

## A. INTRODUCTION

The technical analyses presented in Chapters 3 through 17 examine the potential for significant adverse impacts resulting from the Proposed Action. Where significant adverse impacts have been identified, measures are proposed to minimize or avoid them. This chapter discusses these mitigation measures in the areas of traffic and transportation, and construction.

## B. TRAFFIC AND TRANSPORTATION

As discussed in Chapter 13, “Traffic and Transportation,” the Proposed Action would result in significant adverse impacts at eight study area intersections. To alleviate these impacts, implementable mitigation measures were identified for all the project-generated impacts. The associated results and recommendations are provided below.

Table 18-1 summarizes the recommended mitigation measures for each of the impacted locations. These recommended measures are subject to review and approval by the New York City Department of Transportation (NYCDOT). Tables 18-2 and 18-3 present comparisons of No Build, Build, and Mitigated Build conditions during the weekday AM and PM peak hours, respectively. With the recommended mitigation measures in place, all impacted intersection approaches/lane groups would operate at equal or better service conditions as compared to No Build levels, or at acceptable service conditions (45.0 or less seconds of delay). In addition, the implementation of these measures would not result in significant adverse impacts to other intersection approaches and lane groups.

**Table 18-1**  
**Mitigation Measures**

Intersection	Mitigation Measures	
	AM Peak Hour	PM Peak Hour
South Street and Pike Street	Prohibit parking and add a second traffic lane to the southbound approach. Shift 3 seconds of green time from the north-south phase to the northbound lead phase.	Prohibit parking and add a second traffic lane to the southbound approach. Shift 4 seconds of green time from the east-west phase and 1 second of green time from the north-south phase to the northbound lead phase.
South Street and Market Slip	Prohibit parking and add a second traffic lane to the southbound approach.	Prohibit parking and add a second traffic lane to the southbound approach.
South Street and Catherine Slip	Prohibit parking and add a second traffic lane to the southbound approach.	Prohibit parking and add a second traffic lane to the southbound approach.
South Street and Fulton Street	None required.	Shift 9 seconds of green time from the pedestrian phase to the north-south phase.
Water Street and Broad Street	Shift 10 seconds green time from the north-south phase to the east-west phase.	Shift 10 seconds green time from the north-south phase to the east-west phase.

## East River Waterfront Esplanade and Piers

**Table 18-1(cont'd)**  
**Mitigation Measures**

Intersection	Mitigation Measures	
	AM Peak Hour	PM Peak Hour
Water Street and Whitehall Street	Stripe the existing northbound approach as two traffic lanes	Stripe the existing northbound approach as two traffic lanes
	Develop a New Signal Timing/Phasing:	Develop a New Signal Timing/Phasing:
	Phase Green Amber All-Red	Phase Green Amber All-Red
	EB 23 3 2	EB 23 3 2
	Peds 9 11 2	Peds 9 11 2
	SB 12 3 0	SB 6 3 0
	NB/SB 25 3 2	NB/SB 26 3 2
	Cycle Length = 90 seconds	Cycle Length = 90 seconds
Pearl Street and Broad Street	Shift 1 second of green time from the southbound phase to the east-west phase.	None required.
State Street and Broad Street	Shift 7 second green time from the east-west phase to the southbound phase.	None required.

