Chapter 11: Transportation

A. INTRODUCTION

This chapter examines the potential transportation impacts associated with the development of an approximately 364,000 square-foot (sf) parcel located at 1752 Shore Parkway (Block 6491, Lots 207 and 292) in Brooklyn with destination retail and publicly accessible waterfront open space. The proposed development's potential impacts on traffic, parking, transit and pedestrian conditions are discussed in this chapter.

As described in Chapter 1, "Project Description," the proposed project would result in the development of an approximately 214,000 sf commercial building, currently planned to include a BJ's Wholesale Club and three other destination retail stores. In addition, the development site would incorporate an approximately 690-space above-grade public parking garage and approximately 2.4 acres of publicly accessible waterfront open space.

The proposed development is expected to be completed and occupied by 2013, the analysis year for assessing potential impacts. The traffic capacity analysis for the proposed project was conducted for the weekday midday, weekday PM, and Saturday PM peak hours—the periods during which the project-generated traffic and the overall traffic levels in the study area would be greatest. All analyses presented in this chapter were prepared pursuant to the methodologies and criteria in the *2010 City Environmental Quality Review (CEQR) Technical Manual*[1].

PRINCIPAL CONCLUSIONS

TRAFFIC

Traffic conditions were evaluated at 20 intersections, comprising 19 signalized locations and one unsignalized location. The analysis considered traffic generated by the proposed development as well as future background growth and trips generated by other projects with expected completion dates before the 2013 Build year. The analysis results show that significant adverse traffic impacts would be expected at five intersections during the weekday midday peak hour, at six intersections each during the weekday PM peak hour, and at seven intersections during the Saturday PM peak hour. Traffic improvement measures—including signal timing modifications, lane restriping, and changes to parking regulations—were explored to mitigate these significant adverse impacts. With implementation of the traffic improvement measures, unmitigated impacts would remain in all three peak hours at one intersection, 20th Avenue and 86th Street, in 2013. The findings of this assessment are presented in Chapter 19, "Mitigation."

PARKING

The proposed development would provide approximately 690 on-site parking spaces in a parking garage. These spaces would be sufficient to accommodate the peak parking demand

[1] The only exception was the use of a 1.0% background growth rate, consistent with the *2001 CEQR Technical Manual*, to be conservative.

projected for the proposed development. Therefore, a peaking shortfall or the potential for significant adverse impacts on parking conditions would not result with the proposed project.

SAFETY

The pedestrian safety analysis identified two study area intersections as high pedestrian/bicycle accident locations: Bay Parkway at Cropsey Avenue and Bay Parkway at 86th Street. Although there would be only a small number of pedestrian trips from the proposed development traversing these two intersections, safety measures were recommended to reduce conflicts with vehicles and enhance the overall safety for pedestrians and bicyclists.

TRANSIT AND PEDESTRIANS

Since all site-related auto trips and taxi pick-ups/drop-offs would be accommodated at the on-site parking garage, only persons arriving by bus or walking from the local neighborhood would need to access the site on foot. The proposed actions would not generate any subway trips and would result in only 17, 16, and 37 person trips by bus during the weekday midday, weekday PM, and Saturday PM peak hours, respectively. Since these project-generated incremental trips are below the CEQR threshold of 200 peak hour transit and pedestrian trips, no quantitative analyses are warranted and the proposed project is not expected to result in any significant adverse transit or pedestrian impacts.

B. METHODOLOGY

TRAFFIC

The operations of the study area signalized and unsignalized intersections were analyzed by applying the methodologies presented in the *2000 Highway Capacity Manual (HCM)* using the *Highway Capacity Software (HCS+ 5.4)*. A description of these methodologies is provided below.

SIGNALIZED INTERSECTIONS

The level-of-service (LOS) for a signalized intersection is based on the average stopped delay per vehicle for the various lane groups (grouping of movements in one or more travel lanes), the approaches, and the overall intersections. The levels of service are defined as follows:

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
Source: 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 entire 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. Conditions at LOS E and F reflect poor service levels and frequent cycle failures. The *HCM* methodology provides for a summary of the intersection's operating conditions by identifying the two critical movements (the worst case from each roadway) and calculating critical v/c ratio, delay, and LOS. Within New York City, the midpoint of LOS D (45 seconds of delay) is generally perceived as the threshold between acceptable and unacceptable delays.

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 as follows:

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

Source: 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. As with signalized intersections, within New York City, the midpoint of LOS D (30 seconds of delay) is generally perceived as the threshold between acceptable operations.

TRANSIT ANALYSIS SCREENING

The *CEQR Technical Manual* recommends that a quantitative analysis be performed if the proposed project is expected to result in 200 or more transit trips. As shown later in **Table 11-7**, the proposed project would not generate any subway trips and would result in only 17, 16, and 37 person trips by bus during the weekday midday, weekday PM, and Saturday PM peak hours, respectively. Since these project-generated incremental trips are below the CEQR threshold of 200 peak hour transit trips, no quantitative analyses are warranted and the proposed project is not expected to result in any significant adverse transit impacts.

PEDESTRIANS ANALYSIS SCREENING

The *CEQR Technical Manual* recommends that a quantitative analysis be performed if the proposed project is expected to result in 200 or more pedestrian trips. Since all site-related auto trips and taxi pick-ups/drop-offs would be accommodated at the on-site parking garage, only trips by bus would need to access the site on foot. As summarized in **Table 11-7** later in this chapter, the proposed project would result in 17, 16, and 37 person trips by bus during the weekday midday, weekday PM, and Saturday PM peak hours, respectively. Since these project-generated incremental trips are below the CEQR threshold of 200 peak hour pedestrian trips, no quantitative analyses are warranted and the proposed project is not expected to result in any significant adverse pedestrian impacts.

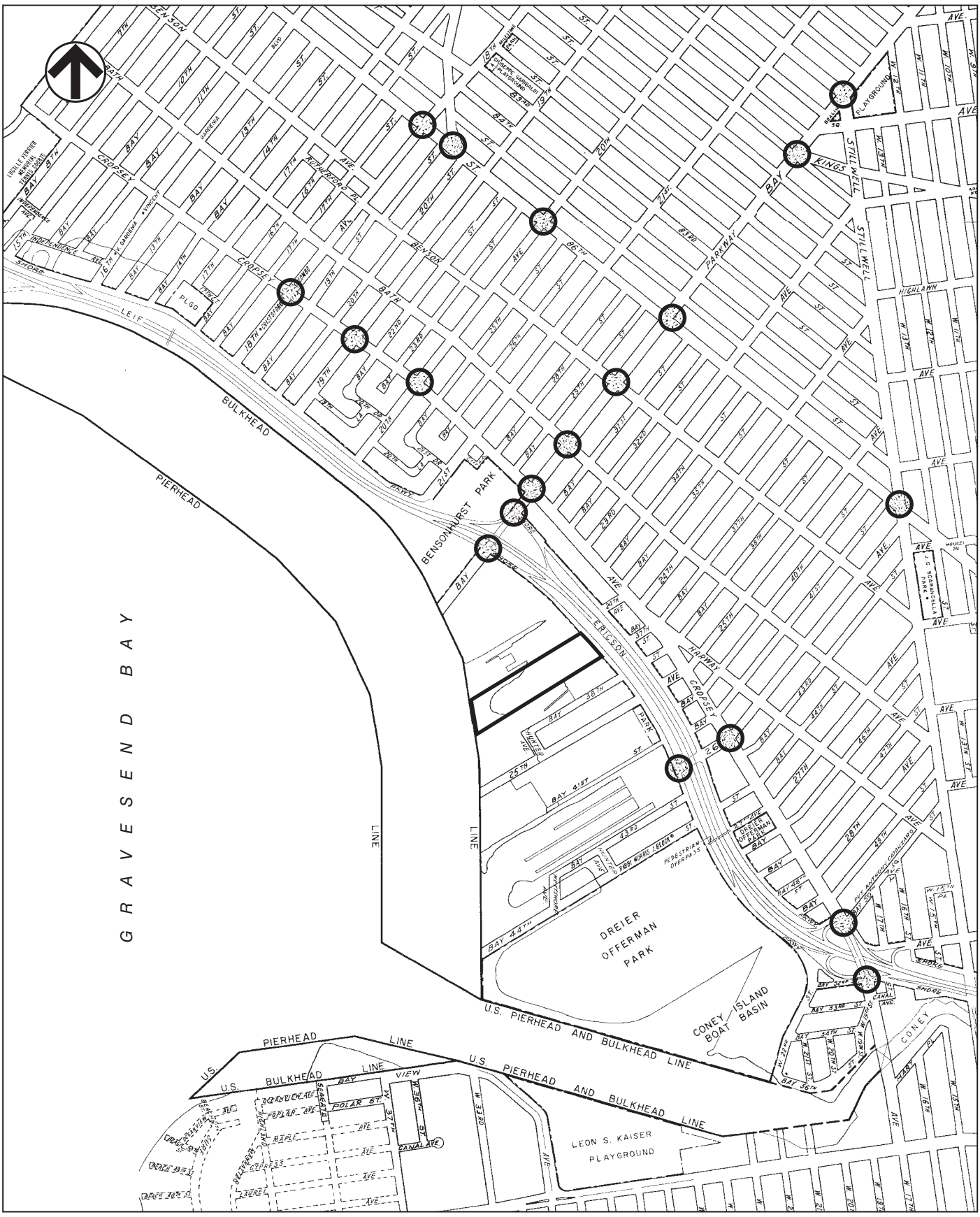
C. EXISTING CONDITIONS

STUDY AREA ROADWAY NETWORK

To assess the traffic impacts associated with the proposed project, an overall study area was defined that considers the location of the proposed development, primary access routes to and from the site, and key intersections likely to be affected by project-generated trips. The project site is located between the Belt Parkway eastbound service road (Shore Parkway South) and Gravesend Bay (Lower New York Bay) and is located between the New York Sports Club, Samurai Sam restaurant and Rejuvenation, a medical spa, to the north (west) and Bay Side Fuel Oil Depot to the south (east). The study area is located in the Bensonhurst neighborhood in southern Brooklyn and is bounded by Stillwell Avenue to the east, Kings Highway to the north, New Utrecht Avenue to the west, and the Gravesend Bay to the southwest.

As shown in **Figure 11-1**, the study area consists of a network containing 20 intersections, as listed below:

1. 18th Avenue and 86th Street;
2. Bay Parkway and Bay Ridge Parkway;
3. Bay Parkway and 78th Street-Kings Highway;
4. Bay Parkway and 86th Street;
5. Bay Parkway and Benson Avenue;
6. Bay Parkway and Bath Avenue;
7. Bay Parkway and Cropsey Avenue;
8. Bay Parkway and Belt Parkway WB Ramps;
9. Bay Parkway and Belt Parkway EB Ramps;
10. Stillwell Avenue and 86th Street;
11. 26th Avenue and Cropsey Avenue;
12. 26th Avenue and Belt Parkway EB Service Road;
13. Avenue Z and Bay 50th Street;
14. Cropsey Avenue and Bay 50th Street;
15. Cropsey Avenue and Belt Parkway EB Ramps;
16. New Utrecht Avenue and 86th Street;
17. 20th Avenue and 86th Street;
18. 18th Avenue and Cropsey Avenue;
19. 19th Avenue and Cropsey Avenue;
20. 20th Avenue and Cropsey Avenue



Project Site Boundary

Analysis Intersection

Traffic Study Area

Figure 11-1

BROOKLYN BAY CENTER

The physical and operational characteristics of the study area roadways and streets are as follows:

- *Belt Parkway* is a two-way east-west limited-access highway that generally operates with three moving lanes of traffic in each direction with entry and exit ramps at Bay Parkway and Cropsey Avenue. The eastbound service road, which runs between Bay Parkway and Cropsey Avenue, provides access and egress to the project site.
- *Bay Parkway* is a major two-way north-south roadway that generally operates with two moving lanes of traffic with curbside parking in each direction. At its intersection with Cropsey Avenue, it provides exclusive left-turn lanes in both directions, and at the Belt Parkway eastbound ramp, it provides an exclusive left-turn lane in the southbound direction and an exclusive right-turn lane in the northbound direction. In addition, the roadway contains a southbound Class 3 bicycle facility (on-street signed route) from Shore Parkway to Bath Avenue. Future New York City Department of Transportation (NYCDOT) plans for this route include installation of "sharrow" roadway markings delineating a shared lane.
- *Cropsey Avenue* is a local two-way east-west street that curves southwards making it a north-south street at its intersection with the Belt Parkway. It generally operates with two to three moving lanes of traffic in each direction with parking on both sides.
- *86th Street* is a local two-way east-west street that generally operates with two moving lanes of traffic (with curbside parking) in each direction, except at Bay Parkway where it is narrowed to one moving lane in each direction by elevated subway track columns and curbside parking.
- *18th Avenue* is a local two-way north-south street with generally two moving lanes in each direction, except at its intersection with 86th Street where it operates with one moving lane of traffic and curbside parking in each direction.
- *Bay Ridge Parkway* is a local two-way east-west street that continues as Stillwell Avenue east of Bay Parkway. It generally operates with two moving lanes of traffic and curbside parking in both the eastbound and westbound directions.
- *Kings Highway* is a local two-way east-west street that continues as 78th Street west of Bay Parkway as a one-way westbound street. East of its intersection with Bay Parkway, it operates with one moving lane of traffic and curbside parking in each direction. West of this intersection, it continues westbound as 78th Street also with one moving lane of traffic and curbside parking.
- *Benson Avenue* is a local two-way east-west street that generally operates with one moving lane of traffic and curbside parking in each direction.
- *Bath Avenue* is a local two-way east-west street that generally operates with one moving lane of traffic and curbside parking in each direction. The roadway contains a westbound Class 3 bicycle route (on-street signed route) from Bay 35th Street to Bay Parkway. This future planned route between 14th Avenue and Stillwell Avenue will include the installation of "sharrow" roadway markings delineating a shared lane.
- *26th Avenue* is a local two-way north-south street that connects with Cropsey Avenue and the Belt Parkway eastbound service road and generally operates with one moving lane of traffic and curbside parking in each direction.
- *New Utrecht Avenue* is a local two-way north-south street that generally operates with one moving lane of traffic and curbside parking in each direction.

