Chapter 13: Traffic and Transportation

A. INTRODUCTION

The Proposed Action would generate new trips in the vicinity of the project site, which would increase demand for transportation service. Based on travel demand estimates, the Proposed Action is not expected to exceed analysis thresholds for transit (subways and buses) services, but it would exceed thresholds for vehicular traffic and pedestrians. Furthermore, the Proposed Action would result in the direct displacement of public parking facilities as well as parking for commuter and tour buses; therefore, a parking analysis was prepared.

The analysis concludes that the Proposed Action would result in significant adverse traffic impacts, which can be fully mitigated, at eight intersections within the study area. These impacts are mostly attributed to proposed geometric changes along South Street as well as the reconfiguration of access to the Battery Park Underpass (BPU). While these impacts can be fully mitigated as part of this project, the reconstruction of the Brooklyn Bridge ramps from the Franklin D. Roosevelt (FDR) Drive, an independent City project, would also substantially improve operations on South Street by diverting Brooklyn-bound vehicles from local streets.

The Proposed Action would result in the removal of commuter and tour bus parking in some locations, authorized City vehicle parking, and public parking along South Street. While the removal of commuter and tour bus parking would require that operators find alternative locations to lay over, passengers would not be impacted, since they do not board or alight buses at this location, and the removal of authorized City vehicle parking would not be significant since this parking area does not serve emergency vehicles. The removal of four public parking lots beneath the FDR Drive would result in a shortfall of parking. However, unmet demand for parking would either (1) use facilities outside the study area with excess capacity, or (2) shift their mode of travel in the future, and this impact would not be considered significant.

The Proposed Action would generate new pedestrian trips in the study area, but there would not be severe congestion problems resulting in significant adverse impacts on existing crosswalks that serve the project site. Furthermore, the Proposed Action would improve pedestrian circulation by providing for an enhanced north-south esplanade along the East River and by creating a new pedestrian plaza in front of the Battery Maritime Building (BMB).

B. VEHICULAR TRAFFIC AND PARKING

This section describes the Proposed Action's potential effects on vehicular traffic operations and off-street parking conditions in the vicinity of the project site.

METHODOLOGY

The planning for a transportation impact study begins with understanding the travel characteristics associated with a project's various components and the roadway network and regional transportation systems surrounding the project area. Depending on the size and

expected trip generation of a project, various transportation elements may need to be evaluated quantitatively. The determination of analysis needs for projects in New York City is based on guidance outlined in the *City Environmental Quality Review (CEQR) Technical Manual*. Impacts on vehicular flow, parking supply and demand, and vehicle-pedestrian safety are evaluated in this section, while those on transit services and pedestrian flow are examined below in "Transit and Pedestrians."

TRAVEL DEMAND

The approach used to determine trip generation is similar to that followed in most transportation impact studies. Relevant sources are utilized to prepare specific estimates of the number of people who would be entering and exiting the various development program elements (cultural uses, retail, park, and esplanade). These estimates focus on peak periods when the maximum levels of activity would occur, thereby creating the greatest potential for impacts. The total number of daily person-trips (the number of people entering and exiting) is then converted into peak hour trips by applying the percent of the daily total occurring in individual hours of the day; this percentage of trips over time is called the temporal distribution. For the Proposed Action, examining the weekday morning, midday, and late afternoon peak hours and the Saturday midday peak hour conservatively encompasses those time periods when future activities attributed to the Proposed Action would be the greatest.

The estimates of people arriving and leaving during a peak hour are then distributed to the various means of available transportation, which is referred to as the modal split. For most land uses in this part of Manhattan, public transportation is the predominant mode for trips to and from the area. However, for park uses, the vast majority of trips are made on foot. For trips made by automobiles or taxis, person-trip estimates are translated into vehicle trips by applying average vehicle occupancy rates to determine vehicle trips generated by each land use type.

Table 13-1 presents the travel demand factors used for this analysis. For analysis purposes, the 190,000 square feet of programmed areas with the pavilions and the New Market Building was assumed as 90,000 square feet of cultural/museum use and 100,000 square feet of local retail use. The analysis also accounts for trips generated by the total of 17 acres of parkland. Travel demand estimates for these uses were developed from a variety of sources.

The *CEQR Technical Manual* provides park rates for weekdays, which were used for this analysis. The Saturday park rate was derived by comparing weekday and Saturday park rates from the Institute for Transportation Engineers, *Trip Generation Manual*. The resultant ratio was then applied to the CEQR weekday rate to derive a Saturday person-trip rate. The *Brooklyn Bridge Park Final Environmental Impact Statement* was used for the weekday and Saturday temporal and directional distributions.

Portions of the esplanade already exist, but would be improved as part of the Proposed Action. However, the new esplanade itself is not expected to attract a substantial number of new trips from outside the local community other than visitors who are traveling to the area already to frequent South Street Seaport, Battery Park, and other attractions along the waterfront. Therefore, the modal distribution for the esplanade and park was assumed to be 100 percent walk only. However, given that the project is the composite of retail, cultural, and park uses, any vehicle trips associated with the park use are accounted for as part of the cultural and retail uses.

Table 13-1
Trip Generation Assumptions

Trip Generation Factors	Park	Retail				Museum and Cultural Use	
		Visitors		Employees			
Person Trips							
Daily Trip Rate	Weekday: 139 per Acre [3] Saturday: 740 per Acre [a]	Weekday: 118.54 per 1,000 SF [2] Saturday: 273.5 per 1,000 SF [2] Pass By Trip Credit 25% [3]		10 per 1,000 SF [c]		26.6 per 1,000 Sq. Ft. [7b]	
Temporal Distribution							
AM Peak Hour	7% [5]	18.2% [2]		14.7% [2]		8.0% [7]	
Percent In	50% [5]	50.5 [2]		96.0% [2]		94.0% [7]	
Percent Out	50% [5]	49.5 [2]		4.0% [2]		6.0% [7]	
Midday Peak Hour	17% [5]	18.2% [2]		20.0% [2]		11.0% [7]	
Percent In	50% [5]	50.5% [2]		55.0% [2]		45.0% [7]	
Percent Out	50% [5]	49.5% [2]		45.0% [2]		55.0% [7]	
PM Peak Hour	14% [5]	11.1% [2]		12.9% [2]		13.9% [7]	
Percent In	45% [5]	53.1% [2]		5.0% [2]		42.0% [7]	
Percent Out	55% [5]	46.9% [2]		95.0% [2]		58.0% [7]	
Saturday	15% [5b]	17.3% [2]		17.3% [2]		11.0% [7b]	
Percent In	55% [5b]	54.1% [2]		50.0% [2]		45.0% [7b]	
Percent Out	45% [5b]	45.9% [2]		50.0% [2]		55.0% [7b]	
Modal Distribution	**All Peaks [c]**	**All Peaks [2]**		**Weekday [1]**	**Saturday [6]**	**Weekday [4]**	**Saturday [4]**
Auto	0.0%	3.0%		3.0%	2.0%	12.0%	14.0%
Taxi	0.0%	2.0%		2.0%	2.0%	10.0%	10.0%
Subway	0.0%	15.0%		61.0%	5.5%	29.0%	29.0%
Bus	0.0%	5.0%		10.0%	2.0%	7.0%	7.0%
Walk Only	100.0%	70.0%		2.0%	87.0%	39.0%	37.0%
Other	0.0%	5.0%		22.0%	1.5%	3.0%	3.0%
Vehicle Occupancy	**All Peaks**	**Weekday [1,2]**	**Saturday [2,6]**	**Weekday [2]**	**Saturday [2]**	**All Peaks [4]**	
Auto Occupancy	N/A	1.60	2.20	1.60	2.20	2.34	
Taxi Occupancy	N/A	1.20	1.50	1.20	1.50	1.90	
Deliveries							
Daily Trip Rate	N/A	0.35/1,000 Sq. Ft. [8]				0.05/1,000 Sq. Ft. [4]	
Saturday Trip Rate	N/A	0.02/1,000 Sq. Ft. [8]				0.05/1,000 Sq. Ft. [4]	
Temporal Distribution							
AM Peak Hour	N/A	9.7% [8]				6.0% [7]	
Midday Peak Hour	N/A	10.4% [8]				11.0% [7]	
PM Peak Hour	N/A	7.6% [8]				1.0% [7]	
Saturday Peak Hour	N/A	2.6% [8]				1.0% [7]	

Notes:
a. Saturdays were not provided in the *CEQR Technical Manual*; therefore the weekday rate was adjusted using a ratio between weekday and weekend trips rates from the Institute of Transportation Engineers *Trip Generation Manual, 7th Edition*.
b. Saturday rates were not provided; Sundays are used in their place.
c. Assumption based on professional judgment.

Sources:
1 *New York Stock Exchange New Facility Final Environmental Impact Statement*, December 2000.
2 New York City Department of City Planning, *Retail and Industrial Zoning Text Amendments: Final Generic Environmental Impact Statement,* 1996.
3 New York City Mayor's Office of Environmental Coordination; *City Environmental Quality Review Technical Manual,* December 2001.
4 *The Museum of Modern Art (MoMA) Expansion Final Environmental Impact Statement*, October 2000.
5 Brooklyn Bridge Park Corporation and Empire State Development Corporation; *Brooklyn Bridge Park Final Environmental Impact Statement*, December 2005.
6 *Battery Park City Final Fourth Supplement to the Final Environmental Impact Statement*, December 1996.
7 *Hudson River Park Final Environmental Impact Statement*, 1998.
8 Wilbur Smith Associates, *Motor Trucks in the Metropolis*, 1969.

Given the scale of the project and the interconnected character of the uses, trip estimates are adjusted to account for "linkages." This adjustment reflects the fact, for example, that existing residents of Lower Manhattan, employees and visitors to the project's retail space, and employees and visitors of the project's cultural space would use the park and esplanade. This condition of linkage between the uses is accounted for by reducing the number of trips to a given program element. The purpose of this adjustment, which varies depending upon the character of the use, is to avoid double-counting people who visit more than one of the components on the project site. Therefore, trip credits were applied to the travel demand analysis for the park. A 25

percent credit was applied to the total trip generation for the park to account for people who already travel to the project site or will travel to new uses along the East River that will be developed independent of the Proposed Action. It was also assumed that 50 percent of the visitors to the pavilions and piers would use the esplanade.

Tables 13-2 and 13-3 present the trip generation results. The Proposed Action would generate a total of 1,988, 2,182, 1,510, and 4,394 person trips in the AM, midday, PM, and Saturday peak hours, respectively, with the largest proportion of trips being walk only. As shown in Table 13-3, the Proposed Action would generate 105, 120, 94, and 153 vehicle trips in the AM, midday, PM, and Saturday peak hours, respectively.

Table 13-2
Person Trips By Type

Peak Hour	Use	Auto		Taxi		Subway		Bus		Walk Only		Other		Total		
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	Total
AM	Retail	29	24	19	19	209	124	55	41	575	561	71	41	958	807	1,765
	Cultural	22	1	18	1	52	3	13	1	70	4	5	1	180	11	191
	Park	0	0	0	0	0	0	0	0	21	21	0	0	21	21	42
	Total	51	25	37	17	261	127	68	42	666	586	76	42	1159	839	1998
Midday	Retail	28	27	18	18	190	175	52	49	574	563	65	59	927	891	1818
	Cultural	14	17	12	15	35	42	8	10	46	57	4	4	119	145	264
	Park	0	0	0	0	0	0	0	0	50	50	0	0	50	50	100
	Total	42	44	30	33	225	217	60	59	670	670	69	63	1096	1086	2182
PM	Retail	16	18	10	11	83	145	27	35	367	326	27	50	530	585	1115
	Cultural	16	22	13	18	38	52	9	13	53	71	2	5	131	181	312
	Park	0	0	0	0	0	0	0	0	37	46	0	0	37	46	83
	Total	32	40	23	29	121	197	36	48	457	443	29	55	698	812	1510
Saturday	Retail	58	50	39	34	288	245	96	82	1397	1196	94	79	1972	1686	3658
	Cultural	17	20	12	15	35	42	8	10	44	54	3	4	119	145	264
	Park	0	0	0	0	0	0	0	0	260	212	0	0	260	212	472
	Total	75	70	51	49	323	287	104	92	1701	1462	97	79	2351	2043	4394

Table 13-3
Vehicle Trips by Type

Peak Hour	Use	Auto		Taxi		Delivery		Total		
		In	Out	In	Out	In	Out	In	Out	Total
AM	Retail	19	15	22	22	3	3	44	40	84
	Cultural	9	0	6	6	0	0	15	6	21
	Park	0	0	0	0	0	0	0	0	0
	Total	28	15	28	28	3	3	59	46	105
Midday	Retail	18	17	22	22	4	4	44	43	87
	Cultural	6	7	10	10	0	0	16	17	33
	Park	0	0	0	0	0	0	0	0	0
	Total	24	24	32	32	4	4	60	60	120
PM	Retail	10	12	14	14	3	3	27	29	56
	Cultural	7	9	11	11	0	0	18	20	38
	Park	0	0	0	0	0	0	0	0	0
	Total	17	21	25	25	3	3	45	49	94
Saturday	Retail	26	23	34	34	0	0	60	57	117
	Cultural	7	9	10	10	0	0	17	19	36
	Park	0	0	0	0	0	0	0	0	0
	Total	33	32	44	44	0	0	77	76	153

SCREENING CRITERIA

Typically, a traffic analysis is warranted for projects that would generate more than 50 peak hour vehicle trips and/or when a project would substantially alter the operation of area streets. With respect to the Proposed Action, there is potential for adverse traffic impacts from both new project-generated trips and geometric changes along South Street and at the BMB Plaza. The potential for project-generated impacts would be greatest during the weekday AM and PM peak hours when background traffic is highest; therefore, these periods were selected for quantified traffic analysis. It is anticipated that any mitigation measures developed for these peak periods would be adequate to address potential impacts during other weekday hours and on weekends.

The Proposed Action would result in the direct displacement of public parking that is currently located beneath the FDR Drive. Therefore, a quantified analysis was prepared to determine whether adequate off-street parking capacity would be available in the vicinity of the project site to accommodate future demand following the removal of parking that is beneath the FDR Drive.

IMPACTS ASSESSMENT

Signalized Intersections

The operation of signalized intersections in the study area was analyzed in accordance with CEQR guidelines by applying the methodologies presented in the 2000 *Highway Capacity Manual (HCM)*. This procedure evaluates signalized intersections for average delay per vehicle and level of service (LOS).

LOS for the signalized intersections is based on the average stopped delay per vehicle for the various lane group movements within the intersection. This delay is the basis for an LOS determination for individual lane groups (grouping of movements in one or more travel lanes), the approaches, and the overall intersection. The levels of service are defined below:

LOS Criteria for Signalized Intersections

Level of Service (LOS)	Average Delay
A	≤ 10.0 seconds
B	> 10.0 and ≤ 20.0 seconds
C	> 20.0 and ≤ 35.0 seconds
D	> 35.0 and ≤ 55.0 seconds
E	> 55.0 and ≤ 80.0 seconds
F	> 80.0 seconds

Sources: Transportation Research Board. *Highway Capacity Manual*, 2000.

Although the HCM methodology calculates a volume-to-capacity (v/c) ratio, there is no strict relationship between v/c ratios and LOS as defined in the HCM. A high v/c ratio indicates substantial traffic passing through an intersection, but a high v/c ratio combined with low average delay actually represents the most efficient condition in terms of traffic engineering standards, where an approach or the whole intersection processes traffic close to its theoretical maximum with minimal delay. However, very high v/c ratios—especially those approaching or greater than 1.0—are often correlated with a deteriorated LOS. Other important variables affecting delay include cycle length, progression, and green time. LOS A and B indicate good operating conditions with minimal delay. At LOS C, the number of vehicles stopping is higher, but congestion is still fairly light. LOS D describes a condition where congestion levels are more noticeable and individual cycle failures (a condition where motorists may have to wait for more

than one green phase to clear the intersection) can occur. The mid-point of this service level (45 seconds of delay) is considered the threshold of acceptable operating conditions. Conditions at LOS E and F reflect poor service levels, and cycle failures are frequent. The HCM methodology provides for a summary of the total intersection operating conditions, by identifying the two critical movements (the worst-case from each roadway) and calculating a summary of critical v/c ratio, delay, and LOS.