**Table 18-2**  
**2009 No Build, Build, and Build with Mitigation Conditions Level of Service Analysis—AM Peak Hour**

Intersection	2009 No Build				2009 Build				2009 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>Signalized</b>												
<b>South St. &amp; Pike St.</b>												
Eastbound	L	0.36	27.1	C	L	0.36	27.1	C	L	0.36	27.1	C
	R	0.77	41.7	D	R	0.78	42.4	D	R	0.77	42.1	D
Northbound	LT	1.16	107.5	F	L	1.39	218.5	F*	L	1.07	87.5	F
					T	0.43	12.0	B	T	0.45	12.3	B
Southbound	TR	0.72	24.5	C	TR	1.48	250.3	F*	TR	0.74	27.0	C
	Intersection		55.6	E	Intersection		153.7	F	Intersection		36.9	D
<b>South St. &amp; Market Slip</b>												
Eastbound	L	0.04	19.8	B	L	0.05	19.8	B	L	0.05	19.8	B
	R	0.03	19.7	B	R	0.03	19.7	B	R	0.03	19.7	B
Northbound	LT	0.97	48.3	D	L	0.25	14.5	B	L	0.21	13.2	B
					T	0.89	34.8	C	T	0.93	40.0	D
Southbound	TR	0.66	17.0	B	TR	1.35	185.9	F*	TR	0.62	16.1	B
	Intersection		30.0	C	Intersection		121.3	F	Intersection		25.2	C
<b>South St. &amp; Catherine Slip</b>												
Eastbound	L	0.11	20.6	C	L	0.11	20.6	C	L	0.11	20.6	C
	R	0.11	20.7	C	R	0.12	20.8	C	R	0.12	20.8	C
Northbound	LT	0.93	40.3	D	L	0.17	12.3	B	L	0.14	11.6	B
					T	0.87	31.6	C	T	0.90	35.7	D
Southbound	TR	0.60	15.7	B	TR	1.22	131.5	F*	TR	0.56	15.0	B
	Intersection		26.0	C	Intersection		85.1	F	Intersection		23.2	C
<b>Water St. &amp; Broad Street</b>												
Eastbound	LTR	1.09	109.8	F	LTR	2.72	830.9	F*	LTR	1.04	89.2	E
	LTR	1.08	91.1	F	L	1.50	277.9	F*	L	1.03	83.2	D
Northbound					TR	1.38	214.2	F*	TR	1.03	67.7	E
	LTR	0.65	18.0	B	LTR	0.59	16.3	B	LTR	0.75	28.0	C
Southbound	LTR	0.44	13.9	B	LTR	0.35	12.5	B	LTR	0.44	19.6	B
	Intersection		54.8	D	Intersection		222.8	F	Intersection		54.8	D

Table 18-2 (cont'd)

**2009 No Build, Build, and Build with Mitigation Conditions Level of Service Analysis—AM Peak Hour**

Intersection	2009 No Build				2009 Build				2009 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
Water St. & Whitehall St.												
Eastbound	LR	0.94	82.5	F	LTR	0.70	44.4	D	LTR	0.89	73.9	E
Westbound	L	1.06	102.6	F								
	LT	0.11	26.2	C								
	R	0.25	28.5	C								
Northbound	LT	0.70	30.0	C	LTR	0.98	61.2	E*	LTR	0.84	42.9	D
Southbound	T	0.19	18.4	B	DefL	1.59	316.0	F*	DefL	0.88	44.3	D
					T	0.51	23.8	C	T	0.45	19.3	B
	Intersection		53.7	D	Intersection		104.7	F	Intersection		41.7	D
Pearl St. & Broad Street												
Eastbound	TR	0.27	15.0	B	TR	0.27	15.0	B	TR	0.26	14.4	B
Westbound	LT	0.50	18.4	B	LT	0.92	45.9	D*	LT	0.90	41.0	D
Northbound	LR	0.87	77.7	E	LR	0.87	77.7	E	LR	0.87	77.7	E
Southbound	LTR	0.50	43.9	D	LTR	0.50	43.9	D	LTR	0.55	47.6	D
	Intersection		30.9	C	Intersection		44.1	D	Intersection		41.7	D
Pearl St. & State Street												
Eastbound	T	0.53	15.9	B	T	0.74	22.8	C	T	0.87	37.3	D
Westbound	T	0.46	13.7	B	T	0.28	11.6	B	T	0.33	16.0	B
Southbound	LR	0.63	33.2	C	LR	1.08	99.8	F*	LR	0.85	41.9	D
	Intersection		18.1	B	Intersection		42.6	D	Intersection		32.6	C
Notes:												
L = Left Turn, T = Through, R = Right Turn, DefL = Defacto Left Turn; LOS = Level of Service.												
+ Significant traffic impact.												
(1) No mitigation was necessary at this location during the PM period, but lane configuration and signal phasing changed to conform to AM mitigation.												