- *19th Avenue* is a local two-way north-south street that generally operates with one moving lane of traffic and curbside parking in each direction.
- *20th Avenue* is a local two-way north-south street that generally operates with one moving lane of traffic and curbside parking in each direction.

TRAFFIC VOLUMES

Existing study area traffic volumes were based on traffic data collected in September 2008, The September 2008 field program included manual traffic counts at study area intersections during the weekday and Saturday peak periods. Traffic volumes were collected at additional study intersections in November 2009 before the week of Thanksgiving and in January 2010 after the holiday embargo due to the addition of five study area intersections. In addition, Automated Traffic Recorders (ATRs) placed at key locations for a full week identified temporal and daily traffic variations. Vehicle classification counts also were conducted at selected locations during the weekday and Saturday peak periods to determine representative vehicle mix. An inventory of the analyzed intersections was performed to determine traffic signal timing, phasing, and cycle length, street and curbside signage, pavement markings, and lane dimensions to be used in the calculation of street capacities. Also, official signal timing data were obtained from the New York City Department of Transportation (NYCDOT) to confirm field observations and for incorporation into the capacity analysis.

Figures 11-2 through **11-4** show the 2008 existing traffic volumes for the weekday midday and PM, and Saturday PM peak hours. The representative peak hours of traffic in the study area were determined to take place from 2:00 PM to 3:00 PM and 5:00 PM to 6:00 PM on a weekday, and 4:15 PM to 5:15 PM on a Saturday. These peak hours of existing traffic correspond closely with the peak hours of project-generated trips, and therefore have been selected as the analysis peak hours to assess the potential traffic impacts of the proposed project.

In terms of traffic volumes, Bay Parkway carries the highest traffic volumes within the study area. Two-way traffic volumes on Bay Parkway are in the range of approximately 1,400 to 3,000 vehicles per hour (vph) during the analysis peak hours. Cropsey Avenue carries traffic in the range of 900 to 2,700 vph and 86th Street carries volumes in the range of 550 to 1,100 vph. The eastbound exit ramp off of the Belt Parkway carries traffic volumes in the range of 800 to 900 vph and other local streets in the study area carry low-to-moderate traffic volumes.

LEVEL OF SERVICE

Tables 11-1 and **11-2** present the capacity analysis results for the signalized and unsignalized intersections in the study area. As presented in the tables, the majority of the analyzed intersection approaches and lane groups operate at acceptable levels (mid-LOS D or better) during the three analysis peak hours. The exceptions are as follows:

- The eastbound approach of Benson Avenue at Bay Parkway, which operates at LOS D during the weekday PM peak hour (v/c ratio of 0.58 and delay of 46.3 seconds);
- The westbound approach of Benson Avenue at Bay Parkway, which operates at LOS F during the weekday PM peak hour (v/c ratio of 0.97 and delay of 90.0 seconds), and at LOS F during the Saturday PM peak hour (v/c ratio of 1.05 and delay of 91.2 seconds);
- The eastbound approach of Bath Avenue at Bay Parkway, which operates at LOS E during the weekday PM (v/c ratio of 0.90 and delay of 69.3 seconds), and at LOS F during the Saturday PM peak hour (v/c ratio of 1.05 and delay of 90.0 seconds);

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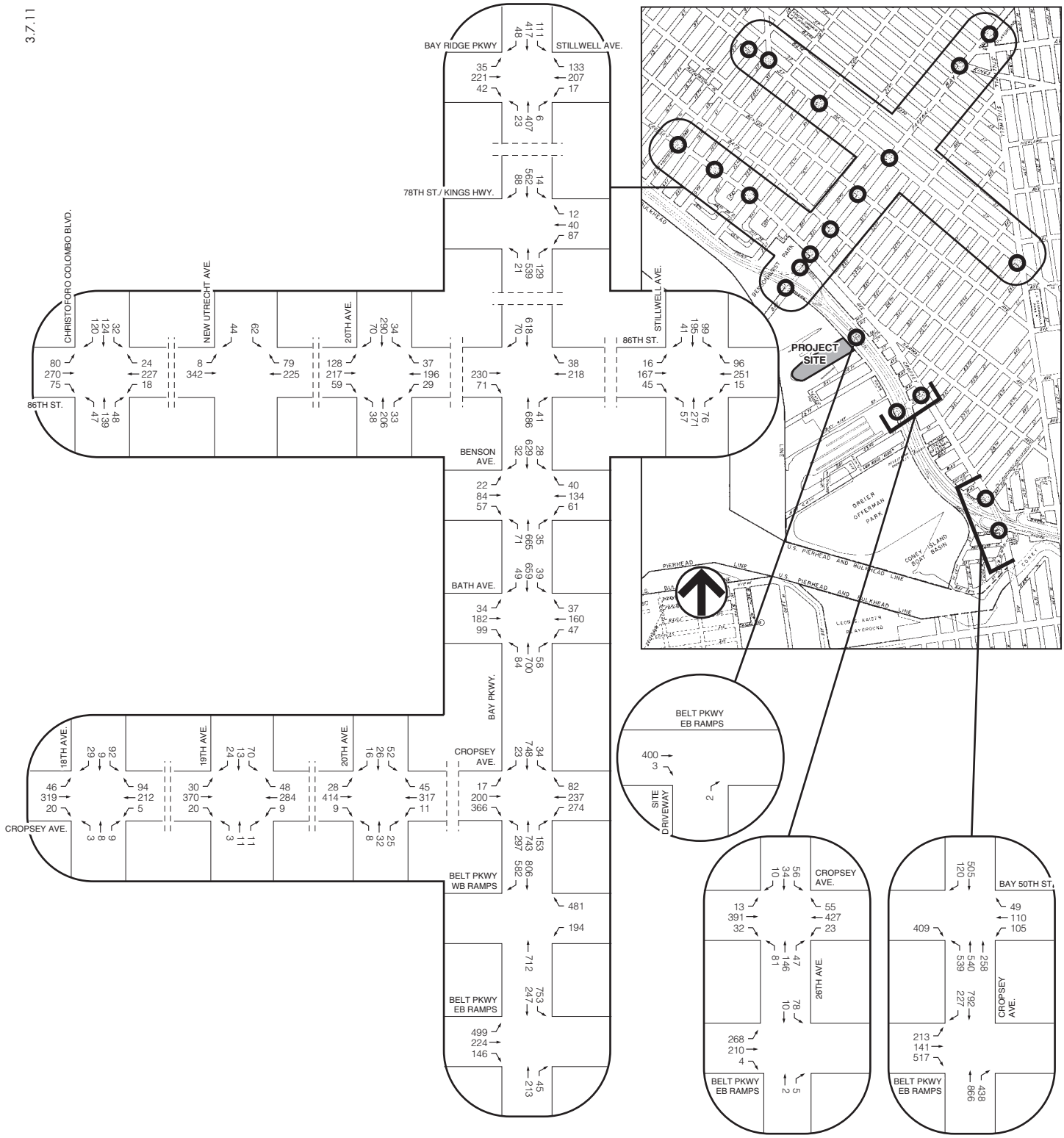

2008 Existing Traffic Volumes
Weekday Midday Peak Hour

Figure 11-2

BROOKLYN BAY CENTER

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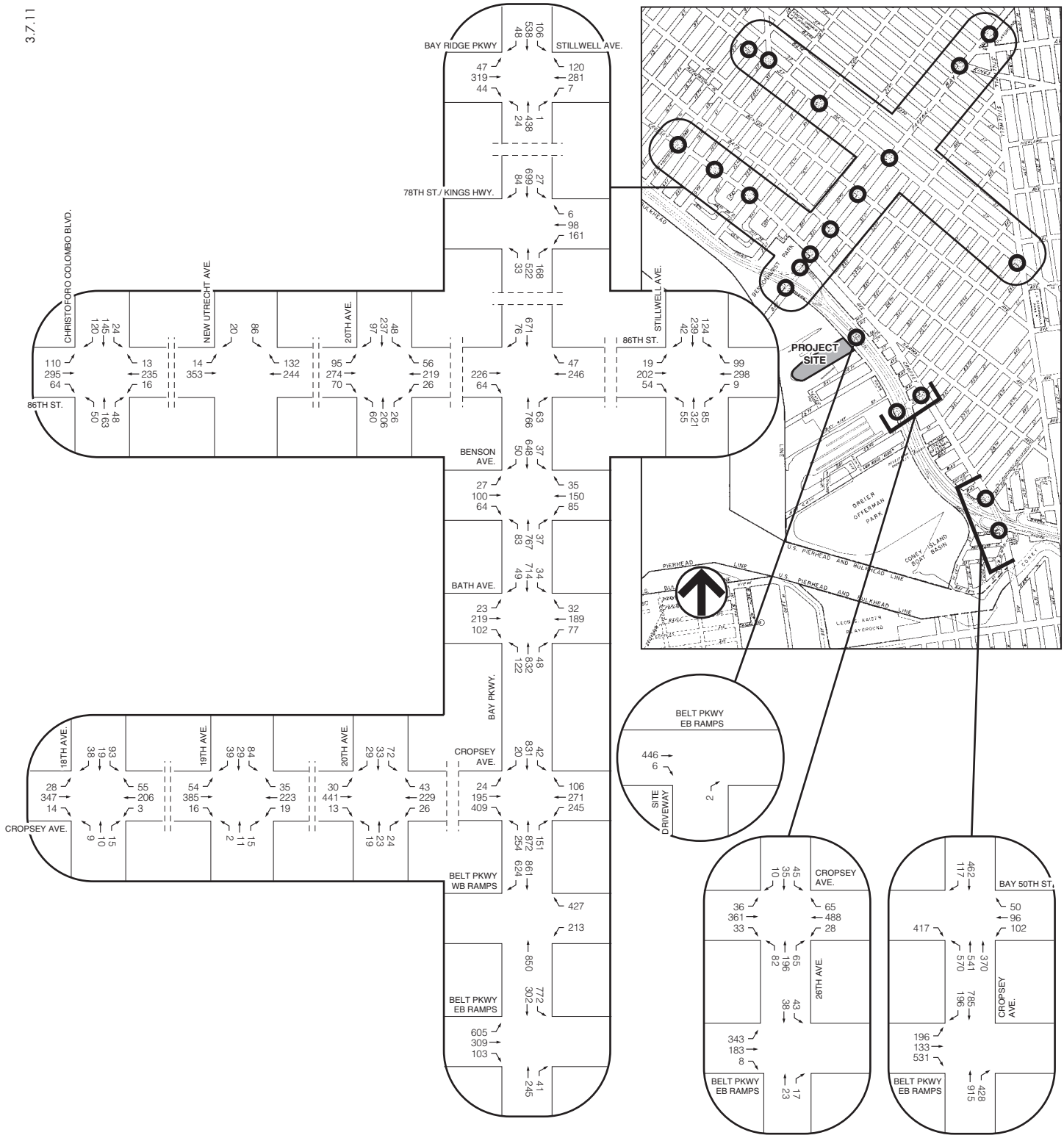

2008 Existing Traffic Volumes
Weekday PM Peak Hour

BROOKLYN BAY CENTER

Figure 11-3

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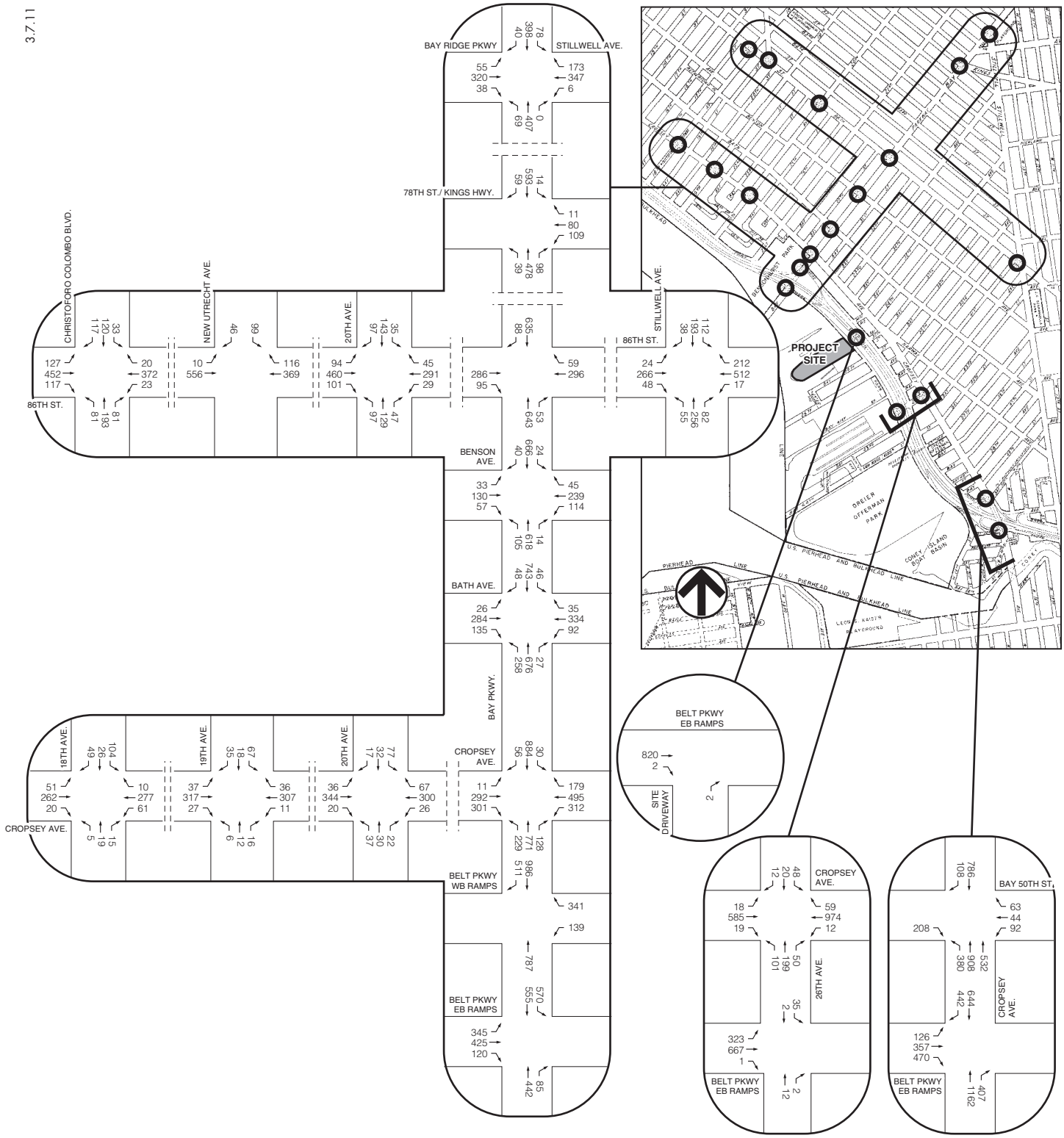