According to the criteria presented in the *CEQR Technical Manual*, impacts are considered significant and require examination of mitigation if they result in an increase of 5 or more seconds of delay in a lane group over No Build levels beyond mid-LOS D. For No Build LOS E, a 4-second increase in delay is considered significant. For No Build LOS F, a 3-second increase in delay is considered significant. However, if the No Build LOS F condition already corresponds with a delay in excess of 120 seconds, an increase of 1.0 or more seconds of delay is considered significant. In addition, impacts are considered significant if levels of service deteriorate from acceptable A, B, or C in the No Build conditions to marginally unacceptable LOS D (a delay in excess of 45 seconds, the midpoint of LOS D), or unacceptable LOS E or F in the future Build conditions. The above sliding scale is applicable only if a project is expected to generate five or more vehicle trips through the analysis intersection during the peak hour being examined.

Unsignalized Intersections

For unsignalized intersections, the total delay is defined as the total elapsed time from which a vehicle stops at the end of the queue until the vehicle departs from the stop line. This includes the time required for the vehicle to travel from the last-in-queue to the first-in-queue position. The average total delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation. The LOS criteria for unsignalized intersections are summarized in the table below.

LOS Criteria for Unsignalized Intersections

Level-of-Service (LOS)	Average Delay
A	≤ 10.0 seconds
B	> 10.0 and ≤ 15.0 seconds
C	> 15.0 and ≤ 25.0 seconds
D	> 25.0 and ≤ 35.0 seconds
E	> 35.0 and ≤ 50.0 seconds
F	> 50.0 seconds

Sources: Transportation Research Board. *Highway Capacity Manual*, 2000.

The LOS thresholds for unsignalized intersections are different from those for signalized intersections. The primary reason is that drivers expect different levels of performance from different types of transportation facilities. The expectation is that a signalized intersection is designed to carry higher traffic volumes than an unsignalized intersection. In addition, certain driver behavioral considerations combine to make delays at signalized intersections less onerous than at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, whereas drivers on minor approaches to unsignalized intersections must remain attentive to identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at unsignalized intersections. For these reasons, the total overall scale of delay thresholds for unsignalized intersections is lower than that of signalized intersections.

The same sliding scale of significant delays described for signalized intersections apply for unsignalized intersections. However, for the minor street to trigger significant impacts, 90 passenger car equivalents (PCE) must be identified in the future Build conditions in a peak hour.

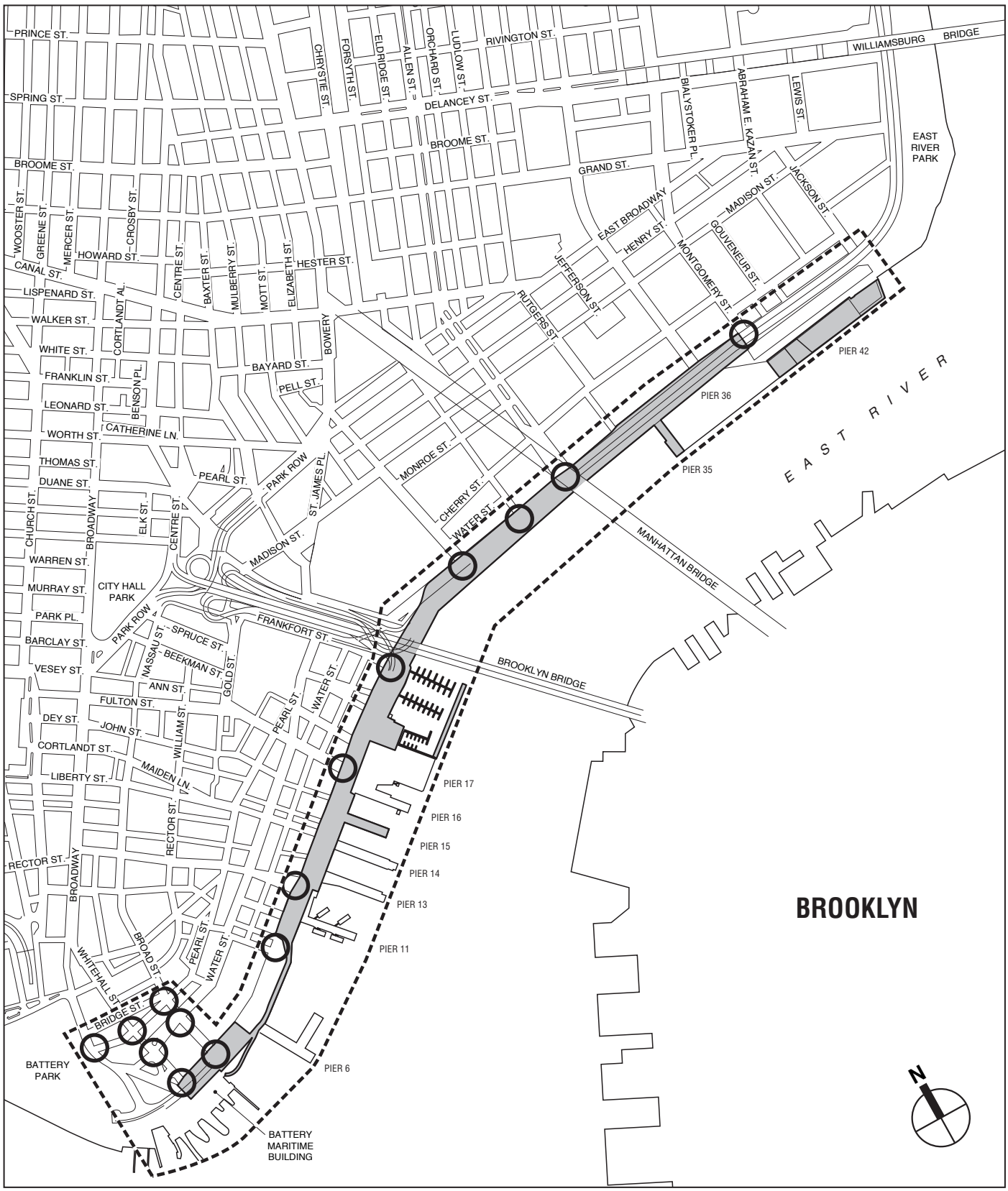
EXISTING CONDITIONS

VEHICULAR TRAFFIC

The Proposed Action spans the length of the East River waterfront from the BMB to Jackson Street. In addition to providing for an esplanade and park, retail, and cultural facilities, the Proposed Action includes the expansion of the BMB Plaza, reconfiguration of the ramps leading to the BPU, and geometric changes along South Street. A traffic study area was developed to account for the proposed changes in the street network that would result from the Proposed Action. As shown in Figure 13-1, this study area includes 15 intersections generally located along South Street. In the vicinity of the BMB, the study area is expanded to include interior intersections that may have increased traffic volumes following the reconfiguration of the BMB Plaza and the ramps leading to the BPU.

The following describes the characteristics and operation of the roadways within the study area.

- South Street is a two-way north-south arterial located beneath and immediately adjacent to the elevated portion of the FDR Drive between Whitehall Street in the south and Montgomery Street in the north. There are signalized intersections at most of the major cross streets while the less traveled locations are unsignalized. It should be noted that the north-south roadway in the study area travels generally northeast to southwest and curves right toward the tip of the island, intersecting with Broad, State, and Whitehall Streets, which generally run northwest to southeast and curves left toward the extreme tip of Manhattan.
    - South of Old Slip, the north and south traffic flows are separated by the FDR Drive, which undergoes a transition from the BPU to an elevated highway at Old Slip. The roadway is generally one to two traffic lanes with curbside parking or bus storage. Just north of Broad Street, South Street shares multi-lane weaving areas with the FDR when the highway reaches grade level.
    - Between Old Slip and the Brooklyn Bridge, South Street generally features two northbound lanes and one southbound lane with parking immediately adjacent to and inland of the elevated FDR drive. Parking, bus storage, and pedestrian areas are located under the FDR Drive bordering the northbound lanes.
    - Between the Brooklyn Bridge and Montgomery Street, South Street features a single northbound and two southbound lanes, with bus layover zones on both sides of the street, and some curbside parking in the southbound lanes. The southbound lanes of this section of the roadway serve as an alternate route to the southbound FDR Drive, which generally experiences delays at the exit to the Brooklyn Bridge. Diverted traffic exits the drive at Montgomery Street and accesses the Brooklyn Bridge by turning right at Robert F. Wagner Sr. Place.
- Water Street is a two-way, north-south roadway extending from Whitehall Street in the south to the Brooklyn Bridge in the north. In general, it contains two traffic lanes with adjacent parking in each direction.



Traffic Study Area
Figure 13-1

- Pearl Street is a one-way southbound roadway which begins at State Street in the south, and merges with Water Street near Beekman Street. The roadway generally features one or two southbound traffic lanes with curbside parking on both sides.
- Broad Street is a two-way roadway traveling in a general northwest to southeast direction through the study area, crossing Pearl/Bridge Streets and Water Street at signalized intersections and ending at a stop-controlled T-intersection at South Street. The roadway varies in width from one to two lanes in each direction, with curbside taxi stands and bus layover zones in the study area.
- Whitehall Street travels in a northwest to southeast direction between Bowling Green and South Street, with varying traffic directions and roadway configurations through the study area. North of Pearl Street, the roadway carries one wide southbound traffic lane with parking on both sides of the street. Between Pearl and Water Streets, Whitehall Street is a two-way street with a single lane and adjacent parking on both sides. Between Water and South Streets, Whitehall Street is northwest-bound only, with three traffic lanes.

The assessment of existing conditions was developed based on field reconnaissance, manual turning movement counts, and automated traffic recorder counts conducted in April and May 2006. These data were supplemented with traffic counts conducted in 2004 as part of a feasibility study for the proposed South Street roadway improvements. The combination of these sources was used to develop traffic networks for the AM (8:30 AM to 9:30 AM) and PM (5:00 PM to 6:00 PM) peak hours (see Figures 13-2 and 13-3).

Table 13-4 shows the LOS analysis results for the study area intersections in the existing condition. Presently, the signalized traffic movements within the study area operate at mid-LOS D or better (45.0 seconds of delay or less), except at the following intersections:

- The northbound approach at South and Pike Streets operates at LOS E in the AM and PM peak hours, and the southbound approach operates at LOS E in the PM peak hour;
- The northbound approach at South Street and Market Slip operates at LOS E in the PM peak hour;
- The eastbound approach at South and Wall Streets operates at LOS E in the AM peak hour and at LOS F in the PM peak hour;
- The westbound through movement at South Street and Old Slip operates at LOS D (50.8 seconds of delay) in the AM peak hour, and the southbound approach operates at LOS E in the PM peak hour;
- The eastbound and westbound approaches at Water and Broad Streets operate at LOS F in the AM peak hour and at LOS E in the PM peak hour;
- The eastbound approach and the westbound left-turn at Water and Whitehall Streets operates at LOS E in the AM peak hour and at LOS F in the PM peak hour; and
- The northbound approach at Pearl and Broad Streets operates at LOS E in the AM and PM peak hours.

Table 13-5 presents the LOS analysis for the unsignalized intersections in the study area. The stop-controlled traffic movements at the unsignalized intersection of Pearl and Whitehall Streets currently operate at LOS A; however, the controlled movement at South and Broad Streets operates at LOS F in the AM peak hour and LOS E in the PM peak hour.

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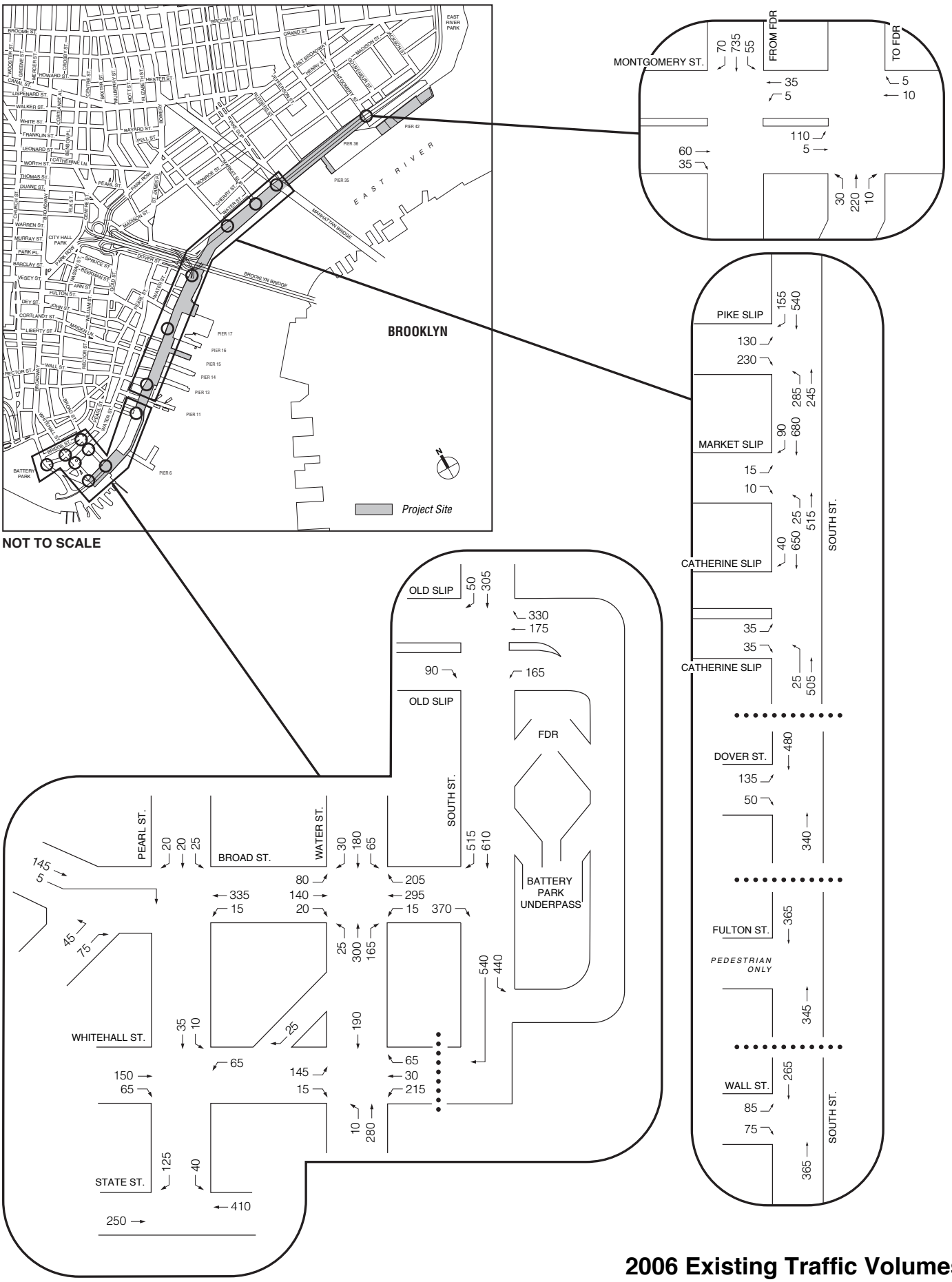

