Chapter 13: Mitigation

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 project. These locations are listed as follows:

- The southbound left-turn movement of Adams Street at Tillary Street during the AM and PM peak hours;
- The eastbound shared through and right-turn movement of Tillary Street at Jay Street during the AM peak hour;
- The eastbound left-turn movement of Tillary Street at Flatbush Avenue during the AM and PM peak hours;
- The eastbound shared through and right-turn movement of Tillary Street at Flatbush Avenue during the AM peak hour;
- The westbound approach of Willoughby Street at Jay Street during the AM and PM peak hours;
- The eastbound left-turn movement of Willoughby Street at Flatbush Avenue during the AM peak hour; and
- The northbound left-turn movement of Flatbush Avenue at Willoughby Street during the AM and PM peak hours;

RECOMMENDED MITIGATION MEASURES

Table 13-1 presents the mitigation measures required for each impacted intersection during the AM and PM peak hours, while Table 13-2 shows the capacity analysis results at the impacted intersections with the 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 Tillary Street and Flatbush Avenue, which would remain unmitigated during the AM peak hour.

Table 13-1
Recommended Mitigation Measures

Intersection	AM Peak Hour	PM Peak Hour
Tillary St. & Adams St.	Shift 1 second green time from the NB/SB phase to the SB lagging phase.	Shift 1 second green time from the NB/SB phase to the SB lagging phase.
Tillary St. & Jay St.	Shift 1 second of green time from the NB/SB phase to the EB/WB phase. Prohibit parking on the eastbound approach for 50 feet from 7AM to 9AM.	None Required.
Tillary St. & Flatbush Ave.	Unmitigated.	Shift 1 second of green time from the EB/WB phase to the EB/WB left-only phase.
Willoughby St. & Jay St.	Shift 2 seconds of green time from the NB/SB phase to the EB/WB phase.	Shift 1 second of green time from the NB/SB phase to the EB/WB phase.
Willoughby St. & Flatbush Ave.	Shift 2 seconds of green time from the NB/SB phase to the NB leading phase and 1 second of green time from the NB/SB phase to the EB/WB phase.	Shift 2 seconds of green time from the NB/SB phase to the NB leading phase

TILLARY STREET AT ADAMS STREET

The impacts at the southbound left-turn movement at this intersection during the AM and PM peak hours could be mitigated by shifting one second of green time from the northbound/southbound phase to the southbound lagging phase.

TILLARY STREET AT JAY STREET

The impact at the eastbound shared through-right movement at this intersection during the AM peak hour could be mitigated by shifting one second of green time from the northbound/southbound phase to the eastbound/westbound phase, and by prohibiting parking at the eastbound approach during the AM peak hour.

TILLARY STREET AT FLATBUSH AVENUE

The impacts at both the eastbound left-turn movement and the shared through-and right-turn movement at this intersection during the AM peak hour would remain unmitigated. The traffic conditions at this intersection are very congested and standard traffic engineering measures would not mitigate significant traffic impacts during the AM peak hour. At this intersection, roadway design modifications may be required to improve the traffic operating condition.

The impact at the eastbound left-turn movement at this intersection during the PM peak hour could be mitigated by shifting one second of green time from the eastbound/westbound through phase to the eastbound/westbound left-only phase.

WILLOUGHBY STREET AT JAY STREET

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

Table 13-2
2008 No Build, Build and Build with Mitigation Conditions
Level of Service Analyses