2008 Existing Traffic Volumes
Saturday Peak Hour

Figure 11-4

BROOKLYN BAY CENTER

- The westbound approach of Bath Avenue at Bay Parkway, which operates at LOS F (v/c ratio of 1.05) during the weekday PM (delay of 112.2 seconds), and Saturday PM peak hours (delay of 89.4 seconds);
- The northbound defacto left-turn movement of Bay Parkway at Bath Avenue, which operates at LOS E during the Saturday PM peak hour (v/c ratio of 0.98 and delay of 66.4 seconds);
- The eastbound right-turn movement of Cropsey Avenue at Bay Parkway, which operates at LOS D during the weekday PM peak hour (v/c ratio of 0.87 and delay of 53.3 seconds);
- The westbound left-turn movement of Cropsey Avenue at Bay Parkway, which operates at LOS E during the weekday midday peak hour (v/c ratio of 0.84 and delay of 56.9 seconds), and at LOS F during the Saturday PM peak hour (v/c ratio of 1.05 and delay of 104.3 seconds);
- The northbound left-turn movement of Bay Parkway at Cropsey Avenue, which operates at LOS F during the weekday midday (v/c ratio of 1.05 and delay of 108.3 seconds) and PM (v/c ratio of 1.04 and delay of 111.5 seconds) peak hours, as well as during the Saturday PM peak hour (v/c ratio of 1.05 and delay of 98.2 seconds);
- The eastbound approach of 20th Avenue and 86th Street, which operates at LOS E during the Saturday PM peak hour (v/c ratio of 1.05 and delay of 73.5 seconds); and
- The southbound approach of 20th Avenue and 86th Street, which operates at LOS D during the weekday midday peak hour (v/c ratio of 0.88 and delay of 46.1 seconds) and the weekday PM peak hour (v/c ratio of 0.80 and delay of 45.2 seconds).

Table 11-1
2008 Existing Conditions Level of Service Analysis
Signalized Intersections

Intersections	Weekday Midday Peak Hour				Weekday PM Peak Hour				Saturday Peak Hour			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
18th Avenue and 86th Street												
Eastbound	LTR	0.48	21.3	C	LTR	0.52	27.6	C	LTR	0.83	32.7	C
Westbound	LTR	0.25	18.0	B	LTR	0.23	22.5	C	LTR	0.39	19.6	B
Northbound	LTR	0.31	15.4	B	LTR	0.32	19.5	B	LTR	0.48	18.0	B
Southbound	LTR	0.35	16.0	B	LTR	0.34	19.8	B	LTR	0.35	16.0	B
	Intersection		18.2	B	Intersection		23.1	C	Intersection		23.9	C
Bay Parkway and Bay Ridge Parkway												
Eastbound	LTR	0.30	22.4	C	LTR	0.39	29.9	C	LTR	0.44	24.3	C
Westbound	LTR	0.41	23.9	C	LTR	0.42	30.4	C	LTR	0.57	26.5	C
Northbound	LT	0.28	11.5	B	LT	0.29	14.4	B	LT	0.34	12.1	B
	R	0.01	9.4	A	R	0.00	11.7	B	R	0.00	9.3	A
Southbound	LT	0.42	13.1	B	LT	0.47	17.1	B	LT	0.35	12.2	B
	R	0.07	10.0	A	R	0.07	12.4	B	R	0.06	9.8	A
	Intersection		16.5	B	Intersection		21.7	C	Intersection		18.6	B
Bay Parkway and 78th Street-Kings Highway												
Westbound	LTR	0.34	31.0	C	LTR	0.54	42.5	D	LTR	0.46	33.0	C
Northbound	LTR	0.41	8.0	A	LTR	0.42	10.4	B	LTR	0.35	7.5	A
Southbound	LTR	0.37	7.6	A	LTR	0.45	10.8	B	LTR	0.36	7.5	A
	Intersection		10.0	A	Intersection		15.3	B	Intersection		10.9	B
Bay Parkway and 86th Street												
Eastbound	TR	0.65	31.5	C	TR	0.58	35.9	D	TR	0.82	41.2	D
Westbound	TR	0.53	27.6	C	TR	0.56	35.3	D	TR	0.73	34.7	C
Northbound	TR	0.48	13.7	B	TR	0.52	17.6	B	TR	0.45	13.3	B
Southbound	TR	0.43	13.1	B	TR	0.46	16.7	B	TR	0.46	13.4	B
	Intersection		18.0	B	Intersection		22.1	C	Intersection		21.8	C
Bay Parkway and Benson Avenue												
Eastbound	LTR	0.44	29.7	C	LTR	0.58	46.3	D	LTR	0.62	35.6	D
Westbound	LTR	0.64	36.2	D	LTR	0.97	90.0	F	LTR	1.05	91.2	F
Northbound	LTR	0.56	12.4	B	LTR	0.58	12.9	B	LTR	0.58	12.9	B
Southbound	LTR	0.44	10.6	B	LTR	0.43	10.6	B	LTR	0.45	10.8	B
	Intersection		16.3	B	Intersection		25.2	C	Intersection		29.5	C
Bay Parkway and Bath Avenue												
Eastbound	LTR	0.76	40.8	D	LTR	0.90	69.3	E	LTR	1.05	90.0	F
Westbound	LTR	0.63	35.1	D	LTR	1.05	112.2	F	LTR	1.05	89.4	F
Northbound	LT	0.55	12.3	B	LT	0.66	14.8	B	DefL	0.98	66.4	E
									T	0.67	15.6	B
	R	0.09	7.9	A	R	0.07	7.5	A	R	0.04	7.5	A
Southbound	LTR	0.47	11.0	B	LTR	0.45	10.8	B	LTR	0.51	11.5	B
	Intersection		18.5	B	Intersection		32.9	C	Intersection		43.9	D
Bay Parkway and Cropsey Avenue												
Eastbound	L	0.10	33.4	C	L	0.13	34.2	C	L	0.07	33.2	C
	T	0.43	38.7	D	T	0.40	38.0	D	T	0.59	42.7	D
	R	0.79	45.0	D	R	0.87	53.3	D	R	0.65	36.2	D
Westbound	L	0.84	56.9	E	L	0.71	42.5	D	L	1.05	104.3	F
	TR	0.29	23.9	C	TR	0.34	24.6	C	TR	0.58	29.1	C
Northbound	L	1.05	108.3	F	L	1.04	111.5	F	L	1.05	98.2	F
	TR	0.55	22.0	C	TR	0.60	23.0	C	TR	0.55	21.9	C
Southbound	L	0.20	27.2	C	L	0.28	30.4	C	L	0.18	26.8	C
	TR	0.62	32.1	C	TR	0.65	32.8	C	TR	0.74	35.7	D
	Intersection		39.5	D	Intersection		38.2	D	Intersection		41.3	D
Bay Parkway and Belt Parkway Westbound Ramps												
Westbound	L	0.25	36.0	D	L	0.27	36.2	D	L	0.18	35.1	D
Northbound	T	0.32	9.3	A	T	0.37	9.7	A	T	0.35	9.6	A
Southbound	TR	0.70	15.1	B	TR	0.73	15.7	B	TR	0.73	15.8	B
	Intersection		15.0	B	Intersection		15.4	B	Intersection		14.9	B
Bay Parkway and Belt Parkway Eastbound Ramps												
Eastbound	L	0.45	36.3	D	L	0.60	40.4	D	L	0.49	37.1	D
	LT	0.51	35.9	D	LT	0.63	38.7	D	LT	0.55	36.7	D
Northbound	T	0.24	33.7	C	T	0.27	34.0	C	T	0.49	37.7	D
	R	0.13	32.8	C	R	0.12	32.7	C	R	0.28	35.8	D
Southbound	DefL	0.69	31.0	C	L	0.89	44.9	D	DefL	0.59	33.0	C
	T	0.27	15.5	B	LT	0.33	15.9	B	T	0.59	21.0	C
	Intersection		31.2	C	Intersection		35.0	C	Intersection		32.4	C

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

Table 11-1 (cont'd)
2008 Existing Conditions Level of Service Analysis
Signalized Intersections

Intersections	Weekday Midday Peak Hour				Weekday PM Peak Hour				Saturday Peak Hour			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
Stillwell Avenue and 86th Street												
Eastbound	LTR	0.20	18.6	B	LTR	0.22	23.5	C	LTR	0.28	19.5	B
Westbound	LT	0.25	19.2	B	LT	0.26	24.0	C	LT	0.46	21.7	C
	R	0.23	19.7	B	R	0.23	24.3	C	R	0.54	26.1	C
Northbound	LTR	0.28	13.5	B	LTR	0.31	17.7	B	LTR	0.27	13.4	B
Southbound	LTR	0.55	31.9	C	LTR	0.60	39.1	D	LTR	0.58	32.7	C
	Intersection		20.6	C	Intersection		26.0	C	Intersection		22.1	C
26th Avenue and Cropsey Avenue												
Eastbound	LTR	0.30	11.7	B	LTR	0.31	11.8	B	LTR	0.42	12.9	B
Westbound	LTR	0.37	12.4	B	LTR	0.40	12.8	B	LTR	0.68	17.1	B
Northbound	LTR	0.57	28.8	C	LTR	0.68	32.1	C	LTR	0.72	34.3	C
Southbound	LTR	0.24	22.5	C	LTR	0.21	21.9	C	LTR	0.21	22.0	C
	Intersection		16.4	B	Intersection		17.7	B	Intersection		18.9	B
Avenue Z and Bay 50th Street												
Westbound	LTR	0.61	33.0	C	LTR	0.57	31.8	C	LTR	0.47	29.3	C
Northbound	T	0.16	8.6	A	T	0.21	9.0	A	T	0.30	9.6	A
Southbound	TR	0.56	23.4	C	TR	0.50	22.3	C	TR	0.75	27.8	C
	Intersection		22.3	C	Intersection		20.2	C	Intersection		22.1	C
Cropsey Avenue and Bay 50th Street												
Westbound	LTR	0.61	33.0	C	LTR	0.57	31.8	C	LTR	0.47	29.3	C
Northbound	DefL	0.55	22.9	C	DefL	0.58	23.7	C	L	0.41	25.4	C
	T	0.57	13.9	B	T	0.54	13.3	B	LT	0.81	19.8	B
Southbound	TR	0.56	23.4	C	TR	0.50	22.3	C	TR	0.75	27.8	C
	Intersection		22.0	C	Intersection		21.4	C	Intersection		24.1	C
Cropsey Avenue and Belt Parkway Eastbound Service Road												
Eastbound	L	0.27	16.6	B	L	0.24	16.3	B	L	0.16	15.4	B
	TR	0.18	15.6	B	TR	0.17	15.5	B	TR	0.46	19.3	B
	R	0.69	25.1	C	R	0.70	25.2	C	R	0.63	23.1	C
Northbound	TR	0.68	21.8	C	TR	0.67	21.4	C	TR	0.75	23.2	C
Southbound	T	0.57	20.2	C	T	0.54	19.6	B	T	0.43	18.1	B
	R	0.37	18.3	B	R	0.31	17.3	B	R	0.68	25.2	C
	Intersection		21.1	C	Intersection		20.8	C	Intersection		21.8	C
New Utrecht Avenue and 86th Street												
Eastbound	LT	0.52	21.6	C	LT	0.53	26.1	C	LT	0.85	34.9	C
Westbound	T	0.32	18.0	B	T	0.32	21.8	C	T	0.54	21.9	C
	R	0.07	0.1	A	R	0.11	0.2	A	R	0.11	0.2	A
Southbound	LR	0.16	14.9	B	LR	0.15	19.4	B	LR	0.21	15.4	B
	Intersection		17.4	B	Intersection		20.0-	B	Intersection		25.2	C
20th Avenue and 86th Street												
Eastbound	LTR	0.85	37.4	D	LTR	0.83	39.9	D	LTR	1.05	73.5	E
Westbound	LTR	0.42	16.8	B	LTR	0.46	21.8	C	LTR	0.62	21.5	C
Northbound	LTR	0.62	28.8	C	LTR	0.64	35.6	D	LTR	0.72	34.8	C
Southbound	LTR	0.88	46.1	D	LTR	0.80	45.2	D	LTR	0.62	28.7	C
	Intersection		34.1	C	Intersection		36.6	D	Intersection		46.8	D
18th Avenue and Cropsey Avenue												
Eastbound	LTR	0.52	15.4	B	LTR	0.49	18.2	B	LTR	0.45	14.3	B
Westbound	LTR	0.42	13.8	B	LTR	0.31	15.1	B	LTR	0.49	15.0	B
Northbound	LTR	0.04	19.7	B	LTR	0.07	25.6	C	LTR	0.08	20.1	C
Southbound	LTR	0.39	25.7	C	LTR	0.36	30.6	C	LTR	0.43	25.7	C
	Intersection		16.5	B	Intersection		19.8	B	Intersection		17.1	B
19th Avenue and Cropsey Avenue												
Eastbound	LTR	0.55	12.1	B	LTR	0.58	12.6	B	LTR	0.46	10.6	B
Westbound	LTR	0.44	10.4	B	LTR	0.34	9.3	A	LTR	0.44	10.3	B
Northbound	LTR	0.05	13.9	B	LTR	0.05	13.9	B	LTR	0.07	14.1	B
Southbound	LTR	0.28	16.6	B	LTR	0.36	17.6	B	LTR	0.29	16.6	B
	Intersection		12.0	B	Intersection		12.5	B	Intersection		11.4	B
20th Avenue and Cropsey Avenue												
Eastbound	LTR	0.59	12.8	B	LTR	0.59	12.8	B	LTR	0.51	11.4	B
Westbound	LTR	0.48	10.9	B	LTR	0.38	9.6	A	LTR	0.50	11.2	B
Northbound	LTR	0.14	14.7	B	LTR	0.14	14.8	B	LTR	0.22	15.7	B
Southbound	LTR	0.23	15.8	B	LTR	0.32	17.1	B	LTR	0.33	17.3	B
	Intersection		12.5	B	Intersection		12.6	B	Intersection		12.4	B