2006 Existing Traffic Volumes
AM Peak Hour
Figure 13-2

EAST RIVER *Waterfront Esplanade and Piers*

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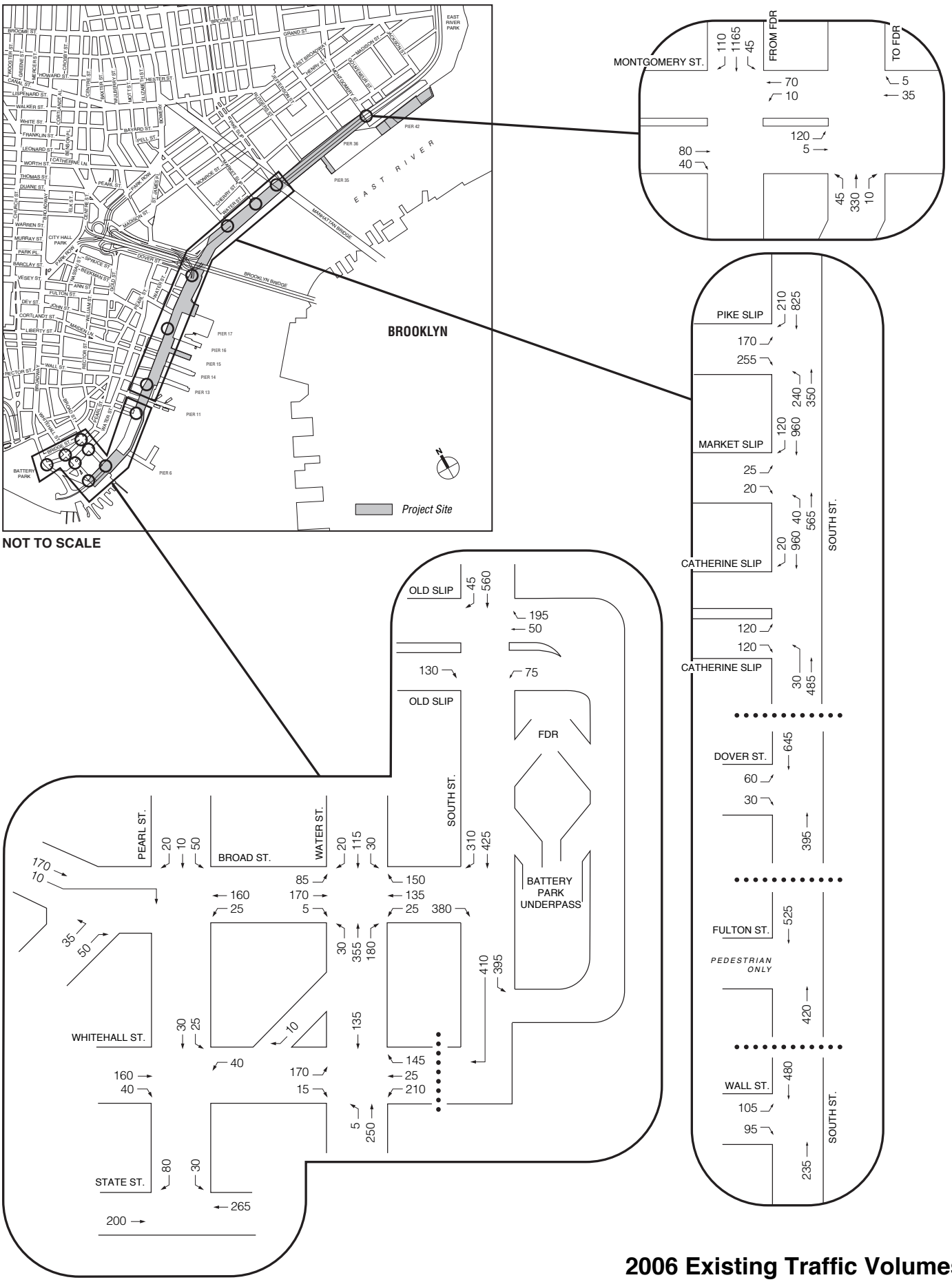


2006 Existing Traffic Volumes
PM Peak Hour
Figure 13-3

Table 13-4

2006 Existing Conditions Level of Service Analysis for Signalized Intersections

Intersection	AM				PM			
	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane |Group	v/c Ratio	Delay (seconds)	LOS
South St. & Montgomery St. (SB)								
Eastbound	TR	0.34	24.3	C	TR	0.33	23.9	C
Westbound	LT	0.16	21.2	C	LT	0.34	24.6	C
Southbound	LTR	0.57	15.0	B	LTR	1.01	46.4	D
	Intersection		16.4	B	Intersection		43.4	D
South St. & Montgomery St. (NB)								
Eastbound	LT	0.37	24.9	C	LT	0.39	25.2	C
Westbound	TR	0.11	20.7	C	TR	0.20	22.2	C
Northbound	LTR	0.37	12.8	B	LTR	0.56	16.0	B
	Intersection		16.7	B	Intersection		18.5	B
South St. & Pike St.								
Eastbound	L	0.35	26.9	C	L	0.44	28.4	C
	R	0.66	35.5	D	R	0.49	29.6	C
Northbound	LT	1.05	69.1	E	LT	1.05	69.6	E
Southbound	TR	0.67	23.0	C	TR	1.05	66.0	E
	Intersection		40.7	D	Intersection		60.2	E
South St. & Market Slip								
Eastbound	L	0.04	19.8	B	L	0.06	20.0+	C
	R	0.03	19.7	B	R	0.07	20.1	C
Northbound	LT	0.85	29.4	C	LT	1.05	71.8	E
Southbound	TR	0.59	15.7	B	TR	0.92	29.8	C
	Intersection		21.4	C	Intersection		43.1	D
South St. & Catherine Slip								
Eastbound	L	0.10	20.5	C	L	0.32	23.6	C
	R	0.11	20.7	C	R	0.36	24.5	C
Northbound	LT	0.85	30.3	C	LT	0.89	36.0	D
Southbound	TR	0.53	14.5	B	TR	0.82	22.2	C
	Intersection		21.5	C	Intersection		26.2	C
South St. & Dover St.								
Eastbound	LR	0.55	29.5	C	LR	0.26	22.8	C
Northbound	T	0.33	12.1	B	T	0.35	12.2	B
Southbound	T	0.74	21.6	C	T	0.93	37.0	D
	Intersection		19.7	B	Intersection		27.0	C
South St. & Fulton St.								
Northbound	T	0.29	11.6	B	T	0.48	14.2	B
Southbound	T	0.63	18.6	B	T	0.80	25.5	C
	Intersection		15.2	B	Intersection		20.1	C
South St. & Wall St.								
Eastbound	LR	0.86	63.8	E	LR	0.99	87.6	F
Northbound	T	0.27	11.4	B	T	0.19	10.7	B
Southbound	T	0.42	14.0	B	T	0.73	22.2	C
	Intersection		22.5	C	Intersection		33.2	C
South St. & Old Slip								
Eastbound	R	0.28	23.3	C	R	0.47	27.2	C
Westbound	L	0.33	23.4	C	L	0.18	21.2	C
	T	0.93	50.8	D	T	0.55	27.5	C
Southbound	TR	0.62	23.4	C	TR	1.05	75.4	E
	Intersection		36.1	D	Intersection		52.0	D
South St. & Whitehall St								
Southbound	R	0.51	14.5	B	R	0.37	12.6	B
	Intersection		14.5	B	Intersection		12.6	B

Table 13-4 (cont'd)
2006 Existing Conditions Level of Service Analysis for Signalized Intersections

Intersection	AM				PM			
	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane |Group	v/c Ratio	Delay (seconds)	LOS
Water St. & Broad Street								
Eastbound	LTR	1.05	97.5	F	LTR	0.89	55.2	E
Westbound	LTR	1.05	82.7	F	LTR	0.98	71.9	E
Northbound	LTR	0.60	16.6	B	LTR	0.65	17.9	B
Southbound	LTR	0.41	13.5	B	LTR	0.22	11.2	B
	Intersection		50.7	D	Intersection		38.3	D
Water St. & Whitehall St.								
Eastbound	LR	0.93	79.2	E	LR	1.00	96.8	F
Westbound	L	0.86	58.5	E	L	1.01	91.3	F
	LT	0.10	26.1	C	LT	0.08	25.8	C
	R	0.24	28.4	C	R	0.56	36.1	D
Northbound	LT	0.62	27.1	C	LT	0.49	23.4	C
Southbound	T	0.17	18.3	B	T	0.13	17.9	B
	Intersection		41.2	D	Intersection		53.2	D
Pearl St. & Broad Street								
Eastbound	TR	0.26	14.9	B	TR	0.30	15.3	B
Westbound	LT	0.49	18.2	B	LT	0.32	15.6	B
Northbound	LR	0.86	75.6	E	LR	0.72	56.8	E
Southbound	LTR	0.50	43.9	D	LTR	0.5	44.5	D
	Intersection		30.5	C	Intersection		26.8	C
Pearl St. & State Street								
Eastbound	T	0.44	14.3	B	T	0.29	12.1	B
Westbound	T	0.42	13.1	B	T	0.28	11.6	B
Southbound	LR	0.62	32.7	C	LR	0.34	23.7	C
	Intersection		17.5	B	Intersection		14.1	B

Notes: L = Left Turn, T = Through, R = Right Turn, DefL = Defacto Left Turn; LOS = Level of Service.

Table 13-5
2006 Existing Conditions Level of Service Analysis for Unsignalized Intersections

Intersection	AM			PM		
	Lane Group	Delay (seconds)	LOS	Lane Group	Delay (seconds)	LOS
South St. & Broad Street						
Eastbound	R	62.7	F	R	44.1	E
Pearl St. & Whitehall St.						
Eastbound	TR	9.3	A	TR	9.4	A
Westbound	L	8.4	A	L	8.2	A
Southbound	LT	8.6	A	LT	8.5	A

Notes: L = Left Turn, T = Through, R = Right Turn, DefL = Defacto Left Turn; LOS = Level of Service.

PARKING

As described above, the Proposed Action would include the removal of public parking lots that are located beneath the FDR Drive between Maiden Lane and Robert F. Wagner, Sr. Place. Therefore, current users of these lots would need to seek an alternative off-street parking location with implementation of the Proposed Action. To estimate the future adequacy of off-street parking, a study area was developed that focuses on the area within ¼ mile of the existing lots beneath the FDR Drive that would be removed.

As shown in Figure 13-4, this study area includes a total of 28 parking lots and garages with a total capacity of 3,699 spaces. Table 13-6 shows the capacity and utilization of these parking lots and garages. Presently, these facilities are 66, 79, 63, and 65 percent occupied during the AM, midday, PM, and Saturday peak periods, respectively.

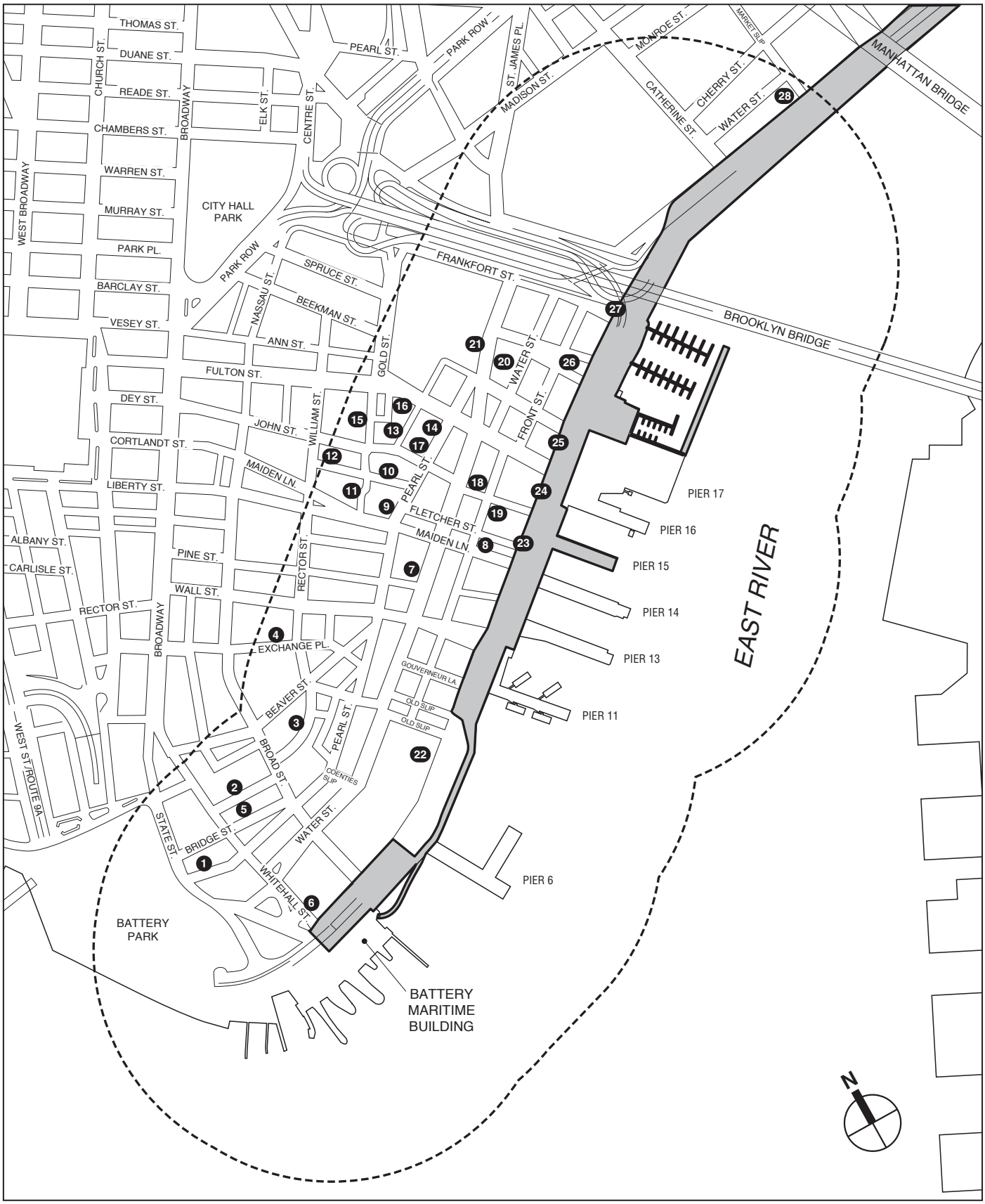
Table 13-6
2006 Existing Off-Street Parking Utilization—¼ Mile

Map No.	Facility	License No.	Licensed Capacity	Utilization Rate (%)				Utilized Spaces				Available Spaces			
				AM	MD	PM	SA	AM	MD	PM	SA	AM	MD	PM	SA
1	1 Battery Park Plaza	369956	150	70	90	50	50	105	135	75	75	45	15	75	75
2	2 Broadway	954597	56	60	60	60	60	34	34	34	34	22	22	22	22
3	14-26 S. William Street	1013974	400	70	70	50	50	280	280	200	200	120	120	200	200
4	45 Wall Street	1213080	137	30	90	90	65	41	123	123	89	96	14	14	48
5	8-12 Stone Street	1220342	34	90	50	90	90	31	17	31	31	3	17	3	3
6	1 New York Plaza	1192927	150	60	80	80	80	90	120	120	120	60	30	30	30
7	80 Pine Street	469882	178	25	65	50	25	45	116	89	45	133	62	89	133
8	Edison Park Fast	369121	70	68	80	70	100	48	56	49	70	22	14	21	0
9	2 Gold Street	198215	98	100	100	100	100	98	98	98	98	0	0	0	0
10	100 John Street	1104794	41	100	100	100	100	41	41	41	41	0	0	0	0
11	13 Gold Street	1040786	19	25	75	75	75	5	14	14	14	14	5	5	5
12	72 John Street	1197266	25	100	100	100	100	25	25	25	25	0	0	0	0
13	99 John Street	178641	87	50	75	33	33	44	65	29	29	43	22	58	58
14	251 Pearl Street	1102765	92	80	80	50	50	74	74	46	46	18	18	46	46
15	85 John Street	1192299	32	100	10	40	100	32	3	13	32	0	29	19	0
16	56 Fulton Street	1098937	280	60	85	85	50	168	238	238	140	112	42	42	140
17	Pearl Parking LLC	1068098	80	100	80	75	100	80	64	60	80	0	16	20	0
18	199 Water Street	1099611	99	100	100	80	40	99	99	79	40	0	0	20	59
19	165-75 Front Street	926763	72	50	100	50	75	36	72	36	54	36	0	36	18
20	288-294 Pearl Street	367803	36	100	90	70	100	36	32	25	36	0	4	11	0
		367802	25	100	90	70	100	25	23	18	25	0	2	7	0
		978091	105	100	90	70	100	105	95	74	105	0	10	31	0
		693811	120	100	90	70	100	120	108	84	120	0	12	36	0
21	299 Pearl Street	693022	30	100	100	100	100	30	30	30	30	0	0	0	0
22	55 Water Street	1106756	545	66	66	66	66	360	360	360	360	185	185	185	185
23	Propark Lot 1	1213656	60	85	75	65	100	51	45	39	60	9	15	21	0
24	Propark Lot 2		48	85	85	75	100	41	41	36	48	7	7	12	0
25	Propark Lot 3	1213663	194	50	95	70	50	97	184	136	97	97	10	58	97
26	Propark Lot 4	1213660	58	100	95	75	100	58	55	44	58	0	3	14	0
27	Propark Lot 5	1213666	315	50	90	30	100	158	284	95	315	157	31	220	0
28	220 South Street		63	25	85	85	85	16	54	54	54	47	9	9	9
Total			**3,699**	**66**	**79**	**63**	**65**	**2457**	**2931**	**2341**	**2517**	**1179**	**705**	**1295**	**1119**

In addition to public parking, the area beneath the FDR Drive provides parking for commuter buses, tour buses, and authorized City vehicles. There are also locations where illegal on-street parking was observed.