Table 18-3

**2009 No Build, Build, and Build with Mitigation Conditions Level of Service Analysis—PM Peak Hour**

Intersection	2009 No Build				2009 Build				2009 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
South St. & Pike St.												
Eastbound	L	0.48	29.2	C	L	0.48	29.2	C	L	0.56	34.7	C
	R	0.57	31.9	C	R	0.61	33.4	C	R	0.71	41.6	D
Northbound	LT	1.22	129.8	F	L	1.52	287.1	F*	L	1.14	127.5	F
					T	0.61	15.6	B	T	0.58	12.9	B
Southbound	TR	1.11	86.7	F	TR	2.27	600.1	F*	TR	1.08	75.0	E
	Intersection		88.7	F	Intersection		355.8	F	Intersection		63.6	E
South St. & Market Slip												
Eastbound	L	0.06	20.0+	C	L	0.07	20.0+	C	L	0.07	20.0+	C
	R	0.07	20.1	C	R	0.07	20.1	C	R	0.07	20.1	C
Northbound	LT	1.29	164.3	F	L	0.61	44.3	D	L	0.61	44.3	D
					T	1.06	73.9	E	T	1.10	87.5	F
	Intersection		82.5	F	Intersection		337.7	F	Intersection		49.3	D
South St. & Catherine Slip												
Eastbound	L	0.35	24.1	C	L	0.35	24.1	C	L	0.35	24.1	C
	R	0.37	24.7	C	R	0.37	24.8	C	R	0.37	24.7	C
Northbound	LT	1.05	69.0	E	L	0.41	26.5	C	L	0.37	22.8	C
					T	0.93	41.0	D	T	0.97	48.1	D
Southbound	TR	0.88	25.7	C	TR	1.82	394.0	F*	TR	0.84	22.9	C
	Intersection		38.2	D	Intersection		241.2	F	Intersection		30.0	C

Table 18-3(cont'd)

2009 No Build, Build, and Build with Mitigation Conditions Level of Service Analysis—PM Peak Hour

Intersection	2009 No Build				2009 Build				2009 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
South St. & Fulton St.												
Northbound	T	0.56	15.6	B	T	1.15	107.6	F*	T	0.97	44.3	D
Southbound	T	0.88	32.7	C	T	0.68	19.2	B	T	0.58	11.4	B
	Intersection		24.3	C	Intersection		64.3	E	Intersection		28.2	C
Water St. & Broad Street												
Eastbound	LTR	0.91	59.7	E	LTR	1.92	463.1	F*	LTR	0.94	59.3	E
Westbound	LTR	1.02	81.0	F	L	1.64	337.1	F*	L	1.01	75.9	E
					TR	1.01	75.6	E	TR	0.75	28.6	C
Northbound	LTR	0.70	19.4	B	LTR	0.45	13.8	B	LTR	0.58	22.4	C
Southbound	LTR	0.24	11.4	B	LTR	0.20	11.0	B	LTR	0.26	17.1	B
	Intersection		41.5	D	Intersection		174.1	F	Intersection		40.6	D
Water St. & Whitehall St. (1)												
Eastbound	LR	1.01	100.7	F	LTR	0.76	49.0	D	LTR	0.76	49.0	D
Westbound	L	1.65	342.6	F								
	LT	0.08	25.8	C								
	R	0.57	36.5	D								
Northbound	LT	0.55	24.8	C	LTR	0.75	32.1	C	LTR	0.62	31.6	C
Southbound	T	0.14	18.0	B	LT	0.65	25.8	C	LT	0.73	28.9	C
	Intersection		136.0	F	Intersection		31.7	C	Intersection		33.0	C
Notes:												
L = Left Turn, T = Through, R = Right Turn, DefL = Defacto Left Turn; LOS = Level of Service.												
+ Significant traffic impact.												
(1) No mitigation was necessary at this location during the PM period, but lane configuration and signal phasing changed to conform to AM mitigation.												