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

Table 11-2
2008 Existing Conditions Level of Service Analysis
Unsignalized Intersections

Intersections	Weekday Midday Peak Hour				Weekday PM Peak Hour				Saturday Peak Hour			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
26th Avenue and Belt Parkway Service Road												
Eastbound	LT	0.40	10.2	B	LT	0.48	11.5	B	LT	0.59	13.1	B
	TR	0.19	8.2	A	TR	0.17	8.1	A	TR	0.59	12.8	B
Northbound	TR	0.01	7.7	A	TR	0.05	8.2	A	TR	0.02	8.6	A
Southbound	LT	0.13	8.9	A	LT	0.12	8.9	A	LT	0.06	9.1	A
	Intersection		9.4	A	Intersection		10.2	B	Intersection		12.8	B

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

D. THE FUTURE WITHOUT THE PROPOSED PROJECT

Traffic conditions in the future without the proposed project (or the "No Build scenario") were assessed to establish a baseline against which to evaluate potential project impacts. The No Build analysis focuses on conditions in 2013, the year during which the proposed development is expected to be completed. In accordance with CEQR guidelines for projects in Brooklyn, the future No Build traffic volumes were developed by applying a 1.0-percent compounded annual background growth factor for a total of 5.1 percent between 2008 and 2013 and accounting for traffic generated by other planned development projects in the area as listed below:

1. 47-49 Bay 29th Street
2. 48 Bay 13th Street
3. 60 Bay 35th Street
4. 109 Bay 14th Street
5. 184 Bay 29th Street
6. 189 Bay 23rd Street
7. 209 Bay 17th Street
8. 1762 Benson Avenue
9. 2331-2355 Cropsey Ave
10. 8665 19th Avenue
11. 8720-8722 Bay 16 Street
12. 2300 Cropsey Avenue
13. 8659-8661 24th Avenue
14. 69 Bay 20th Street
15. 7608 Bay Parkway
16. 1851 81 Street
17. Coney Island Commons
18. Solid Waste Management Plan (Southwest Converted MTS)

From the above list, five development projects (numbers 4, 9, 12, 17, and 18) were specifically accounted for by adding generated trips to the volume network, while the remaining projects were considered to be accounted for in the background growth rate.

The No Build traffic analysis also incorporated changes to the study area roadway network anticipated to be in place by 2013. These changes include geometric and operational modifications to be made by NYCDOT at the intersections of Bay Parkway with Cropsey Avenue; Bay Parkway with the Belt Parkway Westbound Ramps; and Belt Parkway service road at 26th Avenue. After consultation with NYCDOT, it was assumed that the stop sign on the eastbound Belt Parkway

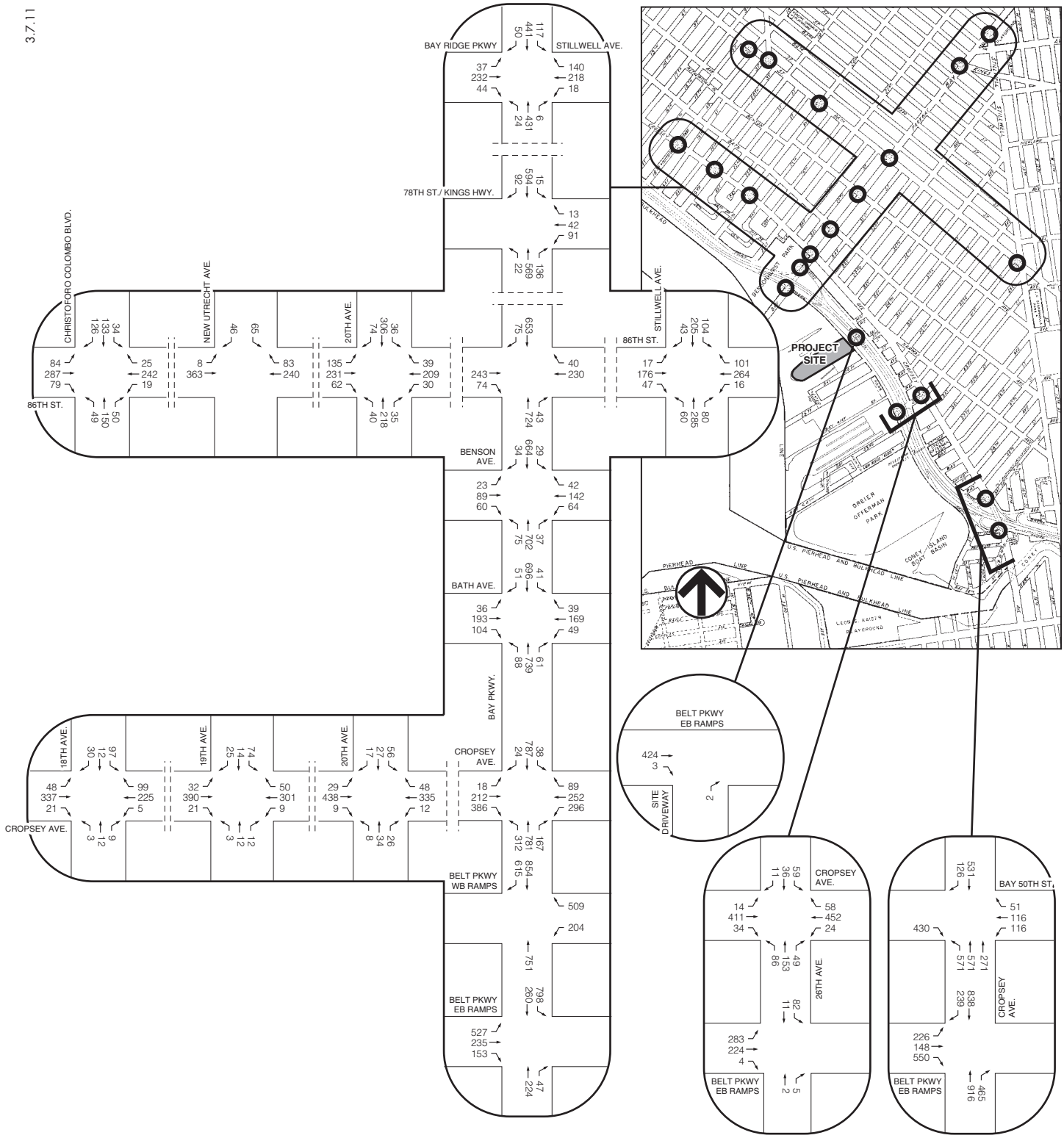
service road at 26th Avenue will be removed. These changes are reflected in the No Build traffic analysis.

TRAFFIC CONDITIONS

Figures 11-5 through **11-7** show the 2013 No Build traffic volumes for the weekday midday and PM, and Saturday PM peak hours. **Tables 11-3** and **11-4** present a comparison of existing and No Build scenarios for the signalized and unsignalized intersections, respectively. Based on the analysis results, the majority of the approaches/lane-groups would operate at the same LOS as in the existing conditions with the following notable exceptions, resulting in changes in LOS beyond mid-LOS D:

- The eastbound approach of 86th Street at Bay Parkway, which would deteriorate within LOS D from a delay of 41.2 seconds (v/c ratio of 0.82) to a delay of 45.5 seconds (v/c ratio of 0.86) during the Saturday PM peak hour;
- The northbound defacto left-turn movement of Bay Parkway at Bath Avenue, which would deteriorate from LOS E (v/c ratio of 0.98 and delay of 66.4 seconds) to LOS F (v/c ratio of 1.09 and delay of 99.7 seconds) during the Saturday PM peak hour;
- The eastbound through movement of Cropsey Avenue at Bay Parkway, which would deteriorate within LOS D from a delay of 42.7 seconds (v/c ratio of 0.59) to a delay of 45.9 seconds (v/c ratio of 0.67) during the Saturday PM peak hour; and
- The westbound left-turn movement of Cropsey Avenue at Bay Parkway, which would deteriorate from LOS D with a delay of 42.5 seconds (v/c ratio of 0.71) to LOS E with a delay of 66.0 seconds (v/c ratio of 0.76) during the weekday PM peak hour; and
- The eastbound approach of 20th Avenue and 86th Street, which would deteriorate within LOS D from a delay of 37.4 seconds (v/c ratio of 0.85) to a delay of 46.1 seconds (v/c ratio of 0.92) during the weekday MD peak hour and from a delay of 39.9 seconds (v/c ratio of 0.83) to a delay of 46.2 seconds (v/c ratio of 0.89) during the weekday PM peak hour, as well as deteriorate from LOS E (v/c ratio of 1.05 and delay of 73.5 seconds) to LOS F (v/c ratio of 1.10 and delay of 90.6 seconds) during the Saturday PM peak hour.