THE FUTURE WITHOUT THE PROPOSED ACTION

Vehicular traffic and parking conditions in the future without the Proposed Action (No Build condition) were assessed to establish a baseline against which to evaluate the potential impacts



Off-Street Parking
Figure 13-4

of the Proposed Action. Chapter 3, "Land Use, Zoning, and Public Policy," identifies a number of projects that will be completed before 2009 (the Build year for the Proposed Action), which have the potential to generate vehicle trips at the study area intersections. Given the location of these projects and the anticipated routes of access, this analysis considers new developments located east of Pearl Street and Madison Street for the length of the project site. The future without the Proposed Action also considers general background traffic growth of 0.5 percent per year, as specified in the *CEQR Technical Manual*.

Absent the Proposed Action, the portion of South Street south of the Brooklyn Bridge would be reconstructed in its current configuration.

VEHICULAR TRAFFIC

Traffic volumes from general background growth and trips associated with new developments were overlaid onto the existing conditions traffic networks to project 2009 volumes absent the Proposed Action (see Figures 13-5 and 13-6). As shown in Table 13-7, the signalized traffic movements within the study area will operate at mid-LOS D or better (45.0 seconds of delay or less) in the future without the Proposed Action except at the following intersections:

- The southbound approach at South and Montgomery Streets will operate at LOS E in the AM peak hour;
- The northbound approach at South and Pike Streets will operate at LOS F in the AM and PM peak hours, and the southbound approach will operate at LOS F in the PM peak hour;
- The northbound approach at South Street and Market Slip will operate at LOS D (48.3 seconds of delay) in the AM peak hour and at LOS F in the PM peak hour;
- The northbound approach at South Street and Catherine Slip will operate at LOS E in the PM peak hour;
- The southbound approach at South and Dover Streets will operate at LOS E in the PM peak hour;
- The eastbound approach at South and Wall Streets will operate at LOS E in the AM peak hour and at LOS F in the PM peak hour;
- The westbound through movement at South Street and Old Slip will operate at LOS E in the AM peak hour, and the southbound approach will operate at LOS F in the PM peak hour;
- The eastbound approach at Water and Broad Streets will operate at LOS F in the AM peak hour and at LOS E in the PM peak hour, and the westbound approach will operate at LOS F in the AM and PM peak hours;
- The eastbound approach at Water and Whitehall Streets will operate at LOS F in the AM peak hour, and the westbound left-turn will operate at LOS E in the AM peak hour and LOS F in the PM peak hour; and
- The northbound approach at Pearl and Broad Streets will operate at LOS E in the AM and PM peak hours.

Table 13-8 presents the LOS analysis for the unsignalized intersections in the study area. The stop-controlled traffic movements at the unsignalized intersection of Pearl and Whitehall Streets will operate at LOS A; however, the controlled movement at South and Broad Streets will operate at LOS F in the AM peak hour and LOS E in the PM peak hour.

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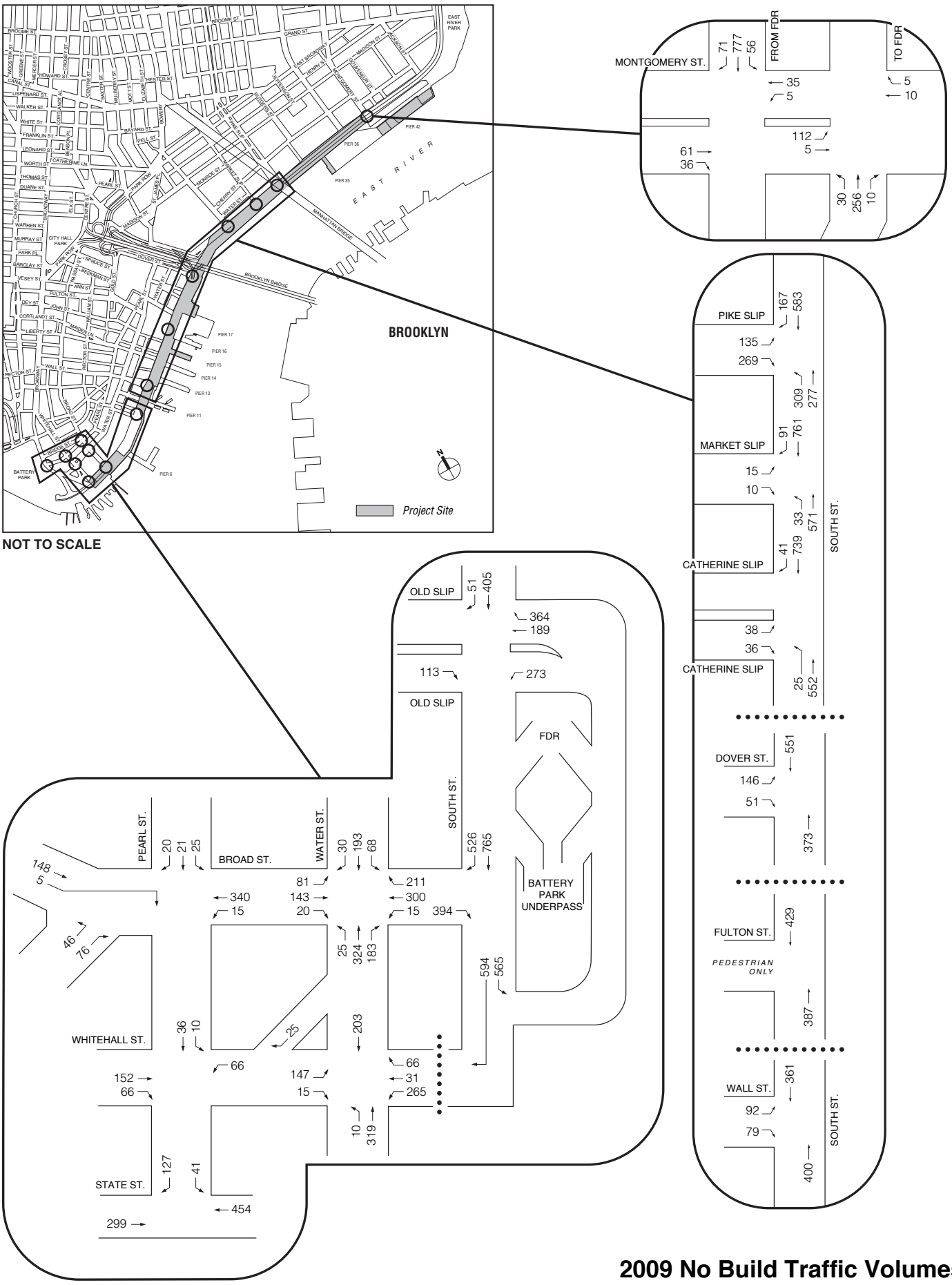
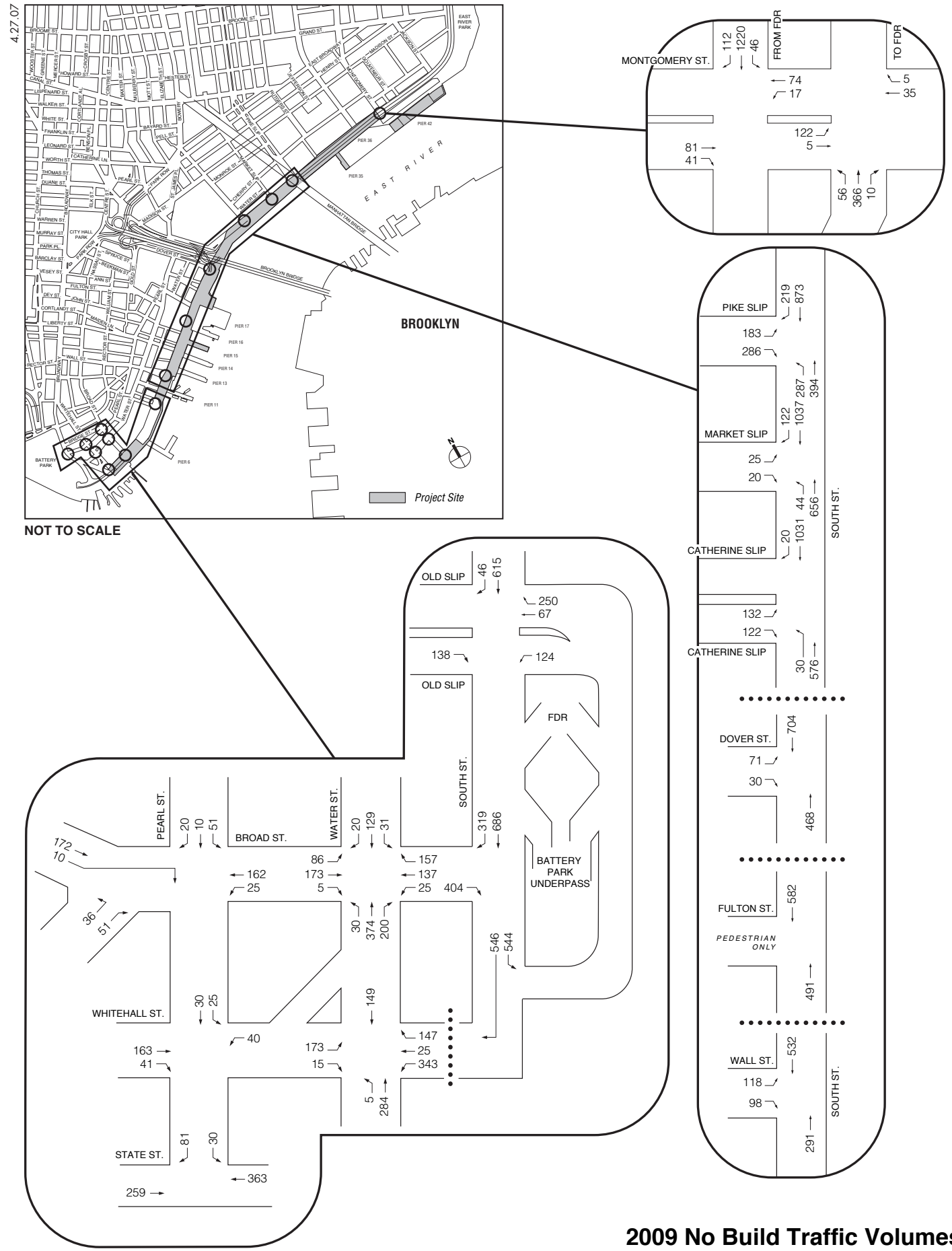


2009 No Build Traffic Volumes
AM Peak Hour

Figure 13-5

EAST RIVER *Waterfront Esplanade and Piers*



2009 No Build Traffic Volumes
PM Peak Hour
Figure 13-6

EAST RIVER *Waterfront Esplanade and Piers*

Table 13-7

2009 No Build Conditions Level of Service Analysis for Signalized Intersections

Intersection	AM				PM			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
South St. & Montgomery St. (SB)								
Eastbound	TR	0.35	24.4	C	TR	0.34	24.0	C
Westbound	LT	0.16	21.2	C	LT	0.4	26.1	C
Southbound	LTR	0.59	15.4	B	LTR	1.06	59.9	E
	Intersection		16.8	B	Intersection		55.1	E
South St. & Montgomery St (NB)								
Eastbound	LT	0.37	25.0	C	LT	0.39	25.3	C
Westbound	TR	0.11	20.7	C	TR	0.2	22.2	C
Northbound	LTR	0.41	13.5	B	LTR	0.63	17.6	B
	Intersection		16.9	B	Intersection		19.5	B
South St. & Pike St.								
Eastbound	L	0.36	27.1	C	L	0.48	29.2	C
	R	0.77	41.7	D	R	0.57	31.9	C
Northbound	LT	1.16	107.5	F	LT	1.22	129.8	F
Southbound	TR	0.72	24.5	C	TR	1.11	86.7	F
	Intersection		55.6	E	Intersection		88.7	F
South St. & Market Slip								
Eastbound	L	0.04	19.8	B	L	0.06	20.0+	C
	R	0.03	19.7	B	R	0.07	20.1	C
Northbound	LT	0.97	48.3	D	LT	1.29	164.3	F
Southbound	TR	0.66	17.0	B	TR	0.99	41.0	D
	Intersection		30.0	C	Intersection		82.5	F
South St. & Catherine Slip								
Eastbound	L	0.11	20.6	C	L	0.35	24.1	C
	R	0.11	20.7	C	R	0.37	24.7	C
Northbound	LT	0.93	40.3	D	LT	1.05	69.0	E
Southbound	TR	0.60	15.7	B	TR	0.88	25.7	C
	Intersection		26.0	C	Intersection		38.2	D
South St. & Dover St.								
Eastbound	LR	0.59	30.6	C	LR	0.29	23.3	C
Northbound	T	0.37	12.5	B	T	0.41	12.9	B
Southbound	T	0.85	28.1	C	T	1.01	55.2	E
	Intersection		23.2	C	Intersection		36.8	D
South St. & Fulton St.								
Northbound	T	0.33	12.0	B	T	0.56	15.6	B
Southbound	T	0.74	22.6	C	T	0.88	32.7	C
	Intersection		17.6	B	Intersection		24.3	C
South St. & Wall St.								
Eastbound	LR	0.91	73.0	E	LR	1.06	107.1	F
Northbound	T	0.30	11.7	B	T	0.23	11.0	B
Southbound	T	0.57	17.1	B	T	0.81	26.8	C
	Intersection		24.6	C	Intersection		38.7	D
South St. & Old Slip								
Eastbound	R	0.35	24.6	C	R	0.5	28.0	C
Westbound	L	0.54	27.5	C	L	0.29	22.8	C
	T	1.02	69.8	E	T	0.71	32.6	C
Southbound	TR	0.79	31.2	C	TR	1.15	110.9	F
	Intersection		45.6	D	Intersection		68.7	E
South St. & Whitehall St								
Southbound	R	0.56	15.3	B	R	0.49	14.2	B
	Intersection		15.3	B	Intersection		14.2	B

Table 13-7 (cont'd)
2009 No Build Conditions Level of Service Analysis for Signalized Intersections

Intersection	AM				PM			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
Water St. & Broad Street								
Eastbound	LTR	1.09	109.8	F	LTR	0.91	59.7	E
Westbound	LTR	1.08	91.1	F	LTR	1.02	81.0	F
Northbound	LTR	0.65	18.0	B	LTR	0.70	19.4	B
Southbound	LTR	0.44	13.9	B	LTR	0.24	11.4	B
	Intersection		54.8	D	Intersection		41.5	D
Water St. & Whitehall St.								
Eastbound	LR	0.94	82.5	F	LR	1.01	100.7	F
Westbound	L	1.06	102.6	E	L	1.65	342.6	F
	LT	0.11	26.2	C	LT	0.08	25.8	C
	R	0.25	28.5	C	R	0.57	36.5	D
Northbound	LT	0.70	30.0	C	LT	0.55	24.8	C
Southbound	T	0.19	18.4	B	T	0.14	18.0	B
	Intersection		53.7	D	Intersection		136.0	F
Pearl St. & Broad Street								
Eastbound	TR	0.27	15.0	B	TR	0.31	15.4	B
Westbound	LT	0.50	18.4	B	LT	0.32	15.7	B
Northbound	LR	0.87	77.7	E	LR	0.73	58.6	E
Southbound	LTR	0.50	43.9	D	LTR	0.51	44.7	D
	Intersection		30.9	C	Intersection		27.2	C
Pearl St. & State Street								
Eastbound	T	0.53	15.9	B	T	0.37	13.2	B
Westbound	T	0.46	13.7	B	T	0.38	12.7	B
Southbound	LR	0.63	33.2	C	LR	0.34	23.8	C
	Intersection		18.1	B	Intersection		14.5	B

Notes: L = Left Turn, T = Through, R = Right Turn, DefL = Defacto Left Turn; LOS = Level of Service.