		AM Peak Hour									
		2008 No Build			2008 Build			2008 Mitigation			
	Lane Group	V/C Ratio	Delay (sec)	LOS	V/C Ratio	Delay (sec)	LOS	V/C Ratio	Delay (sec)	LOS	Mitigation Measures
Tillary Street	EB-L	1.00	106.5	F	1.00	106.5	F	1.00	106.5	F	**Signal Retiming:**
Adams Street	EB-TR	0.64	40.0	D	0.65	40.4	D	0.65	40.4	D	Shift 1 second of
	WB-L	1.11	149.5	F	1.11	149.5	F	1.11	149.5	F	green time from
	WB-T	0.82	62.5	E	0.82	62.5	E	0.82	62.5	E	NB/SB phase to
	WB-R	0.85	48.7	D	0.85	48.7	D	0.83	46.2	D	SB lagging phase
	NB-L	0.53	65.5	E	0.53	65.5	E	0.53	65.5	E	
	NB-TR	0.84	37.8	D	0.89	41.6	D	0.91	44.2	D	
	SB-L	2.32	655.1	F	2.34	660.3	F+	2.23	610.3	F	
	SB-TR	0.40	21.6	C	0.40	21.6	C	0.40	21.6	C	
	Int.		146.1	F		146.4	F		139.0	F	
Tillary Street	EB-L	0.88	101.8	F	0.88	101.8	F	0.85	92.7	F	**Signal Retiming:**
Jay Street	EB-TR	0.93	44.5	D	0.99	54.9	D+	0.92	42.2	D	Shift 1 second of
	WB-L	0.81	69.5	E	0.81	69.8	E	0.81	69.7	E	green time from
	WB-TR	0.64	20.2	C	0.64	20.2	C	0.63	19.4	B	NB/SB phase to
	NB-L	0.22	28.9	C	0.22	28.9	C	0.23	29.7	C	EB/WB phase
	NB-T	0.31	29.8	C	0.31	29.8	C	0.31	30.7	C	**Daylighting:**
	NB-R	0.80	39.7	D	0.80	39.7	D	0.82	41.9	D	Prohibit parking on
	SB-L	0.18	28.3	C	0.18	28.3	C	0.18	29.1	C	eastbound approach
	SB-T	0.11	26.8	C	0.11	26.8	C	0.12	27.5	C	for 50 feet from
	SB-R	0.11	26.9	C	0.11	26.9	C	0.11	27.6	C	7AM to 9AM
	Int.		36.3	D		40.5	D		35.4	D	
Tillary Street	EB-L	1.78	413.8	F	1.80	420.6	F+				
Flatbush Avenue	EB-TR	1.05	85.9	F	1.10	101.8	F+				
	WB-L	0.07	43.3	D	0.09	43.5	D				
	WB-TR	0.86	51.7	D	0.86	51.7	D				
	WB-R	0.43	40.4	D	0.43	40.4	D				
	NB-L	1.07	119.2	F	1.07	119.2	F				
	NB-T	0.55	26.4	C	0.55	26.4	C				
	SB-T	0.72	41.0	D	0.73	41.2	D				
	SB-R	1.01	93.4	F	1.01	93.4	F				
	Int.		103.4	F		108.0	F				
Willoughby Street	EB-LR	0.10	21.2	C	0.10	21.2	C	0.09	19.7	B	**Signal Retiming:**
Jay Street	WB-LTR	1.07	102.3	F	1.13	121.0	F+	1.05	92.7	F	Shift 2 seconds of
	NB-LT	0.89	33.4	C	0.90	34.6	C	0.94	42.1	D	green time from
	SB-TR	0.49	15.6	B	0.51	16.1	B	0.53	17.8	B	NB/SB phase to
	Int.		46.0	D		52.7	D		49.2	D	EB/WB phase
Willoughby Street	EB-L	1.06	129.8	F	1.07	131.8	F+	1.02	114.7	F	**Signal Retiming:**
Flatbush Avenue	EB-R	0.16	25.8	C	0.16	25.8	C	0.15	23.7	C	shift 2 seconds of
	WB-LTR	0.73	54.3	D	0.73	54.5	D	0.70	51.6	D	green time from
	NB-L	0.78	89.6	F	0.90	109.7	F+	0.75	79.8	E	NB/SB phase to NB
	NB-T	0.62	12.3	B	0.62	12.3	B	0.62	12.9	B	leading phase and 1
	SB-TR	0.44	17.1	B	0.46	17.4	B	0.48	19.4	B	second of green time
	Int.		25.4	C		26.5	C		25.3	C	from NB/SB phase to EB/WB phase