3.7.11

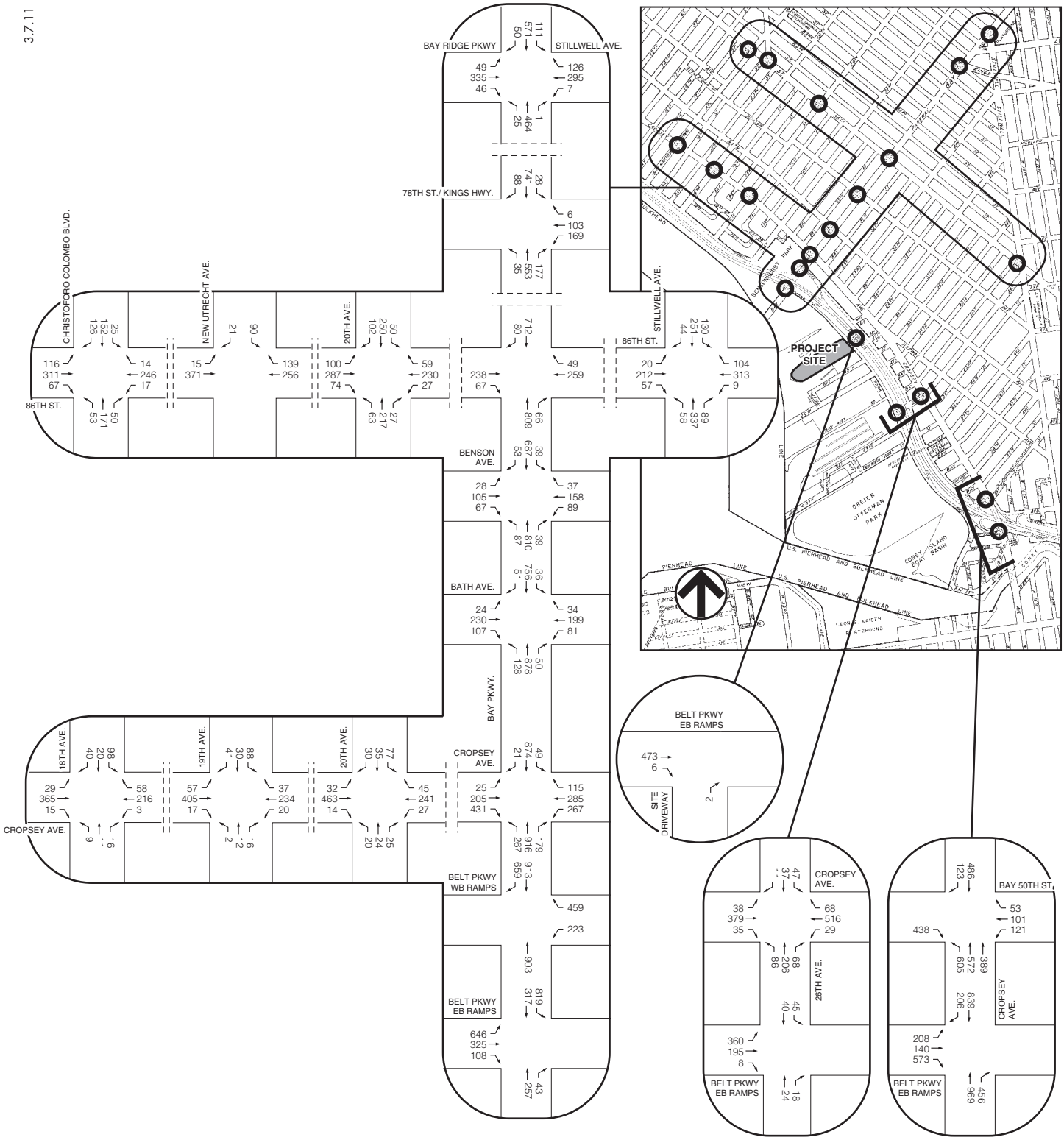


2013 No Build Traffic Volumes
Weekday Midday Peak Hour

BROOKLYN BAY CENTER

Figure 11-5

3.7.11

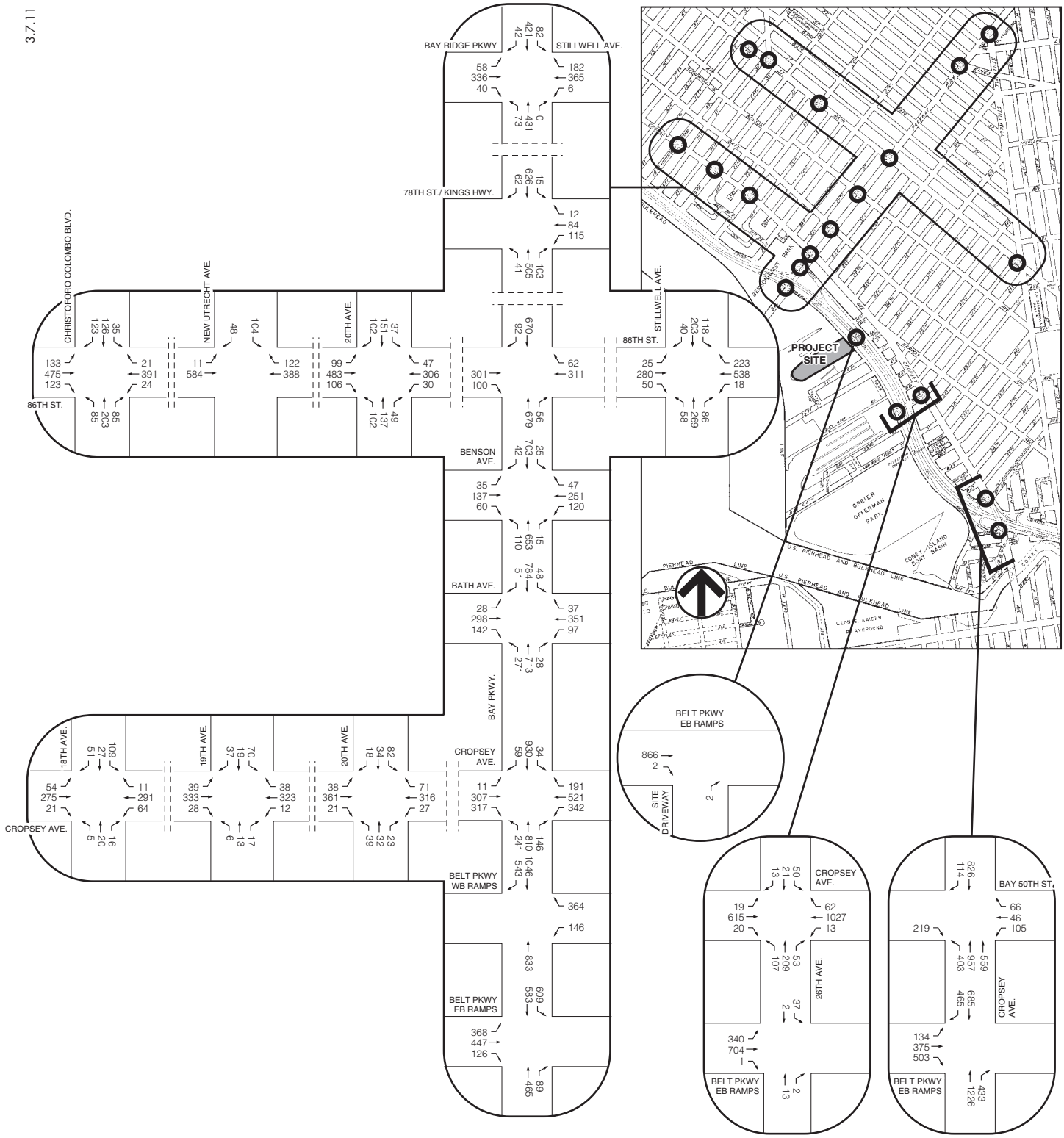


2013 No Build Traffic Volumes
Weekday PM Peak Hour

BROOKLYN BAY CENTER

Figure 11-6

3.7.11



2013 No Build Traffic Volumes
Saturday Peak Hour

Figure 11-7

BROOKLYN BAY CENTER

Table 11-3
2008 Existing Conditions and 2013 No Build Scenario Level of Service Analysis
Signalized Intersections

Intersections	Weekday MD Peak Hour								Weekday PM Peak Hour								Saturday Peak Hour							
	2008 Existing				2013 No Build				2008 Existing				2013 No Build				2008 Existing				2013 No Build			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
18th Avenue and 86th Street																								
Eastbound	LTR	0.48	21.3	C	LTR	0.51	21.9	C	LTR	0.52	27.6	C	LTR	0.56	28.4	C	LTR	0.83	32.7	C	LTR	0.88	37.2	D
Westbound	LTR	0.25	18.0	B	LTR	0.27	18.2	B	LTR	0.23	22.5	C	LTR	0.24	22.6	C	LTR	0.39	19.6	B	LTR	0.41	19.9	B
Northbound	LTR	0.31	15.4	B	LTR	0.33	15.7	B	LTR	0.32	19.5	B	LTR	0.34	19.8	B	LTR	0.48	18.0	B	LTR	0.50	18.5	B
Southbound	LTR	0.35	16.0	B	LTR	0.38	16.3	B	LTR	0.34	19.8	B	LTR	0.36	20.1	C	LTR	0.35	16.0	B	LTR	0.37	16.3	B
	Intersection		18.2	B	Intersection		18.6	B	Intersection		23.1	C	Intersection		23.6	C	Intersection		23.9	C	Intersection		26.0	C
Bay Parkways and Bay Ridge Parkway																								
Eastbound	LTR	0.30	22.4	C	LTR	0.32	22.6	C	LTR	0.39	29.9	C	LTR	0.42	30.2	C	LTR	0.44	24.3	C	LTR	0.48	24.9	C
Westbound	LTR	0.41	23.9	C	LTR	0.43	24.2	C	LTR	0.42	30.4	C	LTR	0.44	30.7	C	LTR	0.57	26.5	C	LTR	0.60	27.2	C
Northbound	LT	0.28	11.5	B	LT	0.30	11.7	B	LT	0.29	14.4	B	LT	0.30	14.6	B	LT	0.34	12.1	B	LT	0.37	12.4	B
	R	0.01	9.4	A	R	0.01	9.4	A	R	0.00	11.7	B	R	0.00	11.7	B	R	0.00	9.3	A	R	0.00	9.3	A
Southbound	LT	0.42	13.1	B	LT	0.45	13.5	B	LT	0.47	17.1	B	LT	0.51	17.8	B	LT	0.35	12.2	B	LT	0.38	12.5	B
	R	0.07	10.0	A	R	0.08	10.0	A	R	0.07	12.4	B	R	0.08	12.4	B	R	0.06	9.8	A	R	0.06	9.9	A
	Intersection		16.5	B	Intersection		16.8	B	Intersection		21.7	C	Intersection		22.1	C	Intersection		18.6	B	Intersection		19.1	B
Bay Parkway and 78th Street-Kings Highway																								
Westbound	LTR	0.34	31.0	C	LTR	0.36	31.3	C	LTR	0.54	42.5	D	LTR	0.57	43.3	D	LTR	0.46	33.0	C	LTR	0.49	33.6	C
Northbound	LTR	0.41	8.0	A	LTR	0.43	8.3	A	LTR	0.42	10.4	B	LTR	0.45	10.8	B	LTR	0.35	7.5	A	LTR	0.37	7.7	A
Southbound	LTR	0.37	7.6	A	LTR	0.39	7.8	A	LTR	0.45	10.8	B	LTR	0.48	11.2	B	LTR	0.36	7.5	A	LTR	0.38	7.7	A
	Intersection		10.0	A	Intersection		10.2	B	Intersection		15.3	B	Intersection		15.7	B	Intersection		10.9	B	Intersection		11.2	B
Bay Parkway and 86th Street																								
Eastbound	TR	0.65	31.5	C	TR	0.68	32.9	C	TR	0.58	35.9	D	TR	0.60	36.8	D	TR	0.82	41.2	D	TR	0.86	45.5	D
Westbound	TR	0.53	27.6	C	TR	0.56	28.4	C	TR	0.56	35.3	D	TR	0.59	36.2	D	TR	0.73	34.7	C	TR	0.77	37.0	D
Northbound	TR	0.48	13.7	B	TR	0.50	14.0	B	TR	0.52	17.6	B	TR	0.54	18.1	B	TR	0.45	13.3	B	TR	0.48	13.6	B
Southbound	TR	0.43	13.1	B	TR	0.46	13.4	B	TR	0.46	16.7	B	TR	0.49	17.1	B	TR	0.46	13.4	B	TR	0.49	13.7	B
	Intersection		18.0	B	Intersection		18.5	B	Intersection		22.1	C	Intersection		22.7	C	Intersection		21.8	C	Intersection		23.1	C
Bay Parkway and Benson Avenue																								
Eastbound	LTR	0.44	29.7	C	LTR	0.46	30.3	C	LTR	0.58	46.3	D	LTR	0.62	47.6	D	LTR	0.62	35.6	D	LTR	0.67	37.9	D
Westbound	LTR	0.64	36.2	D	LTR	0.68	38.1	D	LTR	0.97	90.0	F	LTR	1.04	109.4	F	LTR	1.05	91.2	F	LTR	1.10	107.5	F
Northbound	LTR	0.56	12.4	B	LTR	0.60	13.1	B	LTR	0.58	12.9	B	LTR	0.62	13.8	B	LTR	0.58	12.9	B	LTR	0.63	13.9	B
Southbound	LTR	0.44	10.6	B	LTR	0.46	10.9	B	LTR	0.43	10.6	B	LTR	0.46	11.0	B	LTR	0.45	10.8	B	LTR	0.48	11.1	B
	Intersection		16.3	B	Intersection		16.9	B	Intersection		25.2	C	Intersection		28.2	C	Intersection		29.5	C	Intersection		33.2	C
Bay Parkway and Bath Avenue																								
Eastbound	LTR	0.76	40.8	D	LTR	0.80	44.0	D	LTR	0.90	69.3	E	LTR	0.95	77.7	E	LTR	1.05	90.0	F	LTR	1.12	111.9	F
Westbound	LTR	0.63	35.1	D	LTR	0.68	37.6	D	LTR	1.05	112.2	F	LTR	1.11	130.0	F	LTR	1.05	89.4	F	LTR	1.11	108.4	F
Northbound	LT	0.55	12.3	B	LT	0.59	13.0	B	LT	0.66	14.8	B	LT	0.72	16.4	B	DefL	0.98	66.4	E	DefL	1.09	99.7	F
																	T	0.67	15.6	B	T	0.71	16.7	B
	R	0.09	7.9	A	R	0.10	7.9	A	R	0.07	7.5	A	R	0.07	7.5	A	R	0.04	7.5	A	R	0.05	7.5	A
Southbound	LTR	0.47	11.0	B	LTR	0.50	11.4	B	LTR	0.45	10.8	B	LTR	0.48	11.2	B	LTR	0.51	11.5	B	LTR	0.54	11.9	B
	Intersection		18.5	B	Intersection		19.6	B	Intersection		32.9	C	Intersection		36.9	D	Intersection		43.9	D	Intersection		54.3	D
Bay Parkway and Cropsey Avenue																								
Eastbound	L	0.10	33.4	C	L	0.11	35.3	D	L	0.13	34.2	C	L	0.15	36.3	D	L	0.07	33.2	C	L	0.08	33.2	C
	T	0.43	38.7	D	T	0.53	42.9	D	T	0.40	38.0	D	T	0.48	41.6	D	T	0.59	42.7	D	T	0.67	45.9	D
	R	0.79	45.0	D	R	0.78	44.1	D	R	0.87	53.3	D	R	0.85	51.1	D	R	0.65	36.2	D	R	0.60	33.7	C
Westbound	L	0.84	56.9	E	L	0.89	79.0	E	L	0.71	42.5	D	L	0.76	66.0	E	L	1.05	104.3	F	L	1.07	121.8	F
	TR	0.29	23.9	C	TR	0.29	23.8	C	TR	0.34	24.6	C	TR	0.33	24.5	C	TR	0.58	29.1	C	TR	0.57	28.6	C
Northbound	L	1.05	108.3	F	L	1.15	139.7	F	L	1.04	111.5	F	L	1.20	168.4	F	L	1.05	98.2	F	L	1.22	163.4	F
	TR	0.55	22.0	C	TR	0.61	23.4	C	TR	0.60	23.0	C	TR	0.68	25.0	C	TR	0.55	21.9	C	TR	0.62	23.4	C
Southbound	L	0.20	27.2	C	L	0.24	28.8	C	L	0.28	30.4	C	L	0.38	35.0	D	L	0.18	26.8	C	L	0.22	28.3	C
	TR	0.62	32.1	C	TR	0.65	32.9	C	TR	0.65	32.8	C	TR	0.68	33.7	C	TR	0.74	35.7	D	TR	0.78	37.2	D
	Intersection		39.5	D	Intersection		45.2	D	Intersection		38.2	D	Intersection		44.9	D	Intersection		41.3	D	Intersection		47.7	D
Bay Parkway and Belt Parkway Westbound Ramps																								
Westbound	L	0.19	28.8	C	L	0.19	28.8	C	L	0.27	36.2	D	L	0.20	29.0	C	L	0.18	35.1	D	L	0.14	28.2	C
					R	0.74	42.1	D					R	0.68	40.0	D					R	0.58	36.9	D
Northbound	T	0.32	9.3	A	T	0.38	14.0	B	T	0.37	9.7	A	T	0.44	14.8	B	T	0.35	9.6	A	T	0.42	14.5	B
Southbound	TR	0.70	15.1	B	T	0.47	15.3	B	TR	0.73	15.7	B	T	0.49	15.4	B	TR	0.73	15.8	B	T	0.56	16.7	B
					R	0.84	31.0	C					R	0.88	35.6	D					R	0.75	25.5	C
	Intersection		15.0	B	Intersection		23.8	C	Intersection		15.4	B	Intersection		24.0	C	Intersection		14.9	B	Intersection		20.8	C
Bay Parkway and Belt Parkway Eastbound Ramps																								
Eastbound	L	0.45	36.3	D	L	0.48	36.9	D	L	0.60	40.4	D	L	0.64	41.9	D	L	0.49	37.1	D	L	0.52	38.0	D
	LT	0.51	35.9	D	LT	0.54	36.4	D	LT	0.63	38.7	D	LT	0.67	39.8	D	LT	0.55	36.7	D	LT	0.58	37.4	D
Northbound	T	0.24	33.7	C	T	0.25	33.8	C	T	0.27	34.0	C	T	0.28	34.2	C	T	0.49	37.7	D	T	0.52	38.2	D
	R	0.13	32.8	C	R	0.14	32.9	C	R	0.12	32.7	C	R	0.13	32.8	C	R	0.28	35.8	D	R	0.30	36.0	D
Southbound	DefL	0.69	31.0	C	DefL	0.74	33.3	C	L	0.89	44.9	D	DefL	0.78	35.9	D	DefL	0.59	33.0	C	DefL	0.63	34.1	C
	T	0.27	15.5	B	T	0.28	15.6	B	LT	0.33	15.9	B	T	0.33	16.3	B	T	0.59	21.0	C	T	0.62	21.8	C
	Intersection		31.2	C	Intersection		32.4	C	Intersection		35.0	C	Intersection		34.9	C	Intersection		32.4	C	Intersection		33.2	C