Table 13-8
2009 No Build Conditions Level of Service Analysis for Unsignalized Intersections

Intersection	AM				PM			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
South St. & Broad Street								
Eastbound	R	1.12	120.4	F	R	1.17	133.7	F
Pearl St. & Whitehall St.								
Eastbound	TR	-	9.4	A	TR	-	9.5	A
Westbound	L	-	8.4	A	L	-	8.2	A
Southbound	LT	-	8.6	A	LT	-	8.5	A

Notes: L = Left Turn, T = Through, R = Right Turn, DefL = Defacto Left Turn; LOS = Level of Service.

PARKING

In the future without the Proposed Action, there will be no change in parking regulations along South Street, and the four public parking lots will continue operation. General background growth and new trips associated with development that will occur in or before 2009 will generate new demand for off-street parking in the study area. As shown in Table 13-9, there will be adequate capacity to meet this projected demand in the AM, PM, and Saturday peak periods, but there would be a 49-space parking shortfall in the midday peak.

Table 13-9
Off-Street Parking Supply and Demand in the 2009 No Build Condition

	AM Peak	Midday Peak	PM Peak	Saturday Peak
2009 No Build Parking Supply	3,699	3,699	3,699	3,699
2009 No Build Parking Demand				
2006 Existing Parking Demand	2,457	2,931	2,341	2,517
Background Growth	37	45	36	38
Trips from New Development	735	772	591	494
Total Parking Demand	3,229	3,748	2,968	3,049
2009 No Build Parking Utilization	87%	101%	80%	82%
2009 No Build Parking Surplus/(Shortfall)	470	(49)	731	674

PROBABLE IMPACTS OF THE PROPOSED ACTION

As described above, the Proposed Action would generate new vehicle trips in the vicinity of the project site, would alter the existing geometry of area roadways, and would eliminate parking beneath the FDR Drive. This section evaluates whether the combination of these changes would result in significant adverse impacts as compared to conditions without the Proposed Action.

VEHICULAR TRAFFIC

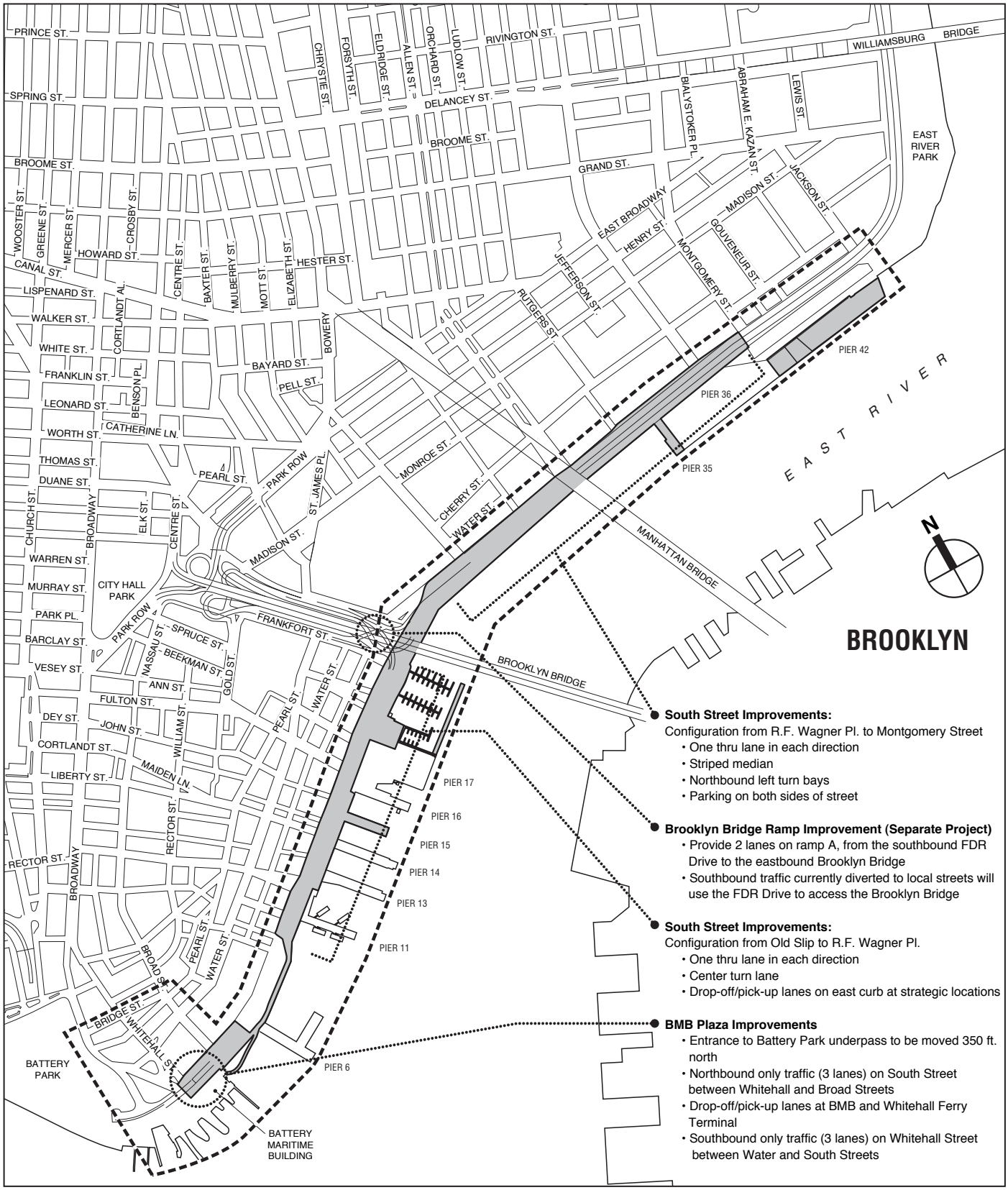
Changes in the Roadway Network

The Proposed Action would include the reconfiguration of the BPU in order to create a pedestrian plaza in front of the BMB. It also includes improvements along South Street for the length of the project site (see Figure 13-7).

The entrance to the BPU would be moved approximately 350 feet north, (to just north of Broad Street). The U-turn from southbound South Street to northbound South Street would be moved from immediately north of Whitehall Street to immediately north of Broad Street, and access between southbound and northbound South Street to the BPU would no longer be possible. South Street would be changed to a three-lane northbound street between Whitehall and Broad Streets, and a traffic signal would be added at its intersection with Broad Street. Broad Street would be configured to provide two traffic lanes in each direction between South and Water Streets, and the traffic flow on Whitehall Street would be changed from westbound to eastbound between Water and South Streets. These measures would also result in the reconfiguration or removal of parking, taxi stands, and bus layover areas currently located on these blocks of Broad and South Streets. However, the existing bus stops would not be moved.

Between Broad Street and Old Slip, South Street would, in general, follow the same configuration as currently exists. As mentioned above, however, there would be no access to the BPU from southbound South Street, and no access from the BPU to northbound South Street. The two directions of the roadway would meet at the Old Slip intersection, as they currently do.

Between Old Slip and Robert F. Wagner Sr. Place, South Street would accommodate a single through-lane in each direction and a center turn lane where appropriate. Drop-off and pick-up areas would be provided in the northbound lanes at strategic locations. A total of four public parking lots located under the FDR Drive would be eliminated, along with a bus parking area and motorcycle parking. Fulton Street would continue to be limited to pedestrian traffic.



Traffic Improvements

Figure 13-7

Between Robert F. Wagner Sr. Place and Montgomery Street, South Street would consist of a striped median with left-turn bays for northbound traffic, a single through-lane in each direction, and parking on the west side of the street. The curbside bus parking areas currently located in both the northbound and southbound lanes would be eliminated.

A conceptual design for these improvements was developed and has been used for the analysis presented in this Environmental Impact Statement (EIS). The final design of these improvements, including any supporting signal warrant analyses, would be developed prior to project implementation. All design drawings and supporting analyses would be reviewed and approved by the New York City Department of Transportation (NYCDOT) prior to implementation.

Trip Assignment

New vehicle trips associated with the Proposed Action were distributed to the various access points to the project site. Automobile trips were assigned to off-street parking facilities while taxi and truck trips were distributed throughout the project site.

Vehicles were also diverted from South Street to account for the removal of parking beneath the FDR Drive. The volume of vehicles was based on projected demand for these facilities in the future without the Proposed Action. These trips were diverted to parking lots and garages in close proximity to the facilities that would be removed as part of the Proposed Action.

The reconstruction of the BMB Plaza results in the rerouting of traffic through the study area. Northbound vehicles were assumed to divert from South Street to either Whitehall Street, which would allow for eastbound access between State Street and South Street or to Water Street. Southbound vehicles were assumed to divert from South Street at Broad Street or further north to bypass the area near the BPU. A portion of both northbound and southbound traffic was assumed to completely avoid local streets in the study area by traveling directly between the BPU and the FDR Drive, or by using interior streets such Broadway and Church Street.

Figures 13-8 and 13-9 show the increment of project-generated trips within the study area. The numbers shown are the composite of trips generated by new uses and traffic diversions with implementation of roadway improvements and the removal of parking facilities. The project-generated increment was then added to the networks developed for the future without the Proposed Action to result in the total traffic volumes with completion of the Proposed Action (Build condition) as shown in Figures 13-10 and 13-11.

CAPACITY ANALYSIS RESULTS

Tables 13-10 and 13-11 compare the 2009 capacity analysis without and with completion of the Proposed Action. The Proposed Action would result in changes in the operation of area streets and intersections, but generally, the LOS would continue to be mid-D (45.0 seconds of delay) or better at the analysis approaches, and conditions at some locations would improve. However, there would be capacity constraints on certain intersection approaches, which would result in LOS D, E, or F conditions with more than 45.0 seconds of delay, as set forth in Tables 13-10 and 13-11:

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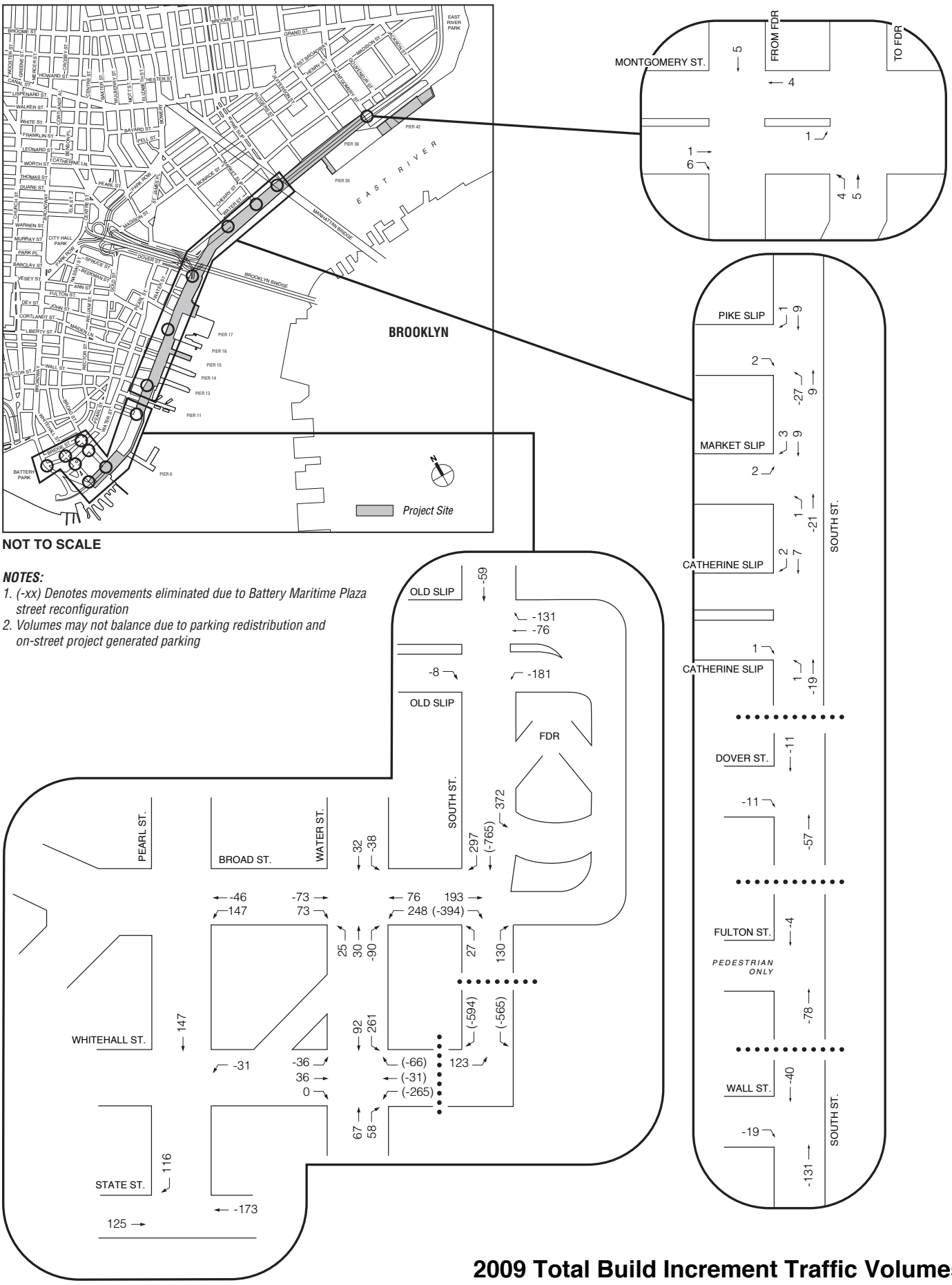


NOT TO SCALE

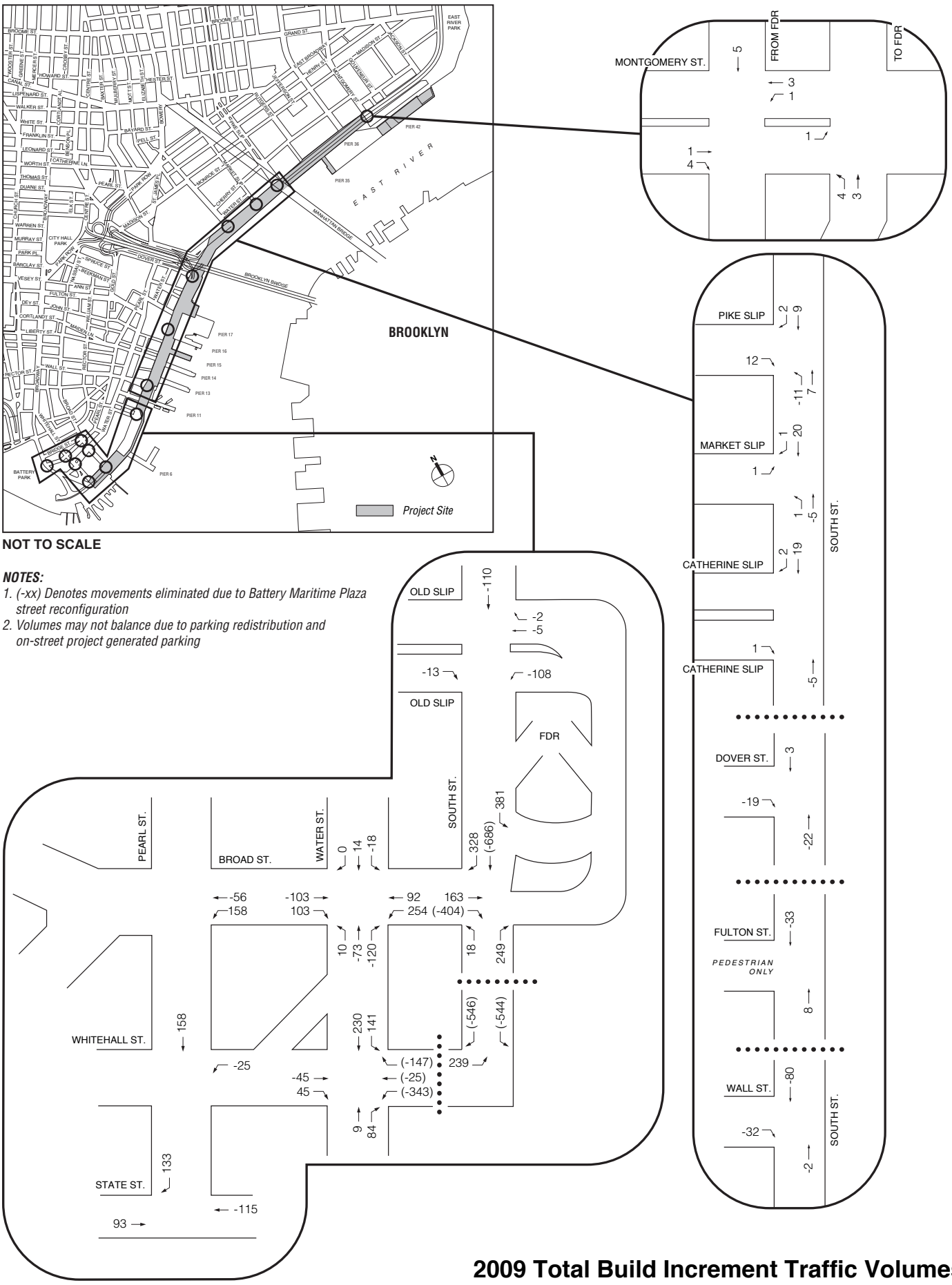
NOTES:

1. *(-xx) Denotes movements eliminated due to Battery Maritime Plaza street reconfiguration*
2. *Volumes may not balance due to parking redistribution and on-street project generated parking*

2009 Total Build Increment Traffic Volumes
AM Peak Hour

Figure 13-8

4.27.07



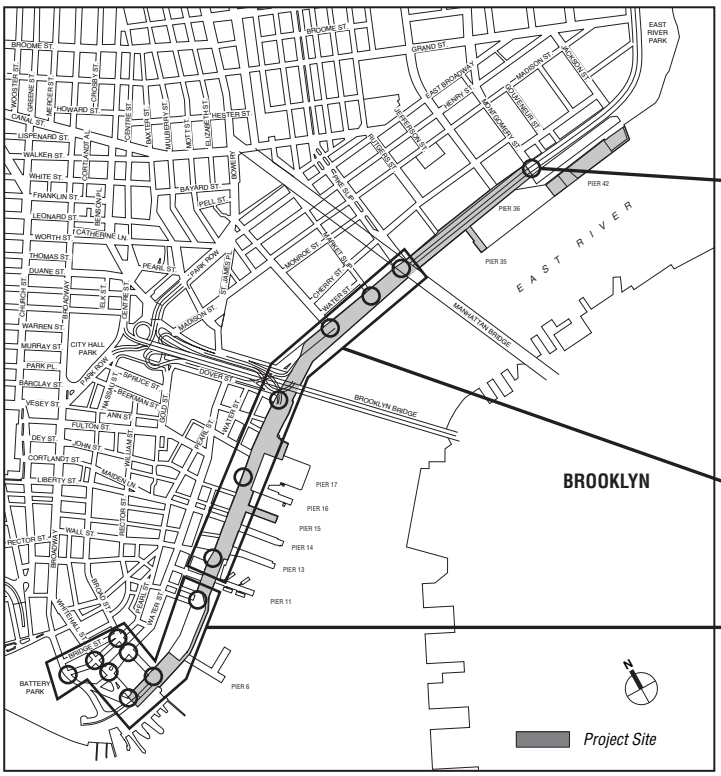
NOTES:

1. *(-xx) Denotes movements eliminated due to Battery Maritime Plaza street reconfiguration*
2. *Volumes may not balance due to parking redistribution and on-street project generated parking*

2009 Total Build Increment Traffic Volumes
PM Peak Hour

Figure 13-9

4.27.07



NOT TO SCALE

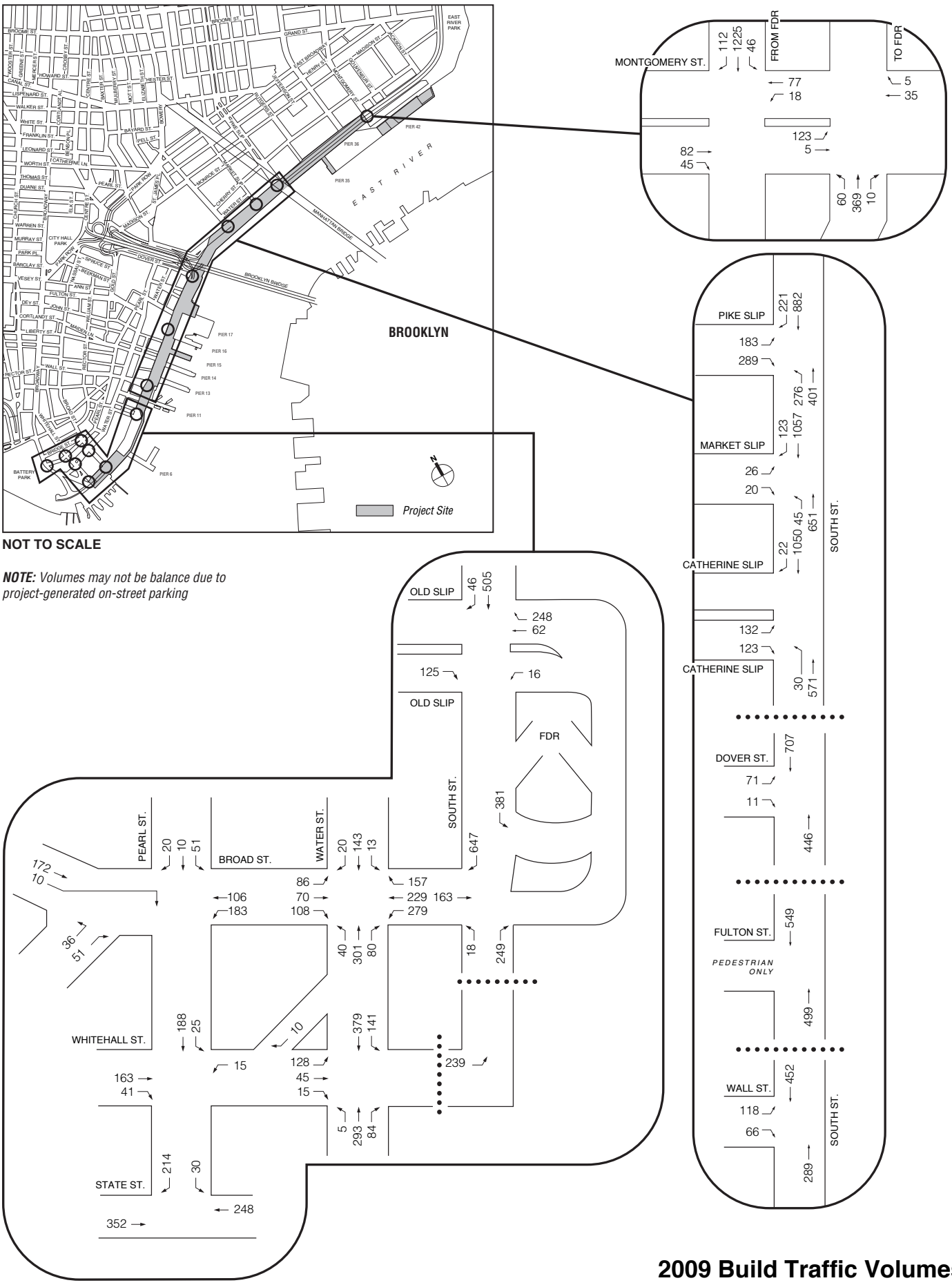
NOTE: *Volumes may not be balance due to project-generated on-street parking*

2009 Build Traffic Volumes
AM Peak Hour

Figure 13-10

EAST RIVER *Waterfront Esplanade and Piers*

4.27.07



NOTE: *Volumes may not be balance due to project-generated on-street parking*

2009 Build Traffic Volumes
PM Peak Hour

Figure 13-11

EAST RIVER *Waterfront Esplanade and Piers*

Table 13-10
2009 No Build and Build Conditions Level of Service Analysis for Signalized Intersections—AM Peak Hour

Intersection	2009 No Build				2009 Build				
	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS	
South St. & Montgomery St. (SB)									
Eastbound	TR	0.35	24.4	C	TR	0.37	24.	C	
Westbound	LT	0.16	21.2	C	LT	0.17	21.4	C	
Southbound	LTR	0.59	15.4	B	LTR	0.6	15.5	B	
	Intersection		16.8	B	Intersection		17.0	B	
South St. & Montgomery St (NB)									
Eastbound	LT	0.37	25.0	C	LT	0.38	25.0	C	
Westbound	TR	0.11	20.7	C	TR	0.11	20.7	C	
Northbound	LTR	0.41	13.5	B	LTR	0.43	13.6	B	
	Intersection		16.9	B	Intersection		17.0	B	
South St. & Pike St.									
Eastbound	L	0.36	27.1	C	L	0.36	27.1	C	
	R	0.77	41.7	D	R	0.78	42.4	D	
Northbound	LT	1.16	107.5	F	L	1.39	218.5	F	*
					T	0.43	12.0	B	
Southbound	TR	0.72	24.5	C	TR	1.48	250.3	F	*
	Intersection		55.6	E	Intersection		153.7	F	
South St. & Market Slip									
Eastbound	L	0.04	19.8	B	L	0.05	19.8	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	
					T	0.89	34.8	C	
Southbound	TR	0.66	17.0	B	TR	1.35	185.9	F	*
	Intersection		30.0	C	Intersection		121.3	F	
South St. & Catherine Slip									
Eastbound	L	0.11	20.6	C	L	0.11	20.6	C	
	R	0.11	20.7	C	R	0.12	20.8	C	
Northbound	LT	0.93	40.3	D	L	0.17	12.3	B	
					T	0.87	31.6	C	
Southbound	TR	0.60	15.7	B	TR	1.22	131.5	F	*
	Intersection		26.0	C	Intersection		85.1	F	
South St. & Dover St.									
Eastbound	LR	0.59	30.6	C	LR	0.55	29.4	C	
Northbound	T	0.37	12.5	B	T	0.53	15.7	B	
Southbound	T	0.85	28.1	C	T	0.80	24.6	C	
	Intersection		23.2	C	Intersection		22.7	C	
South St. & Fulton St.									
Northbound	T	0.33	12.0	B	T	0.61	18.1	B	
Southbound	T	0.74	22.6	C	T	0.63	17.8	B	
	Intersection		17.6	B	Intersection		18.0	B	
South St. & Wall St.									
Eastbound	LR	0.91	73.0	E	LR	0.91	75.4	E	
Northbound	T	0.30	11.7	B	T	0.43	14.1	B	
Southbound	T	0.57	17.1	B	T	0.42	13.6	B	
	Intersection		24.6	C	Intersection		26.1	C	

Table 13-10 (cont'd)
2009 No Build and Build Conditions Level of Service Analysis for Signalized Intersections—AM Peak Hour

Intersection	2009 No Build				2009 Build				
	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS	
South St. & Old Slip									
Eastbound	R	0.35	24.6	C	R	0.33	24.1	C	
Westbound	L	0.54	27.5	C	L	0.18	21.4	C	
	T	1.02	69.8	E	T	0.64	29.7	C	
Southbound	TR	0.79	31.2	C	TR	0.61	22.4	C	
	Intersection		45.6	D	Intersection		25.3	C	
South St. & Broad Street									
Eastbound	Not a signalized intersection during the No Build condition				T	0.32	29.6	C	
Northbound					L	0.18	30.8	C	
					T	0.25	29.8	C	
Southbound					R	0.62	10.6	B	
					Intersection		16.2	B	
South St. & Whitehall St									
Eastbound					L	0.07	9.8	A	
Southbound	R	0.56	15.3	B					
	Intersection		15.3	B	Intersection		9.8	A	
Water St. & Broad Street									
Eastbound	LTR	1.09	109.8	F	LTR	2.72	830.9	F	*
Westbound	LTR	1.08	91.1	F	L	1.50	277.9	F	*
					TR	1.38	214.2	F	*
Northbound	LTR	0.65	18.0	B	LTR	0.59	16.3	B	
Southbound	LTR	0.44	13.9	B	LTR	0.35	12.5	B	
	Intersection		54.8	D	Intersection		222.8	F	
Water St. & Whitehall St.									
Eastbound	LR	0.94	82.5	F	LTR	0.70	44.4	D	
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	*
Southbound	T	0.19	18.4	B	DefL	1.59	316.0	F	*
					T	0.51	23.8	C	
	Intersection		53.7	D	Intersection		104.7	F	
Pearl St. & Broad Street									
Eastbound	TR	0.27	15.0	B	TR	0.27	15.0	B	
Westbound	LT	0.50	18.4	B	LT	0.92	45.9	D	*
Northbound	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	
	Intersection		30.9	C	Intersection		44.1	D	
Pearl St. & State Street									
Eastbound	T	0.53	15.9	B	T	0.74	22.8	C	
Westbound	T	0.46	13.7	B	T	0.28	11.6	B	
Southbound	LR	0.63	33.2	C	LR	1.08	99.8	F	*
	Intersection		18.1	B	Intersection		42.6	D	

Notes:
L = Left Turn, T = Through, R = Right Turn, DefL = Defacto Left Turn; LOS = Level of Service; * = Significant traffic impact.
Average vehicle delays in excess of 120 seconds indicate significant congestion but are not necessarily reflective of the actual delay that would be experienced by drivers.

Table 13-11
2009 No Build and Build Conditions Level of Service Analysis for Signalized Intersections—PM Peak Hour

Intersection	2009 No Build				2009 Build				
	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS	
South St. & Montgomery St. (SB)									
Eastbound	TR	0.34	24.0	C	TR	0.35	24.3	C	
Westbound	LT	0.4	26.1	C	LT	0.42	26.5	C	
Southbound	LTR	1.06	59.9	E	LTR	1.06	61.4	E	
	Intersection		55.1	E	Intersection		56.2	E	
South St. & Montgomery St (NB)									
Eastbound	LT	0.39	25.3	C	LT	0.40	25.4	C	
Westbound	TR	0.2	22.2	C	TR	0.20	22.2	C	
Northbound	LTR	0.63	17.6	B	LTR	0.64	17.8	B	
	Intersection		19.5	B	Intersection		19.7	B	
South St. & Pike St.									
Eastbound	L	0.48	29.2	C	L	0.48	29.2	C	
	R	0.57	31.9	C	R	0.61	33.4	C	
Northbound	LT	1.22	129.8	F	L	1.52	287.1	F	*
					T	0.61	15.6	B	
Southbound	TR	1.11	86.7	F	TR	2.27	600.1	F	*
	Intersection		88.7	F	Intersection		355.8	F	
South St. & Market Slip									
Eastbound	L	0.06	20.0+	C	L	0.07	20.0+	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	
					T	1.06	73.9	E	
Southbound	TR	0.99	41.0	D	TR	2.03	490.1	F	*
	Intersection		82.5	F	Intersection		337.7	F	
South St. & Catherine Slip									
Eastbound	L	0.35	24.1	C	L	0.35	24.1	C	
	R	0.37	24.7	C	R	0.37	24.8	C	
Northbound	LT	1.05	69.0	E	L	0.41	26.5	C	
					T	0.93	41.0	D	
Southbound	TR	0.88	25.7	C	TR	1.82	394.0	F	*
	Intersection		38.2	D	Intersection		241.2	F	
South St. & Dover St.									
Eastbound	LR	0.29	23.3	C	LR	0.23	22.3	C	
Northbound	T	0.41	12.9	B	T	0.66	18.7	B	
Southbound	T	1.01	55.2	E	T	0.98	47.3	D	
	Intersection		36.8	D	Intersection		35.1	C	
South St. & Fulton St.									
Northbound	T	0.56	15.6	B	T	1.15	107.6	F	*
Southbound	T	0.88	32.7	C	T	0.68	19.2	B	
	Intersection		24.3	C	Intersection		64.3	E	
South St. & Wall St.									
Eastbound	LR	1.06	107.1	F	LR	1.03	101.8	F	
Northbound	T	0.23	11.0	B	T	0.49	15.2	B	
Southbound	T	0.81	26.8	C	T	0.57	16.2	B	
	Intersection		38.7	D	Intersection		32.8	C	

Table 13-11 (cont'd)
2009 No Build and Build Conditions Level of Service Analysis for Signalized Intersections—PM Peak Hour

Intersection	2009 No Build				2009 Build			
	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS
South St. & Old Slip								
Eastbound	R	0.5	28.0	C	R	0.45	26.7	C
Westbound	L	0.29	22.8	C	L	0.04	19.7	B
	T	0.71	32.6	C	T	0.69	31.9	C
Southbound	TR	1.15	110.9	F	TR	0.85	33.4	C
	Intersection		68.7	E	Intersection		31.7	C
South St. & Broad Street								
Eastbound	Not a signalized intersection during the No Build condition				T	0.27	29.2	C
Northbound					L	0.13	29.6	C
					T	0.50	33.7	C
Southbound					R	0.58	9.8	A
					Intersection		18.0	B
South St. & Whitehall St								
Eastbound					L	0.15	10.3	B
Southbound	R	0.49	14.2	B				
	Intersection		14.2	B	Intersection		10.3	B
Water St. & Broad Street								
Eastbound	LTR	0.91	59.7	E	LTR	1.92	463.1	F *
Westbound	LTR	1.02	81.0	F	L	1.64	337.1	F *
					TR	1.01	75.6	E
Northbound	LTR	0.70	19.4	B	LTR	0.45	13.8	B
Southbound	LTR	0.24	11.4	B	LTR	0.20	11.0	B
	Intersection		41.5	D	Intersection		174.1	F
Water St. & Whitehall St.								
Eastbound	LR	1.01	100.7	F	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
Southbound	T	0.14	18.0	B	LT	0.65	25.8	C
	Intersection		136.0	F	Intersection		31.7	C
Pearl St. & Broad Street								
Eastbound	TR	0.31	15.4	B	TR	0.31	15.4	B
Westbound	LT	0.32	15.7	B	LT	0.88	43.9	D
Northbound	LR	0.73	58.6	E	LR	0.73	58.6	E
Southbound	LTR	0.51	44.7	D	LTR	0.51	44.7	D
	Intersection		27.2	C	Intersection		37.9	D
Pearl St. & State Street								
Eastbound	T	0.37	13.2	B	T	0.51	15.4	B
Westbound	T	0.38	12.7	B	T	0.25	11.5	B
Southbound	LR	0.34	23.8	C	LR	0.76	38.6	D
	Intersection		14.5	B	Intersection		20.9	C

Notes:
L = Left Turn, T = Through, R = Right Turn, DefL = Defacto Left Turn; LOS = Level of Service; + = Significant traffic impact.
Average vehicle delays in excess of 120 seconds indicate significant congestion but are not necessarily reflective of the actual delay that would be experienced by drivers.

