L	0.33	21.6	C	L	0.36	24.2	C
	TR	0.42	20.4	C	TR	0.44	20.8	C	TR	0.46	23.0	C
Northbound	L	0.12	22.4	C	L	0.15	23.4	C	L	0.13	20.9	C
	TR	0.41	26.3	C	TR	0.43	26.6	C	TR	0.40	24.2	C
Southbound	L	0.33	25.9	C	L	0.49	30.3	C	L	0.45	27.1	C
	TR	1.04	84.4	F	TR	1.09	101.3	F +	TR	1.03	79.5	E
	Intersection		37.1	D	Intersection		41.8	D	Intersection		37.1	D
<b>Notes:</b> L = Left Turn, T = Through, R = Right Turn, DefL = Defacto Left Turn; LOS = Level of Service + Significant traffic impact												

It should be noted that the provision of signage on East 153rd Street in the absence of a new traffic signal at the East 153rd Street and Concourse Village West intersection would not mitigate the traffic impacts at the eastbound 153rd Street approach. Therefore, traffic impacts to the intersection of Concourse Village West and East 153rd Street would remain unmitigated in the 2010 Build conditions.

*East 149th Street at Grand Concourse*

The impacts at the eastbound and westbound approaches at this intersection during the PM peak hour could be mitigated by shifting two seconds of green time from the northbound/southbound phase to the eastbound/westbound phase.

*East 149th Street at Morris Avenue*

The impact at the southbound shared through and right-turn movement at this intersection during the AM peak hour could be mitigated by shifting two seconds of green time from the eastbound/westbound phase to the northbound/southbound phase.

The impact at the southbound shared through and right-turn movement at this intersection during the PM peak hour could be mitigated by shifting three seconds of green time from the eastbound/westbound phase to the northbound/southbound phase.

**C. TRANSIT AND PEDESTRIANS**

As discussed in Chapter 7, “Transit and Pedestrians,” the proposed project would result in significant adverse impacts on two pedestrian elements and a pedestrian safety impact at one intersection. To alleviate these impacts, mitigation measures were identified. The analysis results and recommendations are provided below.

**PEDESTRIAN ELEMENTS**

For areas outside the Manhattan Central Business District (CBD), project-related sidewalk impacts are considered significant and require examination of mitigation if there is an increase of 2 pedestrians per foot per minute (PFM) over a No Build condition that is characterized by flow rates greater than 13 PFM (mid-LOS D). For corners and crosswalks, a decrease of 1 square foot per minute (SFP) under the Build condition when the No Build condition has an average occupancy of less than 20 SFP (mid-LOS D) is considered significant. However, if there is less than a 30-person increase at a location within the peak 15-minute time period, any impact is not considered significant since such increases would not typically be perceptible. Mitigation of significant crosswalk impacts would involve the widening of painted areas to allow pedestrians additional crossing space. Mitigation for significant corner impacts would involve the increase in total usable pedestrian square feet of corner area and requires the widening of the actual sidewalk widths and crosswalk widths that are directly adjoining the impacted corner location. The specific recommended mitigation measures and an analysis of the resulting pedestrian element operations are described below.

- The south crosswalk at the intersection of East 161st Street and Concourse Village West would deteriorate from a No Build LOS D with a maximum surge of 21 SFP to a Build LOS D with a maximum surge 19 SFP during the PM peak 15-minute period. A one-foot widening of this crosswalk would restore the Build operating conditions to acceptable levels.

As illustrated in Table 15-3, all projected crosswalk impacts would be mitigated with the above recommended measures. Recommended traffic mitigation measures previously identified, would not adversely impact any of the pedestrian analysis locations during either the AM or PM peak periods.

**Table 15-3  
2010 Mitigated and Build Conditions: Crosswalks**

Intersection	Crosswalk	Width (feet)	No Build Condition		Build Condition		Mitigated Condition		
			SFP	LOS	SFP	LOS	Width	SFP	LOS
<b>PM Peak Period</b>									
E. 161st Street & Concourse Village West	South	12	21	D	19	D	13	20	D

**PEDESTRIAN SAFETY**

The proposed project could result in a significant pedestrian safety impact at the intersection of East 153rd Street and Concourse Village West. As discussed in the preceding section, NYCDOT has not approved the installation of a new traffic signal at this intersection. However, they have agreed to install a crosswalk across the east side of East 153rd Street and Grand Concourse intersection, and another crosswalk will be installed across Concourse Village West (north of 153rd Street). In addition, NYCDOT will install a barrier on the south side of East 153rd Street to prohibit pedestrians from crossing East 153rd Street at Concourse Village West. This would

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force the pedestrians to cross East 153rd Street at the newly proposed crosswalk at the east side of East 153rd Street/Grand Concourse intersection. Pedestrian capacity analysis was conducted for this crosswalk to determine the service conditions in relation to the pedestrian flows. Based on the analysis results, the crosswalk would operate at an acceptable LOS C during both the AM and PM peak periods in the 2010 Build conditions.

In addition to the above measures, it is recommended that high-visibility crosswalks be provided for the newly proposed crosswalks at Concourse Village West and East 153rd Street. Also, school area traffic control devices including the School Advance Warning Sign, School Crosswalk Warning Sign, and School Reduced Speed Ahead Sign should be considered for the study area streets/roadways—specifically, on East 153rd Street—to further enhance the pedestrian safety conditions. Furthermore, using School Crossing Guards, specifically at the intersection of East 153rd Street and Concourse Village West—during the AM and PM peak hours of pedestrian activity—is also anticipated to improve pedestrian safety conditions.

It is anticipated that implementation of the measures described above would mitigate the potential pedestrian safety impact at East 153rd Street and Concourse Village West intersection during both the analysis periods.

**AIR QUALITY**

Chapter 8, “Air Quality,” shows the maximum predicted 8-hour carbon monoxide (CO) concentrations for the proposed project, and concludes that the proposed project would not result in significant adverse air quality impacts. Therefore, no air quality mitigation is required. This section considers the effects on air quality of the proposed project with implementation of the traffic mitigation measures discussed above.

Table 15-4 illustrates the effect that proposed traffic mitigation measures developed as part of the proposed project’s traffic analysis (see Chapter 6, “Traffic and Transportation”) would have on maximum predicted CO concentrations with the proposed project. The values shown are the highest predicted concentrations for the analyzed receptor locations. Table 15-4 shows that the proposed traffic mitigation measures would not result in any violations of the CO standard or any significant impacts at the receptor locations.

**Table 15-4**  
**Future (2010) Maximum Predicted 8-Hour Average**  
**Carbon Monoxide Concentrations (parts per million)**

Site	Location	Time Period	8-Hour Concentration (ppm)		
			No Build	Build	Build with Mitigation
1	Grand Concourse & 153rd Street	AM	3.1	3.2	3.2

**Note:** 8-hour CO standard is 9 ppm.

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