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

Table 11-3 (cont'd)
2008 Existing Conditions and 2013 No Build Scenario Level of Service Analysis
Signalized Intersections

Intersections	Weekday MD Peak Hour								Weekday PM Peak Hour								Saturday Peak Hour							
	2008 Existing				2013 No Build				2008 Existing				2013 No Build				2008 Existing				2013 No Build			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
Stillwell Avenue and 86th Street																								
Eastbound	LTR	0.20	18.6	B	LTR	0.21	18.7	B	LTR	0.22	23.5	C	LTR	0.23	23.6	C	LTR	0.28	19.5	B	LTR	0.30	19.6	B
Westbound	LT	0.25	19.2	B	LT	0.26	19.3	B	LT	0.26	24.0	C	LT	0.27	24.2	C	LT	0.46	21.7	C	LT	0.48	22.1	C
	R	0.23	19.7	B	R	0.24	19.9	B	R	0.23	24.3	C	R	0.24	24.5	C	R	0.54	26.1	C	R	0.56	26.9	C
Northbound	LTR	0.28	13.5	B	LTR	0.29	13.7	B	LTR	0.31	17.7	B	LTR	0.33	18.0	B	LTR	0.27	13.4	B	LTR	0.29	13.6	B
Southbound	LTR	0.55	31.9	C	LTR	0.59	32.8	C	LTR	0.60	39.1	D	LTR	0.64	40.3	D	LTR	0.58	32.7	C	LTR	0.62	33.7	C
	Intersection		20.6	C	Intersection		20.9	C	Intersection		26.0	C	Intersection		26.5	C	Intersection		22.1	C	Intersection		22.6	C
26th Avenue and Cropsey Avenue																								
Eastbound	LTR	0.30	11.7	B	LTR	0.32	11.9	B	LTR	0.31	11.8	B	LTR	0.33	12.0	B	LTR	0.42	12.9	B	LTR	0.44	13.2	B
Westbound	LTR	0.37	12.4	B	LTR	0.39	12.6	B	LTR	0.40	12.8	B	LTR	0.43	13.1	B	LTR	0.68	17.1	B	LTR	0.72	18.1	B
Northbound	LTR	0.57	28.8	C	LTR	0.60	29.8	C	LTR	0.68	32.1	C	LTR	0.72	34.1	C	LTR	0.72	34.3	C	LTR	0.76	36.6	D
Southbound	LTR	0.24	22.5	C	LTR	0.26	22.8	C	LTR	0.21	21.9	C	LTR	0.22	22.1	C	LTR	0.21	22.0	C	LTR	0.23	22.3	C
	Intersection		16.4	B	Intersection		16.8	B	Intersection		17.7	B	Intersection		18.3	B	Intersection		18.9	B	Intersection		19.9	B
Avenue Z and Bay 50th Street																								
Westbound	LTR	0.61	33.0	C	LTR	0.65	34.7	C	LTR	0.57	31.8	C	LTR	0.63	33.9	C	LTR	0.47	29.3	C	LTR	0.51	30.3	C
Northbound	T	0.16	8.6	A	T	0.16	8.6	A	T	0.21	9.0	A	T	0.22	9.0	A	T	0.30	9.6	A	T	0.31	9.8	A
Southbound	TR	0.56	23.4	C	TR	0.59	23.9	C	TR	0.50	22.3	C	TR	0.52	22.7	C	TR	0.75	27.8	C	TR	0.79	29.2	C
	Intersection		22.3	C	Intersection		23.0	C	Intersection		20.2	C	Intersection		21.0	C	Intersection		22.1	C	Intersection		23.0	C
Cropsey Avenue and Bay 50th Street																								
Westbound	LTR	0.61	33.0	C	LTR	0.65	34.7	C	LTR	0.57	31.8	C	LTR	0.63	33.9	C	LTR	0.47	29.3	C	LTR	0.51	30.3	C
Northbound	DefL	0.55	22.9	C	DefL	0.57	23.7	C	DefL	0.58	23.7	C	DefL	0.61	24.6	C	L	0.41	25.4	C	DefL	0.45	27.6	C
	T	0.57	13.9	B	T	0.60	14.6	B	T	0.54	13.3	B	T	0.58	13.9	B	LT	0.81	19.8	B	T	0.87	23.2	C
Southbound	TR	0.56	23.4	C	TR	0.59	23.9	C	TR	0.50	22.3	C	TR	0.52	22.7	C	TR	0.75	27.8	C	TR	0.79	29.2	C
	Intersection		22.0	C	Intersection		22.8	C	Intersection		21.4	C	Intersection		22.3	C	Intersection		24.1	C	Intersection		26.4	C
Cropsey Avenue and Belt Parkway Eastbound Service Road																								
Eastbound	L	0.27	16.6	B	L	0.29	16.8	B	L	0.24	16.3	B	L	0.26	16.5	B	L	0.16	15.4	B	L	0.17	15.5	B
	TR	0.18	15.6	B	TR	0.19	15.7	B	TR	0.17	15.5	B	TR	0.18	15.6	B	TR	0.46	19.3	B	TR	0.48	19.8	B
	R	0.69	25.1	C	R	0.74	26.8	C	R	0.70	25.2	C	R	0.75	27.5	C	R	0.63	23.1	C	R	0.67	24.4	C
Northbound	TR	0.68	21.8	C	TR	0.72	22.7	C	TR	0.67	21.4	C	TR	0.71	22.3	C	TR	0.75	23.2	C	TR	0.79	24.4	C
Southbound	T	0.57	20.2	C	T	0.60	20.8	C	T	0.54	19.6	B	T	0.57	20.3	C	T	0.43	18.1	B	T	0.46	18.5	B
	R	0.37	18.3	B	R	0.39	18.6	B	R	0.31	17.3	B	R	0.32	17.5	B	R	0.68	25.2	C	R	0.71	26.6	C
	Intersection		21.1	C	Intersection		21.9	C	Intersection		20.8	C	Intersection		21.8	C	Intersection		21.8	C	Intersection		22.8	C
New Utrecht Avenue and 86th Street																								
Eastbound	LT	0.52	21.6	C	LT	0.55	22.2	C	LT	0.53	26.1	C	LT	0.56	26.8	C	LT	0.85	34.9	C	LT	0.89	39.3	D
Westbound	T	0.32	18.0	B	T	0.34	18.3	B	T	0.32	21.8	C	T	0.34	22.1	C	T	0.54	21.9	C	T	0.57	22.6	C
	R	0.07	0.1	A	R	0.07	0.1	A	R	0.11	0.2	A	R	0.11	0.2	A	R	0.11	0.2	A	R	0.12	0.2	A
Southbound	LR	0.16	14.9	B	LR	0.17	15.0	B	LR	0.15	19.4	B	LR	0.16	19.5	B	LR	0.21	15.4	B	LR	0.22	15.5	B
	Intersection		17.4	B	Intersection		17.8	B	Intersection		20.0-	B	Intersection		20.4	C	Intersection		25.2	C	Intersection		27.5	C
20th Avenue and 86th Street																								
Eastbound	LTR	0.85	37.4	D	LTR	0.92	46.1	D	LTR	0.83	39.9	D	LTR	0.89	46.2	D	LTR	1.05	73.5	E	LTR	1.10	90.6	F
Westbound	LTR	0.42	16.8	B	LTR	0.45	17.3	B	LTR	0.46	21.8	C	LTR	0.48	22.3	C	LTR	0.62	21.5	C	LTR	0.65	22.4	C
Northbound	LTR	0.62	28.8	C	LTR	0.66	30.5	C	LTR	0.64	35.6	D	LTR	0.68	37.8	D	LTR	0.72	34.8	C	LTR	0.78	38.9	D
Southbound	LTR	0.88	46.1	D	LTR	0.92	53.4	D	LTR	0.80	45.2	D	LTR	0.85	49.9	D	LTR	0.62	28.7	C	LTR	0.65	30.2	C
	Intersection		34.1	C	Intersection		39.4	D	Intersection		36.6	D	Intersection		40.4	D	Intersection		46.8	D	Intersection		55.1	E
18th Avenue and Cropsey Avenue																								
Eastbound	LTR	0.52	15.4	B	LTR	0.54	16.0	B	LTR	0.49	18.2	B	LTR	0.51	18.8	B	LTR	0.45	14.3	B	LTR	0.48	14.7	B
Westbound	LTR	0.42	13.8	B	LTR	0.44	14.2	B	LTR	0.31	15.1	B	LTR	0.33	15.4	B	LTR	0.49	15.0	B	LTR	0.52	15.5	B
Northbound	LTR	0.04	19.7	B	LTR	0.04	19.8	B	LTR	0.07	25.6	C	LTR	0.07	25.6	C	LTR	0.08	20.1	C	LTR	0.08	20.2	C
Southbound	LTR	0.39	25.7	C	LTR	0.42	26.4	C	LTR	0.36	30.6	C	LTR	0.38	31.1	C	LTR	0.43	25.7	C	LTR	0.45	26.2	C
	Intersection		16.5	B	Intersection		17.0	B	Intersection		19.8	B	Intersection		20.2	C	Intersection		17.1	B	Intersection		17.6	B
19th Avenue and Cropsey Avenue																								
Eastbound	LTR	0.55	12.1	B	LTR	0.58	12.7	B	LTR	0.58	12.6	B	LTR	0.61	13.3	B	LTR	0.46	10.6	B	LTR	0.49	11.0	B
Westbound	LTR	0.44	10.4	B	LTR	0.47	10.8	B	LTR	0.34	9.3	A	LTR	0.37	9.5	A	LTR	0.44	10.3	B	LTR	0.46	10.6	B
Northbound	LTR	0.05	13.9	B	LTR	0.06	13.9	B	LTR	0.05	13.9	B	LTR	0.06	13.9	B	LTR	0.07	14.1	B	LTR	0.08	14.1	B
Southbound	LTR	0.28	16.6	B	LTR	0.29	16.8	B	LTR	0.36	17.6	B	LTR	0.38	17.9	B	LTR	0.29	16.6	B	LTR	0.31	16.9	B
	Intersection		12.0	B	Intersection		12.5	B	Intersection		12.5	B	Intersection		12.9	B	Intersection		11.4	B	Intersection		11.8	B
20th Avenue and Cropsey Avenue																								
Eastbound	LTR	0.59	12.8	B	LTR	0.62	13.5	B	LTR	0.59	12.8	B	LTR	0.63	13.5	B	LTR	0.51	11.4	B	LTR	0.54	11.8	B
Westbound	LTR	0.48	10.9	B	LTR	0.51	11.3	B	LTR	0.38	9.6	A	LTR	0.40	9.9	A	LTR	0.50	11.2	B	LTR	0.53	11.6	B
Northbound	LTR	0.14	14.7	B	LTR	0.15	14.8	B	LTR	0.14	14.8	B	LTR	0.15	14.9	B	LTR	0.22	15.7	B	LTR	0.23	15.9	B
Southbound	LTR	0.23	15.8	B	LTR	0.25	16.0	B	LTR	0.32	17.1	B	LTR	0.35	17.5	B	LTR	0.33	17.3	B	LTR	0.35	17.7	B
	Intersection		12.5	B	Intersection		13.0	B	Intersection		12.6	B	Intersection		13.0	B	Intersection		12.4	B	Intersection		12.9	B