- The southbound approach at South and Montgomery Streets would continue to operate at LOS E with a 0.6 second increase in average vehicle delay in the PM peak hour;
- The northbound approach at South and Pike Streets would continue to operate at LOS F with a substantial increase in delay for the left-turn movement;
- The southbound approach at South and Pike Streets would continue to operate at LOS F with a substantial increase in delay in the AM and PM peak hours;
- The southbound approach at South Street and Market Slip would worsen from a No Build LOS B to a Build LOS F in the AM peak hour, and in the PM peak hour, this approach would worsen from a No Build LOS D to a Build LOS F;
- The southbound approach at South Street and Catherine Slip would worsen from a No Build LOS B to a Build LOS F in the AM peak hour, and in the PM peak hour, this approach would worsen from a No Build LOS C to a Build LOS F;
- The northbound approach at South and Fulton Streets would worsen from a No Build LOS B to a Build LOS F with an 88.5 second increase in delay in the PM peak hour;
- The eastbound approach at South and Wall Streets would continue to operate at LOS E with a 2.4 second increase in delay in the AM peak hour, and in the PM peak hour, the eastbound approach would continue to operate at LOS F with a 5.3 second decrease in delay.
- The eastbound approach at Water and Broad Streets would continue to operate at LOS F in the AM peak hour with a substantial increase in delay, and in the PM peak hour, this approach would worsen from a No Build LOS E to a Build LOS F;
- The westbound approach at Water and Broad Streets would continue to operate at LOS F in the AM peak hour with a substantial increase in delay, and in the PM peak hour this approach would realize both degradations and improvements; whereas, the through and right-turn movements would improve from No Build LOS F to Build LOS E, the left-turn would continue to operate at LOS F with a substantial increase in delay;
- The northbound approach at Water and Whitehall Streets would worsen from a No Build LOS C to a Build LOS E with a 30 second increase in delay in the AM peak hour;
- The southbound approach at Water and Whitehall Streets would operate at a No Build LOS B, but in the Build condition, the through movement would worsen to a LOS C, and the de facto left-turn movement would worsen to LOS F;
- The westbound approach at Pearl and Broad Streets would worsen from a No Build LOS B to a Build LOS D with a 27.5 second increase in delay in the AM peak hour;
- The northbound approach at Pearl and Broad Streets would continue to operate at LOS E in the AM and PM peak hours with no change in delay as compared with the No Build condition; and
- The southbound approach at Pearl and State Streets would worsen from a No Build LOS C to a Build LOS F in the AM peak hour.

The installation of a traffic signal at the intersection of South and Broad Streets would substantially improve its operation as compared with the No Build condition (see Tables 13-12 and 13-13). The intersection of Pearl and Whitehall Streets would experience some increases in delay with completion of the Proposed Action, but intersection movements would operate at LOS B or better in the AM and PM peak periods.

Table 13-12
2009 No Build and Build Conditions Level of Service Analysis for Unsignalized Intersections—AM Peak Hour

Intersection	2009 No Build				2009 Build			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
South St. & Broad Street								
Eastbound	R	1.12	120.4	F	Not an unsignalized intersection in the Build Condition			
Pearl St. & Whitehall St.								
Eastbound	TR	-	9.4	A	TR	-	10.6	B
Westbound	L	-	8.4	A	L	-	9.3	A
Southbound	LT	-	8.6	A	LT	-	11.2	B

Notes: L = Left Turn, T = Through, R = Right Turn, DefL = Defacto Left Turn; LOS = Level of Service.

Table 13-13
2009 No Build and Build Conditions Level of Service Analysis for Unsignalized Intersections—PM Peak Hour

Intersection	2009 No Build				2009 Build			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
South St. & Broad Street								
Eastbound	R	1.17	133.7	F	Not an unsignalized intersection in the Build Condition			
Pearl St. & Whitehall St.								
Eastbound	TR	-	9.5	A	TR	-	10.7	B
Westbound	L	-	8.2	A	L	-	8.6	A
Southbound	LT	-	8.5	A	LT	-	10.9	B

Notes: L = Left Turn, T = Through, R = Right Turn, DefL = Defacto Left Turn; LOS = Level of Service.

Implementation of the Proposed Action would result in increases in delays at a number of locations. These increases are attributed mostly to the proposed geometric changes on South Street north of the Brooklyn Bridge and with the reconstruction of the BMB Plaza and resultant traffic diversions. Based on the impact criteria and analysis results described above, the Proposed Action would result in significant adverse impacts at the following intersection approaches:

- The northbound approach at South and Pike Streets in the AM and PM peak hours;
- The southbound approach at South and Pike Streets in the AM and PM peak hours;
- The southbound approach at South Street and Market Slip in the AM and PM peak hours;
- The southbound approach at South Street and Catherine Slip in the AM and PM peak hours;
- The northbound approach at South and Fulton Streets in the PM peak hour;
- The eastbound approach at Water and Broad Streets in the AM and PM peak hours;
- The westbound approach at Water and Broad Streets in the AM and PM peak hours;
- The northbound approach at Water and Whitehall Streets in the AM peak hour;
- The southbound approach at Water and Whitehall Streets in the AM peak hour;
- The westbound approach at Pearl and Broad Streets in the AM peak hour; and
- The southbound approach at Pearl and State Streets in the AM peak hour.

It should be noted that 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 in 2013 or 2014, the above-described impacts on southbound South Street would not occur. Furthermore, because the reconstruction of South Street north of the Brooklyn Bridge is not yet funded, these impacts may be delayed beyond 2009, and it is possible that the FDR ramps and South Street projects could be phased to ensure that the temporary impacts on southbound traffic would not occur.

A mitigation analysis was prepared to recommend further improvements at these locations to ameliorate the adverse effects of the Proposed Action. These measures are described in Chapter 18, "Mitigation."

PARKING

The Proposed Action would result in the removal of 617 public, off-street parking spaces located beneath the FDR Drive. As a result, the total off-street parking supply in the study area would be reduced from 3,699 to 3,082. The Proposed Action would also result in new demand for off-street parking from new uses on the project site.

Table 13-14 shows the projected off-street parking utilization in the study area with completion of the Proposed Action. As shown, there would be parking shortfalls during the AM, midday, and Saturday analysis periods. The maximum projected shortfall would occur in the midday peak period with an unmet demand of 714 parking spaces.

Table 13-14
Off-Street Parking Supply and Demand in the 2009 Build Condition

	AM Peak	Midday Peak	PM Peak	Saturday Peak
2009 Build Parking Supply				
2009 No Build Parking Supply	3,699	3,699	3,699	3,699
Parking Removed by Proposed Action	617	617	617	617
Total Parking Supply	3,082	3,082	3,082	3,082
2009 Build Parking Demand				
2009 No Build Parking Demand	3,229	3,748	2,968	3,049
Project-Generated Trips	43	48	38	65
Total Parking Demand	3,272	3,796	3,006	3,114
2009 Build Parking Utilization	106%	123%	98%	101%
2009 Build Parking Surplus/(Shortfall)	(190)	(714)	76	(32)

The *CEQR Technical Manual* specifies that for proposed actions within Manhattan south of 61st Street, the inability of a proposed action or surrounding area to meet future parking demand is considered a shortfall but is not deemed a significant adverse impact. The unmet demand for parking would either (1) use facilities outside the study area with excess capacity or (2) shift their mode of travel in the future. Therefore, although the Proposed Action would create a shortfall of parking in the study area, mitigation is not required.

The Proposed Action would also result in the removal of parking for authorized City vehicles, but a replacement location would be identified prior to project implementation. Therefore, its removal would not result in a significant adverse impact on these City services.

C. TRANSIT AND PEDESTRIANS

This section describes the Proposed Action's potential effects on transit and pedestrian operations for the facilities and services in the vicinity of the project site.

METHODOLOGY

SCREENING CRITERIA

The travel demand analysis for the Proposed Action is described above in "Vehicular Traffic and Parking." As shown in Tables 13-2 and 13-3, the Proposed Action would result in a maximum of 610 new subway trips and 196 new bus trips during the peak hours of analysis. Typically, a transit analysis is not warranted for projects that would generate less than 200 peak hour transit trips at a single subway station and/or on a bus route. Given that multiple subway stations and bus routes serve the project site, it is not anticipated that more than 200 project-generated trips would use a single subway station or a single bus route; therefore, a quantified assessment of subway and bus operations was not undertaken. Although the Proposed Action would not result in enough trips to trigger a quantified analysis of transit service, it would result in the displacement of commuter bus parking. Therefore, this chapter includes a qualitative assessment of its potential effects on commuter bus operations.

Detailed assessment of pedestrian circulation is typically warranted for projects that would generate more than 200 new trips at a crosswalk, corner reservoir, or sidewalk in the vicinity of the project site. Given the substantial volume of pedestrian trips that would be generated by the Proposed Action, it was determined that a detailed assessment of crosswalks was warranted. Also, an analysis of the sidewalks adjacent to the BMB was prepared to provide a reference to describe the effects of the plaza improvements that would be included as part of the Proposed Action.

PEDESTRIAN ANALYSIS METHODOLOGY

The adequacy of the study area's sidewalks, crosswalks, and corner reservoir capacities in relation to the demand imposed on them was assessed using the methodologies presented in the *Highway Capacity Manual (HCM) Special Report 209* (Transportation Research Board, 1994). Sidewalks were analyzed in terms of pedestrian flow. The calculation of the average pedestrians per foot per minute (PFM) of effective walkway width is the basis for LOS analysis. However, due to the tendency of pedestrians to move in congregated groups, a platoon factor (+4 PFM) is applied in the calculation of pedestrian flow to more accurately estimate the dynamics of walking. This procedure generally results in an LOS one level poorer than the average flow.

Crosswalks and street corners are not easily measured in terms of free pedestrian flow, as they are influenced by the effects of traffic signals. Street corners must be able to provide sufficient space for a mix of standing pedestrians (queued to cross a street) and circulating pedestrians (crossing the street or moving around in the corner). The HCM methodologies apply a measure of time and space availability based on the area of the corner, the timing of the intersection signal, and the estimated space used by circulating pedestrians.

The total "time-space" available for these activities is the net area of the corner (in square feet) multiplied by the cycle length, which is expressed in square feet per minute. The analysis then determines the total circulation time for all pedestrian movements at the corner (expressed as pedestrians per minute). The ratio of net time-space divided by pedestrian circulation time provides the LOS measurement of square feet per pedestrian (SFP).

Crosswalk LOS is also a function of time and space. Similar to the street corner analysis, crosswalk conditions are first expressed as a measurement of the available area (the crosswalk width multiplied by the width of the street) and the permitted crossing time. This measure is expressed in square feet per minute. The average time required for a pedestrian to cross the street is calculated based on the width of the street and an assumed walking speed. The ratio of time-space available in the crosswalk to the average crossing time is the LOS measurement of available square feet per pedestrian. The LOS analysis also accounts for vehicular turning movements that traverse the crosswalk. Additionally, in the first seconds of the "walk" cycle, the initial movements of pedestrians queued to cross the street create a surge effect. To account for this effect, the LOS analysis incorporates a "surge" factor to estimate worst-case conditions.

The reported LOS results in this study are based on the latest CEQR LOS criteria, shown below, which may differ from those determined in the Highway Capacity Software (HCS) analysis outputs. The description of these LOS results is similar to those described above for subway station elements. Since the ranges for sidewalk analysis results are relatively narrow, a "+" or "-" sign is provided for rounded PFM values coinciding with the different service level thresholds (i.e., LOS A/B = 5 PFM) to show the variation in LOS. For example, analysis results of 4.9 and 5.1 PFM both round to 5 PFM. However, the former would be denoted as 5- PFM and LOS A, whereas the latter would be denoted as 5+ PFM and LOS B.

The *CEQR Technical Manual* specifies that a LOS D condition or better is considered reasonable for sidewalks, corner reservoirs, and crosswalks within the Manhattan Central Business District (CBD). For crosswalks and corner reservoirs, a LOS D condition requires a minimum of 15 SFP, while for sidewalks, a LOS D condition requires a maximum of 15 PFM.

Level of Service Criteria for Pedestrian Elements

LOS	Sidewalks	Corner Reservoirs and Crosswalks
A	5 PFM or less	60 SFP or More
B	5 to 7 PFM	40 to 60 SFP
C	7 to 10 PFM	24 to 40 SFP
D	10 to 15 PFM	15 to 24 SFP
E	15 to 25 PFM	6 to 15 SFP
F	More than 25 PFM	Less than 6 SFP

Notes: PFM = pedestrians per foot per minute. SFP = square feet per pedestrian.
Source: *2001 CEQR Technical Manual*.

For areas within the Manhattan CBD, project-related sidewalk impacts are considered significant and require examination of mitigation if there is an increase of 2 PFM over a No Build condition that is characterized by flow rates greater than 15 PFM (the breakpoint between LOS D and LOS E). For corners and crosswalks, a decrease of 1 SFP under the Build condition when the no action condition has an average occupancy of less than 15 SFP (the breakpoint between LOS D and LOS E) is considered significant. However, if there is less than a 200-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.

EXISTING CONDITIONS

COMMUTER AND TOUR BUSES

The project site contains approximately 65 to 70 parking spaces that serve commuter and tour buses. These spaces are located between Catherine and Old Slips, between Pine Street and Maiden Lane, and beneath the Manhattan Bridge overpass. The commuter buses that park at this location serve Lower Manhattan from the outer boroughs and suburban locations and lay over within the project site between their inbound and outbound runs. Passengers do not board these buses within the project site.

PEDESTRIANS

Existing pedestrian levels are based on field surveys conducted in April 2006. To determine peak conditions for pedestrian facilities, weekday counts were conducted at 15-minute intervals from 7:00 AM to 10:00 AM, 12:00 PM to 2:00 PM, and 4:00 PM to 7:00 PM. Saturday midday counts were conducted from 11:00 AM to 3:00 PM. The highest 15-minute volumes were selected for analysis from each of these peak periods. However, since the Proposed Action would generate few pedestrian trips during the AM peak period, a detailed AM peak period analysis was not conducted.