Table 13-2 (cont'd)
No Build, Build and Mitigation LOS Table

		PM Peak Hour									
		2008 No Build			2008 Build			2008 Mitigation			
	Lane Group	V/C Ratio	Delay (sec)	LOS	V/C Ratio	Delay (sec)	LOS	V/C Ratio	Delay (sec)	LOS	Mitigation Measures
Tillary Street Adams Street	EB-L	0.72	66.6	E	0.72	66.6	E	0.72	66.6	E	**Signal Retiming:** Shift 1 second of green time from NB/SB phase to SB lagging phase.
	EB-TR	0.55	37.6	D	0.56	37.9	D	0.56	37.9	D	
	WB-L	1.09	142.8	F	1.09	142.8	F	1.09	142.8	F	
	WB-T	0.81	61.5	E	0.81	61.5	E	0.81	61.5	E	
	WB-R	0.61	37.0	D	0.61	37.0	D	0.59	35.9	D	
	NB-L	0.55	67.2	E	0.55	67.2	E	0.55	67.2	E	
	NB-TR	0.55	29.1	C	0.61	30.3	C	0.62	31.2	C	
	SB-L	1.87	452.2	F	1.88	457.4	F+	1.79	417.2	F	
	SB-TR	0.48	22.8	C	0.48	22.8	C	0.48	22.8	C	
	Int.		104.7	F		104.4	F		98.5	F	
Tillary Street Flatbush Avenue	EB-L	1.67	365.4	F	1.69	372.1	F+	1.60	334.5	F	**Signal Retiming:** Shift 1 second of Green time from EB/WB phase to EB/WB left-only phase
	EB-TR	0.78	45.6	D	0.82	48.0	D	0.85	50.5	D	
	WB-L	0.03	42.8	D	0.04	43.0	D	0.04	42.1	D	
	WB-TR	0.56	39.9	D	0.56	39.9	D	0.58	41.1	D	
	WB-R	0.49	42.2	D	0.49	42.2	D	0.51	43.8	D	
	NB-L	1.08	122.1	F	1.08	122.1	F	1.08	122.1	F	
	NB-T	0.57	26.9	C	0.57	26.9	C	0.57	26.9	C	
	SB-T	0.75	41.7	D	0.75	41.9	D	0.75	41.9	D	
	SB-R	0.94	74.7	E	0.94	74.7	E	0.94	74.7	E	
	Int.		89.2	F		90.3	F		86.4	F	
Willoughby Street Jay Street	EB-LR	0.24	24.2	C	0.24	24.2	C	0.23	23.2	C	**Signal Retiming:** Shift 1 second of Green time from NB/SB phase to EB/WB phase
	WB-LTR	1.02	91.2	F	1.07	102.2	F+	1.02	88.7	F	
	NB-LT	0.48	15.1	B	0.49	15.3	B	0.50	16.0	B	
	SB-TR	0.51	16.0	B	0.54	16.5	B	0.55	17.4	B	
	Int.		35.6	D		40.2	D		37.0	D	
Willoughby Street Flatbush Avenue	EB-L	1.01	113.6	F	1.02	115.2	F	1.02	115.2	F	**Signal Retiming:** Shift 2 seconds of green time from NB/SB phase to NB leading phase
	EB-R	0.29	28.2	C	0.29	28.2	C	0.28	26.7	C	
	WB-LTR	0.46	42.9	D	0.46	42.9	D	0.46	42.9	D	
	NB-L	1.01	136.8	F	1.13	173.4	F+	0.94	111.1	F	
	NB-T	0.46	10.1	B	0.46	10.1	B	0.46	10.1	B	
	SB-TR	0.67	21.3	C	0.69	21.9	C	0.72	23.6	C	
	Int.		27.4	C		29.7	C		27.8	C	

WILLOUGHBY STREET AT FLATBUSH AVENUE

The impact at the eastbound left-turn movement at this intersection during the AM peak hour could be mitigated by shifting one second of green time from the northbound/southbound phase to the eastbound/westbound phase. The impacts at the northbound left-turn movement at this intersection during the AM and PM peak hours could be mitigated by shifting two seconds of green time from the northbound/southbound phase to the northbound leading phase.

All the mitigation measures discussed above are subject to review and approval by NYCDOT.

C. 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 13-3 illustrates the effects that the proposed traffic mitigation measures developed as part of the proposed project's traffic analysis (see Chapter 6, "Traffic and Parking") 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 13-3 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 13-3
Future (2008) Maximum Predicted 8-Hour Average Carbon Monoxide Concentrations (ppm)

Site	Location	Time Period	8-Hour Concentration (ppm)		
			No Build	Build	Build with Mitigation
1	Tillary Street and Adams Street	AM	4.6	4.7	4.7
2	Tillary Street and Flatbush Avenue	AM	5.0	5.0	5.0
National Ambient Air Quality Standards—8-hour: 9 ppm.					

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