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

Table 11-4
2008 Existing Conditions and 2013 No Build Scenario Level of Service Analysis
Unsignalized Intersections

Intersections	Weekday MD Peak Hour								Weekday PM Peak Hour								Saturday Peak Hour							
	2008 Existing				2013 No Build				2008 Existing				2013 No Build				2008 Existing				2013 No Build			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
26th Avenue and Belt Parkway Service Road																								
Eastbound	LT	0.40	10.2	B	LT	0.18	7.7	A	LT	0.48	11.5	B	LT	0.22	7.9	A	LT	0.59	13.1	B	LT	0.22	7.8	A
	TR	0.19	8.2	A					TR	0.17	8.1	A					TR	0.59	12.8	B				
Northbound	TR	0.01	7.7	A	TR	0.02	16.4	C	TR	0.05	8.2	A	TR	0.13	18.1	C	TR	0.02	8.6	A	TR	0.13	40.6	E
Southbound	LT	0.13	8.9	A	LT	0.62	60.2	F	LT	0.12	8.9	A	LT	0.40	32.7	D	LT	0.06	9.1	A	LT	0.28	39.0	E
	Intersection		9.4	A					Intersection		10.2	B					Intersection		12.8	B				

Notes:
L = Left Turn, T = Through, R = Right Turn, DefL = Defacto Left Turn; LOS = Level of Service.
No Build condition considers removal of stop control for Belt Parkway Service Road at 26th Avenue

E. PROBABLE IMPACTS OF THE PROPOSED PROJECT

The analysis of potential impacts associated with the proposed project begins with and builds upon the future No Build scenario described in the preceding section. As described in Chapter 1, "Project Description," the proposed development would result in approximately 214,000 sf of destination retail uses, a 690 space public parking garage, and approximately 2.4 acres (102,800 square feet) of publicly accessible waterfront open space. The impact analysis considers the increased activities generated by these uses and compares the resulting operating conditions to those under the No Build scenario.

TRIP GENERATION

Absent the proposed project, the project site is assumed to continue operating as a bus storage facility, which generates a small number of trips. Although trips associated with this use would be eliminated in the future with the proposed project (or the "Build scenario"), they were conservatively not deducted from the Build scenario analysis. The discussions below summarize the trip generation analysis results prepared for the proposed development's anticipated land uses.

DESTINATION RETAIL

Trip generation factors for the destination retail component of the proposed development are based on the information presented in the *Gateway Estates II FEIS* (February 2009). Modal split estimates were derived from the analyses summarized in the *900 Brush Avenue EAS* (July 2005), reasonable assumptions, and existing travel characteristics in the study area.

As summarized in **Table 11-5**, the destination retail component of the proposed development would generate approximately 808, 785, and 1,827 person trips and 584, 552, and 1,066 vehicle trips during the weekday midday, weekday PM, and Saturday PM peak hours, respectively.

WATERFRONT OPEN SPACE

As stated above, the proposed retail project would incorporate approximately 2.4 acres (102,800 square feet) of publicly accessible waterfront open space. Its projected trips were estimated using the rates presented in the *CEQR Technical Manual*. Travel to this use was conservatively assumed to follow the same modal split characteristics as shoppers to the destination retail uses.

As shown in **Table 11-6**, the open space portion of the proposed actions would generate approximately 42, 34, and 34 person trips and 22, 18, and 18 vehicle trips during the weekday midday, weekday PM, and Saturday PM peak hours, respectively.

TOTAL TRIPS

In total, the proposed development would generate approximately 850, 819, and 1,861 person trips and 606, 570, and 1,084 vehicle trips during the weekday midday, weekday PM, and Saturday PM peak hours, respectively, as summarized in **Table 11-7** below.

Table 11-5
Brooklyn Bay Center: Destination Retail Trip Generation

Destination Retail: 214,000 sf

Daily Trip Rates (1):

	Weekday MD	Weekday PM	SAT-PM	
Person Trips:	5.03	4.89	11.38	Trips per 1,000 SF
Delivery Trips:	0.35	0.35	0.02	Trips per 1,000 SF
Linked Trip Credit:	25%	25%	25%	

Modal Split (2,3):

	MD	PM	SAT-PM
Auto	95.0%	95.0%	93.0%
Taxi	3.0%	3.0%	5.0%
Bus	2.0%	2.0%	2.0%
Total	100%	100%	100%

Vehicle Occupancy (1):

	MD	PM	SAT-PM
Auto Occupancy:	1.40	1.40	1.72
Taxi Occupancy:	1.64	1.64	1.75

Temporal and Directional Trip Distribution (1):

	MD	PM	SAT-PM
Percent of Day	NA	NA	NA
Percent of Applicable Peak Hour	100.0%	100.0%	100.0%
Percent In	53.6%	51.8%	47.5%
Percent Out	46.4%	48.2%	52.5%
Delivery In/Out	9.0%	0.0%	2.0%

Person Trips by Mode and Distribution

	Auto		Taxi		Bus		Total		Total
	In	Out	In	Out	In	Out	In	Out	In + Out
Midday Peak Hour	411	356	13	11	9	8	433	375	808
PM Peak Hour	387	359	12	11	8	8	407	378	785
Saturday PM peak Hour	807	892	43	48	18	19	868	959	1,827

Taxi Trips

	Demand		Shared Trips		Inbound Only		Outbound Only		Total Trips	
	In	Out	In	Out	In	Out	In	Out	In	Out
Midday Peak Hour	8	7	4	4	4	4	3	3	11	11
PM Peak Hour	7	7	4	4	3	3	3	3	10	10
Saturday PM peak Hour	25	27	13	13	12	12	14	14	39	39

Vehicle Trips by Mode and Distribution

	Auto		Taxi		Delivery		Total		Total
	In	Out	In	Out	In	Out	In	Out	In + Out
Midday Peak Hour	294	254	11	11	7	7	312	272	584
PM Peak Hour	276	256	10	10	0	0	286	266	552
Saturday PM peak Hour	469	519	39	39	0	0	508	558	1,066

Notes:
(1) Gateway Estates II, Brooklyn, CEQR # 93-HPD-014K
(2) 900 Brush Avenue, Bronx, CEQR # 06DCP009X
(3) Modal split adjusted to account for bus services available near the project site.

Table 11-6
Brooklyn Bay Center: Public Walkway Trip Generation

Public Walkway: 2.36 acres

Daily Trip Rates (1):

Person Trips:	139	Trips per acre
Linked Trip Credit:	25%	(to the proposed retail component)

Modal Split (2):

	MD	PM	SAT-PM
Auto	95.0%	95.0%	93.0%
Taxi	3.0%	3.0%	5.0%
Bus	2.0%	2.0%	2.0%
Total	100%	100%	100%

Vehicle Occupancy (1):

Auto Occupancy:	2.00
Taxi Occupancy:	2.00

Temporal and Directional Trip Distribution (1):

	MD	PM	SAT-PM
Percent of Day	17.0%	14.0%	14.0%
Percent In	50.0%	50.0%	50.0%
Percent Out	50.0%	50.0%	50.0%

Person Trips by Mode and Distribution

	Auto		Taxi		Bus		Total		Total
	In	Out	In	Out	In	Out	In	Out	In + Out
Midday Peak Hour	20	20	1	1	0	0	21	21	42
PM Peak Hour	16	16	1	1	0	0	17	17	34
Saturday PM peak Hour	16	16	1	1	0	0	17	17	34

Taxi Trips

	Demand		Shared Trips		Inbound Only		Outbound Only		Total Trips	
	In	Out	In	Out	In	Out	In	Out	In	Out
Midday Peak Hour	1	1	1	1	0	0	0	0	1	1
PM Peak Hour	1	1	1	1	0	0	0	0	1	1
Saturday PM peak Hour	1	1	1	1	0	0	0	0	1	1

Vehicle Trips by Mode and Distribution

	Auto		Taxi		Delivery		Total		Total
	In	Out	In	Out	In	Out	In	Out	In + Out
Midday Peak Hour	10	10	1	1	0	0	11	11	22
PM Peak Hour	8	8	1	1	0	0	9	9	18
Saturday PM peak Hour	8	8	1	1	0	0	9	9	18

Notes:
(1) *CEQR Technical Manual* (December 2001)
(2) The public walkway was assumed to have the same modal splits as the proposed retail uses.

Table 11-7
Brooklyn Bay Center: Total Trip Generation

Person Trips by Mode and Distribution

	Auto		Taxi		Bus		Total		Total
	In	Out	In	Out	In	Out	In	Out	In + Out
Midday Peak Hour	431	376	14	12	9	8	454	396	850
PM Peak Hour	403	375	13	12	8	8	424	395	819
Saturday PM peak Hour	823	908	44	49	18	19	885	976	1,861

Vehicle Trips by Mode and Distribution

	Auto		Taxi		Delivery		Total		Total
	In	Out	In	Out	In	Out	In	Out	In + Out
Midday Peak Hour	304	264	12	12	7	7	323	283	606
PM Peak Hour	284	264	11	11	0	0	295	275	570
Saturday PM peak Hour	477	527	40	40	0	0	517	567	1,084

VEHICLE TRIP ASSIGNMENT

Project-generated traffic was assigned based on population densities within a 3-mile radius catchment area, accounting for geographical locations of different census tracts and likely travel routes to and from the project site. As shown in **Figures 11-8** and **11-9**, the aggregate trip distribution patterns determined from this process are as follows: (1) arrival consisting of 13 percent from the west via Belt Parkway, 32 percent from the east via Belt Parkway, and 55 percent from the north via Bay Parkway; and (2) departure consisting of 18 percent to the west via Belt Parkway, 31 percent to the east via Belt Parkway, and 51 percent to the north primarily via Bay Parkway with the remainder dispersed among local streets. All delivery vehicles were assigned to the traffic network via NYCDOT's designated truck routes.

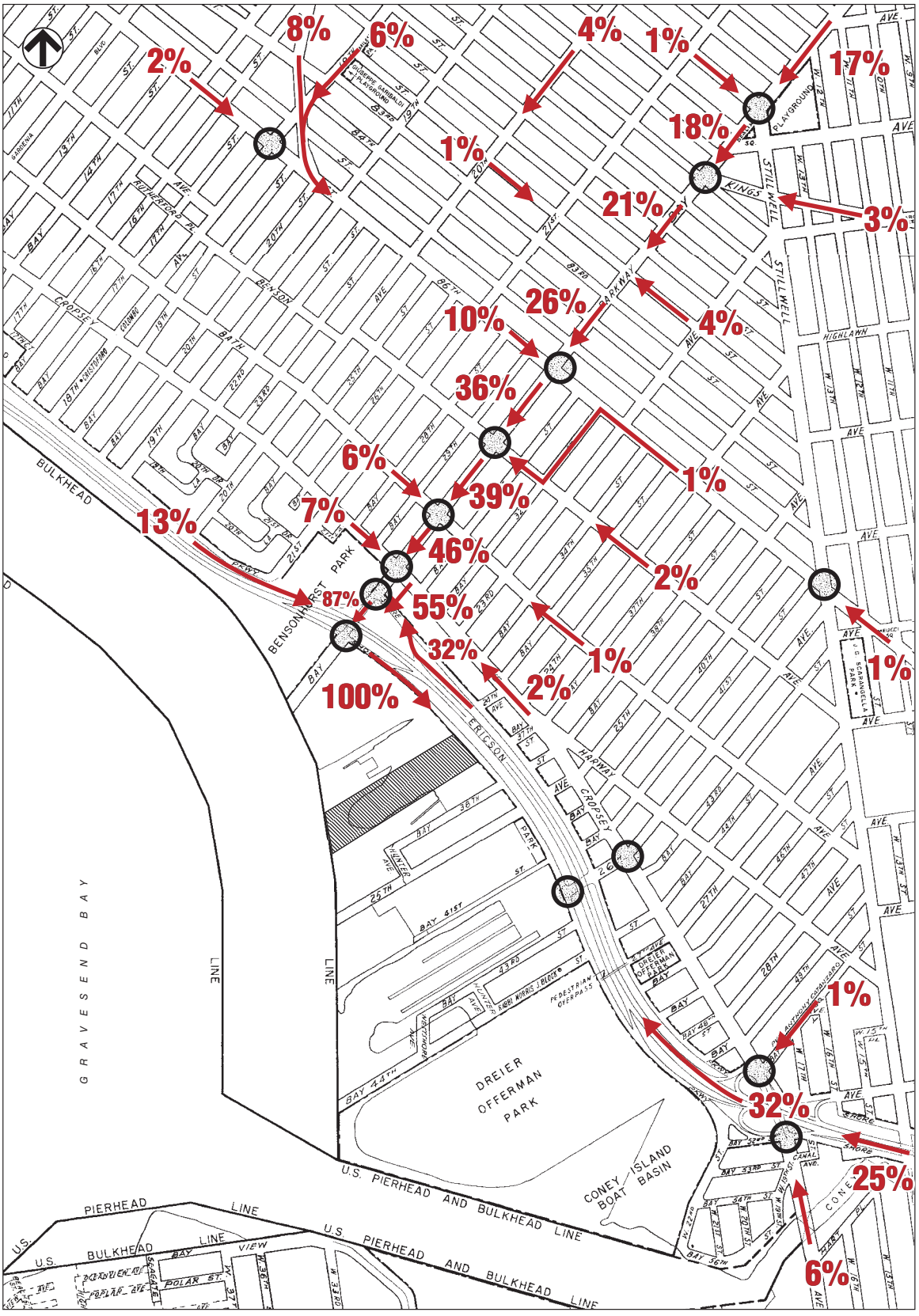
SITE ACCESS AND EGRESS

Vehicular access and egress at the project site would be provided via the Belt Parkway eastbound service road immediately east of the New York Sports Club (see Figure 1-1 in Chapter 1, "Project Description"). Most of the site's remaining frontage along the service road would be used to accommodate truck delivery operations with a pair of one-way head-in and head-out driveways. Currently in front of the project site, there is meter parking on the waterfront side and free on-street parking on the far side of the service road. Typical utilization of these on-street parking spaces is low because most waterfront uses on the service road have adequate on-site parking. Because the site's entering and exiting traffic volumes would be substantial, some curbside treatments are needed to maintain proper traffic flow on the service road. As part of the proposed project, it has been recommended to NYCDOT that all meter parking in front of the project site should be eliminated and replaced with No Standing Anytime regulations. On the far side, the same No Standing Anytime regulations are recommended for the length of the project site plus another 150 feet upstream to the west. These changes would allow for transition in the traffic flow on the service road for bypassing potential queues at and merging vehicles from the site's driveways.