The pedestrian study area considers the crosswalks that would be most affected by new trips generated by the Proposed Action. Based on trip generation estimates and the programming of uses within the project site, seven intersections along South Street were selected for detailed analysis as follows: Montgomery Street at South Street, Pike Slip at South Street, Catherine Slip at South Street, Fulton Street at South Street, Wall Street at South Street, Old Slip at South Street, and the BMB at South Street.

As shown in Tables 13-15 and 13-16, all analyzed pedestrian elements are currently operating at acceptable LOS (15 SFP for crosswalks, 15 PFM for sidewalks) during the midday, PM, and Saturday midday peak 15-minute periods.

Table 13-15
2006 Existing Conditions: Pedestrian LOS Analysis for Sidewalks

Location	Peak Period	Sidewalk	Effective Width (feet)	15-Minute Two-Way Volume	Average		Platoon	
					PFM	LOS	PFM	LOS
South Street in front of the BMB	Midday	East	8	70	1	A	5-	A
	PM	East	8	50	0	A	4	A
	Saturday Midday	East	8	156	1	A	5+	B

Notes: PFM = pedestrians per foot per minute. "+" or "-"indicate a rounded value above or below a LOS threshold.

Table 13-16
2006 Existing Conditions: Pedestrian LOS Analysis for Crosswalks

Location	Crosswalk	Width (feet)	Without Vehicles		With Vehicles		Maximum Surge	
			SFP	LOS	SFP	LOS	SFP	LOS
Existing Midday								
South St. at Montgomery St.	North	14	19530	A	18906	A	18051	A
	South	14	6510	A	6389	A	4745	A
South St. at Pike Slip	North	14.5	1602	A	1361	A	675	A
	South	12	2916	A	2264	A	1254	A
South St. at Catherine Slip	North	13	788	A	711	A	293	A
	South	15	3487	A	3162	A	1354	A
South St. at Fulton St.	North	30	113	A	113	A	45	B
	South	30	113	A	113	A	45	B
South St. at Wall St.	North	16	207	A	191	A	87	A
	South	17	416	A	388	A	175	A
South St. at Old Slip	North	13	245	A	245	A	115	A
South St. at the BMB	South	11.6	106	A	106	A	73	A
Existing PM								
South St. at Montgomery St.	North	14	2790	A	2701	A	2579	A
	South	14	19530	A	19166	A	14235	A
South St. at Pike Slip	North	14.5	1468	A	1248	A	618	A
	South	12	3645	A	2830	A	1568	A
South St. at Catherine Slip	North	13	725	A	654	A	270	A
	South	15	20925	A	18969	A	8126	A
South St. at Fulton St.	North	30	172	A	172	A	68	A
	South	30	172	A	172	A	68	A
South St. at Wall St.	North	16	81	A	75	A	34	C
	South	17	484	A	451	A	204	A
South St. at Old Slip	North	13	136	A	136	A	64	A
South St. at the BMB	South	11.6	162	A	162	A	111	A
Existing Saturday Midday								
South St. at Montgomery St.	North	14	6510	A	6302	A	6017	A
	South	14	3906	A	3833	A	2847	A
South St. at Pike Slip	North	14.5	476	A	405	A	201	A
	South	12	1458	A	1132	A	627	A
South St. at Catherine Slip	North	13	824	A	743	A	307	A
	South	15	10462	A	9485	A	4063	A
South St. at Fulton St.	North	30	81	A	81	A	32	C
	South	30	81	A	81	A	32	C
South St. at Wall St.	North	16	158	A	147	A	67	A
	South	17	624	A	582	A	263	A
South St. at Old Slip	North	13	453	A	453	A	212	A
South St. at the BMB	South	11.6	44	B	44	B	30	C

Notes: SFP = square feet per pedestrian

THE FUTURE WITHOUT THE PROPOSED ACTION

COMMUTER AND TOUR BUSES

In the future without the Proposed Action, there will be no change in commuter and tour bus parking beneath the FDR Drive.

PEDESTRIANS

Pedestrian conditions in the future without the Proposed Action were assessed to establish a baseline against which to evaluate the potential impacts of the Proposed Action. This analysis incorporates general background growth, effects of nearby developments, and transportation improvements that may affect pedestrian movements in the study area.

The No Build peak period volume projections were applied to the existing pedestrian networks to project 2009 operating conditions absent the Proposed Action. As shown in Tables 13-17 and 13-18, all sidewalk and crosswalk analysis locations will operate at acceptable LOS (15 SFP for crosswalks, 15 PFM for sidewalks) during the midday, PM, and Saturday midday peak periods.

Table 13-17
2009 No Build Conditions: Pedestrian LOS Analysis for Sidewalks

Location	Peak Period	Sidewalk	Effective Width (feet)	15-Minute Two-Way Volume	Average		Platoon	
					PFM	LOS	PFM	LOS
South Street in front of the BMB	Midday	East	8	161	1	A	5+	B
	PM	East	8	95	1	A	5-	A
	Saturday Midday	East	8	226	2	A	6	B

Notes: PFM = pedestrians per foot per minute. "+" or "-"indicate a rounded value above or below a LOS threshold.

PROBABLE IMPACTS OF THE PROPOSED ACTION

COMMUTER AND TOUR BUSES

The Proposed Action would remove up to 45 commuter and tour bus parking spaces beneath the FDR Drive adjacent to Piers 13 and 14. It would also remove approximately 20 spaces along South Street near the Manhattan Bridge. Bus operators would be expected to seek alternative parking locations for layover periods both within and outside Lower Manhattan. This EIS recognizes that increased bus circulation as well as legal and illegal bus parking elsewhere in Lower Manhattan could result in limited adverse effects on neighborhood character. But the wide distribution of buses over areas adjacent to the two-mile esplanade and outside Lower Manhattan would minimize the adverse effects of bus displacement. The City's enforcement of existing parking regulations would further disperse buses and minimize adverse effects. However, even if some of the buses that now park on the project site beneath the FDR Drive and near the Manhattan Bridge continue to circulate or idle within the adjacent neighborhoods, this would not constitute a significant adverse impact on neighborhood character. As described in Chapter 8, "Neighborhood Character," traffic conditions are one of several components of neighborhood character, and the potential for an increased presence of buses in the adjacent neighborhoods at some periods would not significantly impact overall neighborhood character.

NYCDOT will be conducting a study for Bus Management in Lower Manhattan from Canal Street to the Battery. It will entail conducting a market analysis, possible alternative parking site selection, and possible bus management strategies. This study will be part of a larger study for Lower Manhattan Street Management. Absent an off-street location for these buses, management strategies may be adopted to require that operators park buses outside of Lower Manhattan and/or other areas of the City. The bus parking would not be removed until the NYCDOT study is completed.

While the removal of commuter and tour bus parking would affect their operations, passengers would not be impacted, since they do not board or alight buses at these locations.

Table 13-18
2009 No Build Conditions: Pedestrian LOS Analysis for Crosswalks

Location	Crosswalk	Width (feet)	Without Vehicles		With Vehicles		Maximum Surge	
			SFP	LOS	SFP	LOS	SFP	LOS
No Build Midday								
South St. at Montgomery St.	North	14	6510	A	6295	A	6017	A
	South	14	3906	A	3822	A	2847	A
South St. at Pike Slip	North	14.5	1355	A	1132	A	571	A
	South	12	2083	A	1559	A	896	A
South St. at Catherine Slip	North	13	725	A	647	A	270	A
	South	15	2616	A	2363	A	1016	A
South St. at Fulton St.	North	30	95	A	95	A	38	C
	South	30	95	A	95	A	38	C
South St. at Wall St.	North	16	177	A	162	A	75	A
	South	17	320	A	298	A	135	A
South St. at Old Slip	North	13	156	A	156	A	73	A
South St. at the BMB	South	11.6	44	B	44	B	30	C
No Build PM								
South St. at Montgomery St.	North	14	977	A	944	A	903	A
	South	14	1395	A	1365	A	1017	A
South St. at Pike Slip	North	14.5	1101	A	920	A	464	A
	South	12	2083	A	1559	A	896	A
South St. at Catherine Slip	North	13	625	A	558	A	233	A
	South	15	5231	A	4726	A	2032	A
South St. at Fulton St.	North	30	147	A	147	A	58	B
	South	30	147	A	147	A	58	B
South St. at Wall St.	North	16	74	A	68	A	31	C
	South	17	349	A	324	A	147	A
South St. at Old Slip	North	13	101	A	101	A	47	B
South St. at the BMB	South	11.6	78	A	78	A	53	B
No Build Saturday Midday								
South St. at Montgomery St.	North	14	1395	A	1349	A	1289	A
	South	14	1221	A	1194	A	890	A
South St. at Pike Slip	North	14.5	452	A	377	A	190	A
	South	12	1215	A	910	A	523	A
South St. at Catherine Slip	North	13	756	A	674	A	281	A
	South	15	5231	A	4726	A	2032	A
South St. at Fulton St.	North	30	72	A	72	A	29	C
	South	30	72	A	72	A	29	C

Table 13-18 (cont'd)
2009 No Build Conditions: Pedestrian LOS Analysis for Crosswalks

Location	Crosswalk	Width (feet)	Without Vehicles		With Vehicles		Maximum Surge	
			SFP	LOS	SFP	LOS	SFP	LOS
No Build Saturday Midday (cont'd)								
South St. at Wall St.	North	16	142	A	130	A	60	A
	South	17	447	A	416	A	188	A
South St. at Old Slip	North	13	313	A	313	A	146	A
South St. at the BMB	South	11.6	30	C	30	C	21	D

Notes: SFP = square feet per pedestrian

PEDESTRIANS

The Proposed Action would generate new pedestrian trips within the study area. It would also result in improved pedestrian facilities as follows:

- The entrance to the BPU would be moved approximately 350 feet to the north, creating the space for a new ¾-acre pedestrian plaza at the entrance of the BMB.
- Between the BMB and Old Slip, the existing narrow esplanade would be widened to approximately 35 feet with a new, approximately 15- to 25-foot-wide structure built out over the water.
- Between Old Slip and the Brooklyn Bridge, trees, plants, and benches would be added to enhance the existing esplanade.
- Between the Brooklyn Bridge and Pier 35, the Proposed Action would enhance the esplanade while keeping it upland of the bulkhead; the esplanade would not be widened north of the Brooklyn Bridge.
- Between Pier 35 and Montgomery Street, a multilevel landscape could be created to enhance the open space and block the view of the existing adjacent building on Pier 36, which would continue to be used by the Department of Sanitation.
- The shed at Pier 42 would be replaced by a new "urban beach" above the East River, with berms reminiscent of dunes separating the continuing esplanade and the beach.

The pedestrian elements along South Street would receive additional enhancements from a separate project, which would include streetscape improvements at several upland gateways to the waterfront, such as Rutgers and Burling Slips. This project would be completed after 2009.

Project-generated pedestrian trips were assigned to the study area based on two principal assumptions as follows:

- Fulton Street is already a major gateway to the project site, since it provides access to South Street Seaport. Therefore, 50 percent of the Proposed Action's retail and cultural trips were assigned to the crosswalks at Fulton Street and South Street, and the remainder was distributed throughout the study area at likely pavilion locations.
- Pedestrians accessing the new park space would be likely to enter the esplanade at numerous points along its length. Therefore, these trips were distributed throughout the length of the esplanade.

The project-generated volumes were superimposed onto the No Build pedestrian networks to project the total 2009 pedestrian volumes with completion of the Proposed Action. Capacity analysis was conducted to determine the incremental change in LOS with and without completion of the Proposed Action. As shown in Table 13-19, all of the analyzed crosswalks would operate at LOS D or better during the peak periods of analysis.

Table 13-19
2009 Build Conditions: Pedestrian LOS Analysis for Crosswalks

Location	Crosswalk	Width (feet)	Without Vehicles		With Vehicles		Maximum Surge	
			SFP	LOS	SFP	LOS	SFP	LOS
Build Midday								
South St. at Montgomery St.	North	14	320	A	310	A	296	A
	South	14	310	A	303	A	226	A
South St. at Pike Slip	North	14.5	185	A	155	A	78	A
	South	12	164	A	123	A	70	A
South St. at Catherine Slip	North	13	169	A	150	A	63	A
	South	15	232	A	210	A	90	A
South St. at Fulton St.	North	30	59	B	59	B	23	D
	South	30	59	B	59	B	23	D
South St. at Wall St.	North	16	144	A	131	A	61	A
	South	17	230	A	214	A	97	A
South St. at Old Slip	North	13	125	A	125	A	59	B
South St. at the BMB	South	11.6	43	B	43	B	30	C
Build PM								
South St. at Montgomery St.	North	14	343	A	331	A	317	A
	South	14	383	A	375	A	279	A
South St. at Pike Slip	North	14.5	263	A	220	A	111	A
	South	12	251	A	188	A	108	A
South St. at Catherine Slip	North	13	227	A	200	A	84	A
	South	15	380	A	344	A	148	A
South St. at Fulton St.	North	30	93	A	93	A	37	C
	South	30	93	A	93	A	37	C
South St. at Wall St.	North	16	70	A	64	A	30	C
	South	17	276	A	256	A	116	A
South St. at Old Slip	North	13	92	A	92	A	43	B
South St. at the BMB	South	11.6	76	A	76	A	52	B
Build Saturday Midday								
South St. at Montgomery St.	North	14	144	A	139	A	133	A
	South	14	142	A	138	A	103	A
South St. at Pike Slip	North	14.5	86	A	72	A	36	C
	South	12	82	A	61	A	35	C
South St. at Catherine Slip	North	13	95	A	84	A	35	C
	South	15	123	A	111	A	48	B
South St. at Fulton St.	North	30	38	C	38	C	15	D
	South	30	38	C	38	C	15	D
South St. at Wall St.	North	16	102	A	93	A	43	B
	South	17	208	A	193	A	88	A
South St. at Old Slip	North	13	152	A	152	A	71	A
South St. at the BMB	South	11.6	29	C	29	C	20	D

Notes: SFP = square feet per pedestrian

As described above, impacts to crosswalks are considered significant if there would be a deterioration from No Build LOS D or better to Build LOS E or F, or when the available circulation space is decreased by 1 SFP or more at a location with a No Build LOS E or F. Based on these criteria, the Proposed Action would not result in significant adverse impacts on the analyzed crosswalks within the study area.

The proposed improvements at the BMB Plaza would result in a new plaza that would provide for a substantially larger area for pedestrian circulation than will exist in the No Build condition. Therefore, pedestrian circulation in this area would operate at LOS A with generally free-flowing conditions.

PEDESTRIAN SAFETY

Accident data for intersections in the study area and vicinity were obtained from the New York State Department of Transportation (NYSDOT). This information provides the most recent three years of available accident data, from January 1, 2000 to December 31, 2002. Accidents are classified as either non-reportable (involving less than $1,000 in property damage and no injuries or fatalities) or reportable. According to the *CEQR Technical Manual*, a high pedestrian accident location is one where there were five or more pedestrian-related accidents in any year of the most recent three-year period for which data are available.

A review of the NYSDOT data revealed two locations as reportable and one location as a high accident intersection based on CEQR criteria as follows:

- Water Street and Broad Street: five pedestrian accidents within a 12-month period (March 2000 to January 2001);
- South Street and Fulton Street: one pedestrian fatality (November 2002); and
- South Street and Pike Street: one bicyclist fatality (July 2001).

The Proposed Action would result in changes in vehicle volumes at each of these accident locations. At the intersection of Water and Broad Streets, vehicle volumes would increase as a result of geometric changes in the area of the BMB Plaza; however, the project-generated impacts at this location would be fully mitigated. Furthermore, the Proposed Action would not substantially increase pedestrian volumes at this location. Although five pedestrian accidents were recorded at this location in a nine-month period, there were fewer incidents during other months of the analysis period. Therefore, it is not anticipated that the Proposed Action would adversely affect pedestrian safety at this location.

During the accident analysis period, two fatalities occurred at intersections along South Street. It is anticipated that the improvements that would be implemented as part of the Proposed Action would reduce the potential for accidents at these locations, since the esplanade would be widened. There would be an increase in pedestrians crossing South Street to access the esplanade and piers, but given the volume of traffic in this area and the historical (three-year) accident data, it is not anticipated that a substantial number of new vehicle-pedestrian conflicts would occur. ✷