**SOUTH STREET BETWEEN MONTGOMERY STREET AND ROBERT F. WAGNER SR. PLACE**

The Proposed Action would result in the reconfiguration of South Street from two to one southbound lanes, which would result in significant adverse impacts at its intersections with Pike Street, Market Slip, and Catherine Slip. To mitigate these impacts it is recommended that parking be prohibited, to allow for an additional southbound travel lane through this section of South Street. In addition, a signal timing adjustment would be required at the intersection of South and Pike Streets.

It should be noted that the NYCDOT has been exploring a plan to improve congestion on the FDR Drive in the vicinity of the Brooklyn Bridge. This plan would improve the ramps to the Brooklyn Bridge, which are currently narrow and severely congest southbound traffic on the FDR Drive. Because existing delays are extensive during most of the day, many motorists exit the FDR Drive and access the Brooklyn Bridge via South Street, Robert F. Wagner Sr. Place, and the Pearl Street ramp. As a result, southbound volumes on South Street include the diverted traffic from the FDR Drive.

NYCDOT's proposed widening of the FDR ramps to the Brooklyn Bridge would substantially reduce the existing queues that result in a diversion of traffic to South Street. As a result, southbound volumes on South Street would decrease between Jackson Street and Robert F. Wagner Sr. Place. Therefore, it is anticipated that with implementation of the Brooklyn Bridge ramps project, the above-described mitigation for southbound South Street would not be necessary.

**SOUTH STREET AND FULTON STREET**

The Proposed Action's PM peak hour impact at this location would be fully mitigated by transferring signal time from the pedestrian only phase to the north-south traffic phase. This timing adjustment would not adversely affect pedestrian circulation since a wide crossing area is provided and the remaining signal time would be adequate to safely cross South Street.

**WATER STREET AND BROAD STREET**

The Proposed Action's traffic impacts in the AM and PM peak hour at Water and Broad Street would be fully mitigated by transferring 10 seconds of signal time from the north-south signal phase to the east-west signal phase. There would be adequate capacity for the north-south approach to accommodate a shorter signal phase without resulting in adverse impacts to its operation.

**WATER STREET AND WHITEHALL STREET**

The Proposed Action's impact at this location would be mitigated with a combination of lane striping and signal timing and phasing. The existing northbound approach is unmarked and operates as a wide, single traffic lane. However, this approach could accommodate two lanes within the existing alignment of the roadway, which has been recommended as mitigation for the proposed project. In addition, a new signal timing plan is suggested for the AM peak hour. Although not required as mitigation, the signal plan would also be used for PM peak hour operations.

**PEARL STREET AND BROAD STREET**

The Proposed Action's AM peak hour impact at this location would be fully mitigated by transferring 1 second of green time from the southbound phase to the east-west phase. Although this would reduce the green time for southbound traffic, this approach would operate at LOS D during the AM peak hour. Mitigation is not required at this location during the PM peak hour.

**STATE STREET AND BROAD STREET**

The Proposed Action's AM peak hour impact at this location would be fully mitigated by transferring 7 seconds of green signal time from the east-west phase to the southbound phase. Although this would reduce the green time for eastbound and westbound traffic, these approaches would operate at LOS D or better during the AM peak hour. Mitigation is not required at this location during the PM peak period.

**C. CONSTRUCTION**

As with most development in New York City, construction of the Proposed Action may be disruptive to the surrounding area for limited periods of time throughout the construction period. To the extent that there would be any disruption in traffic flow from construction activities, the changes would generally be minor, except in the case of the Battery Maritime Building (BMB) Plaza. This could potentially require the closure of the Battery Park Underpass, which could result in temporary significant adverse impacts with respect to traffic circulation and air quality during the construction period. Construction would be coordinated with other construction work taking place in the area through the Lower Manhattan Construction Command Center (LMCCC). Working with LMCCC and the Environmental Protection Commitments of the Lower Manhattan Development Corporation, any potential adverse impacts of construction for the Proposed Action would be minimized to greatest extent possible. \*