TRAFFIC CONDITIONS

Figures **11-10** through **11-12** present the project-generated traffic volumes and **Figure**s **11-13** through **11-15** show the Build traffic volumes for the weekday midday, weekday PM, and Saturday PM peak hours, respectively. **Tables 11-8** and **11-9** compare the No Build and Build service conditions for the study area signalized and unsignalized intersections for the weekday midday, weekday PM, and Saturday PM peak hours, respectively.

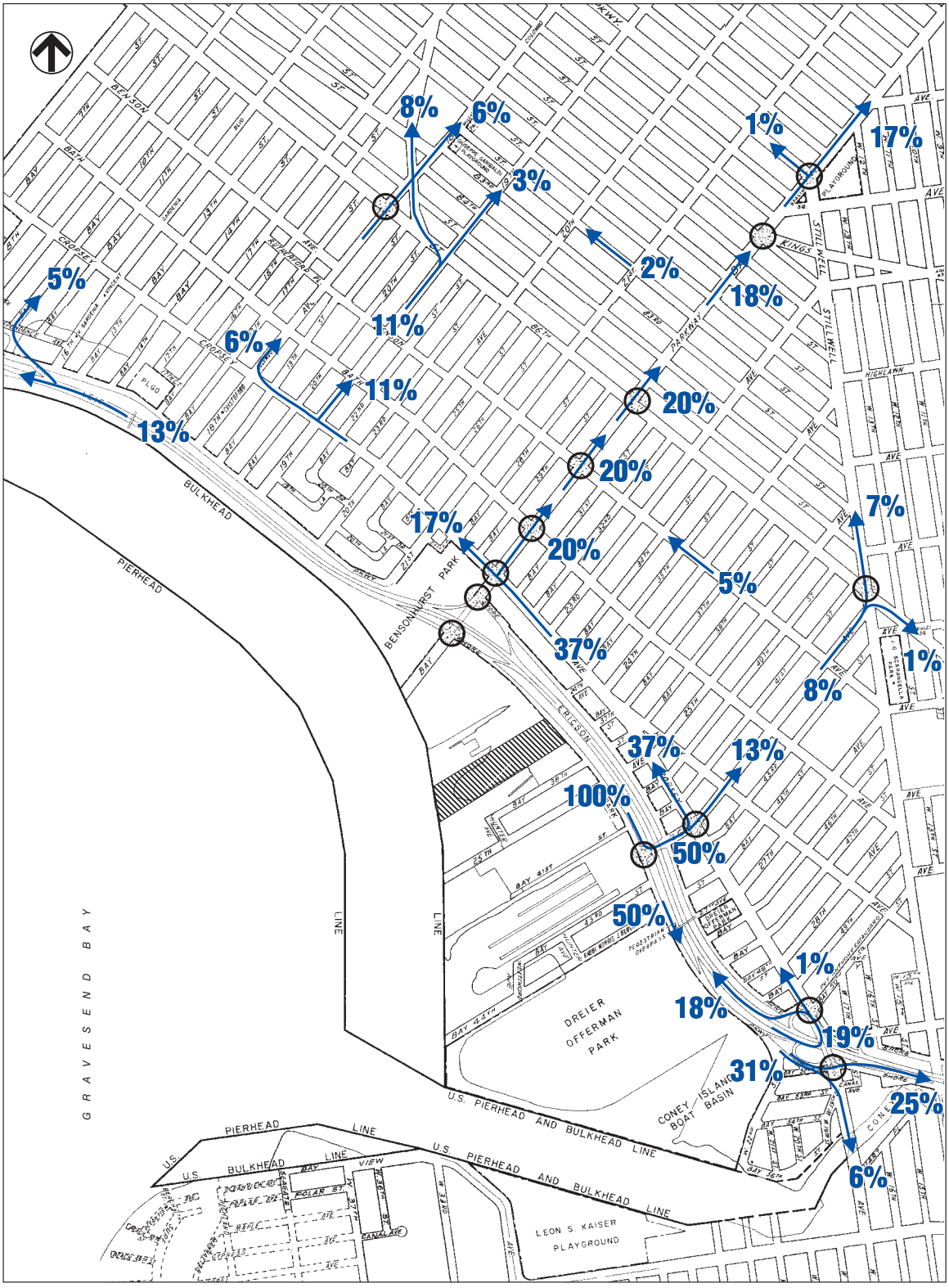
Overall, intersections along Bay Parkway providing access to and from the project site are the most affected by project-generated traffic volumes. In the 2013 Build scenario, the Saturday PM peak hour would have the highest number of intersections (7) projected to result in significant adverse traffic impacts, as described below, followed by the weekday PM peak hour (6), and then by the weekday midday peak hour (5).



Auto and Taxi
Project Generated Trip Assignments - Percent-Ins

BROOKLYN BAY CENTER

Figure 11-8

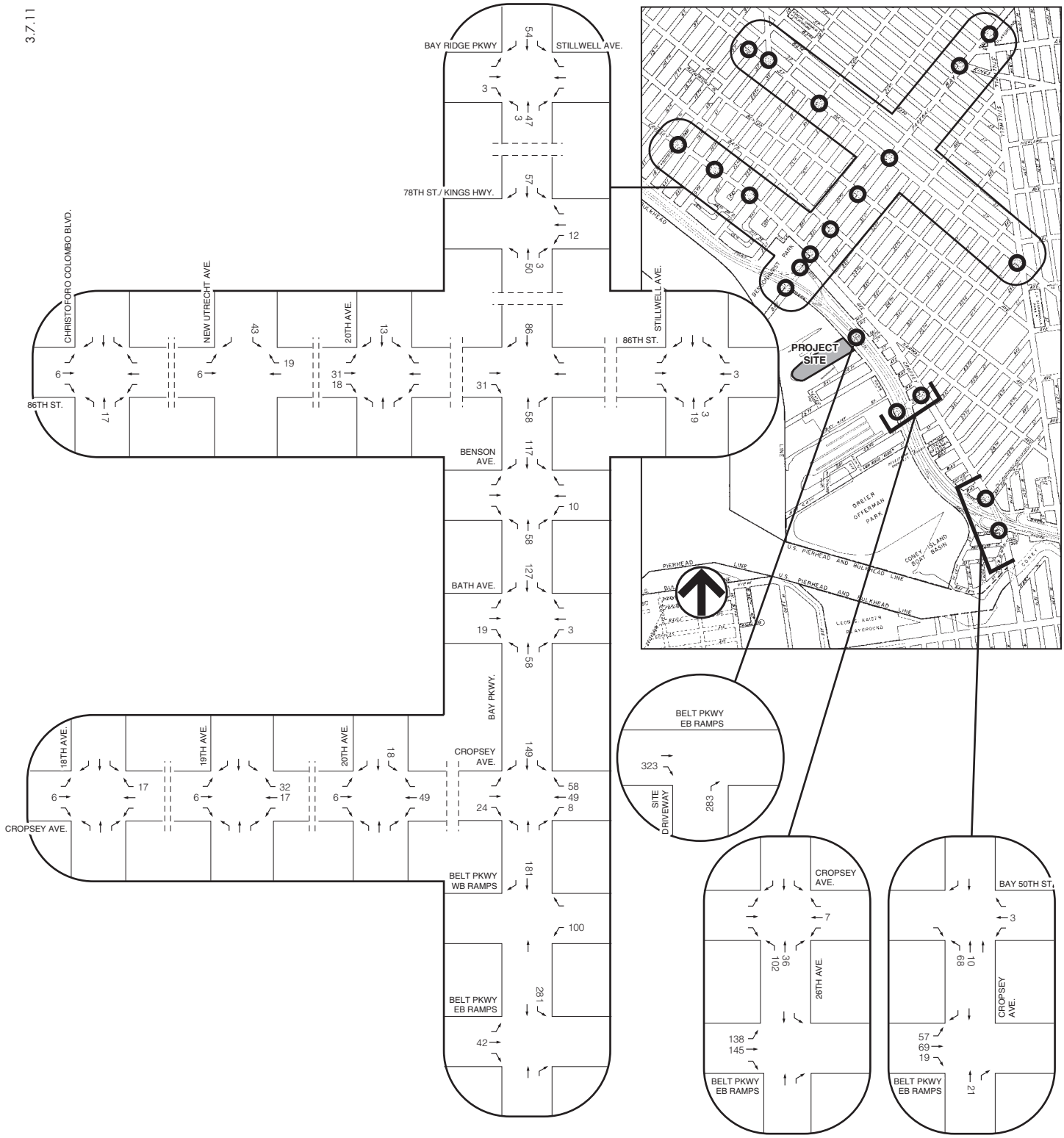


Auto and Taxi
Project Generated Trip Assignments - Percent-Outs

BROOKLYN BAY CENTER

Figure 11-9

3.7.11

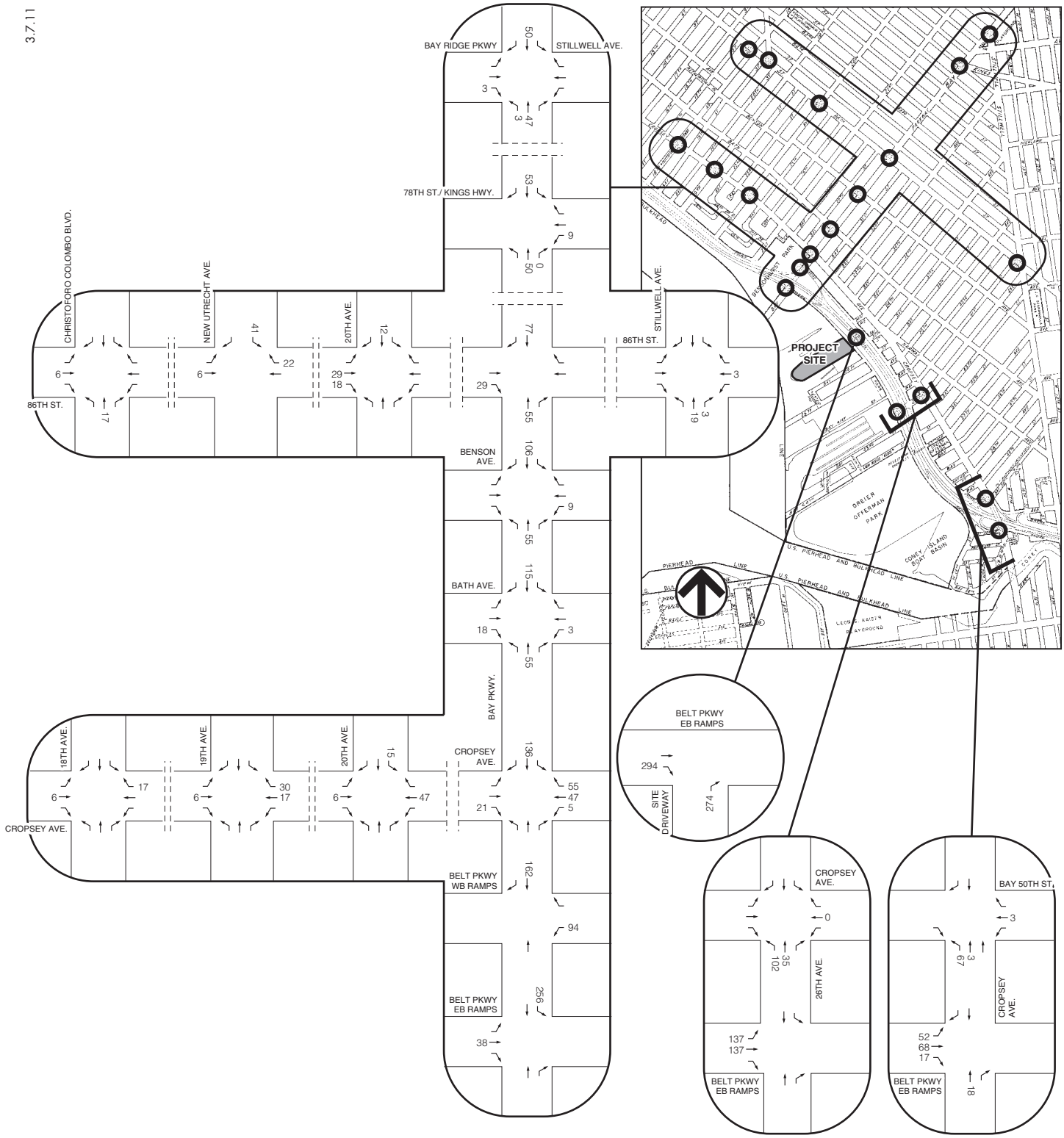


Project Generated Traffic Volumes
Weekday Midday Peak Hour

BROOKLYN BAY CENTER

Figure 11-10

3.7.11

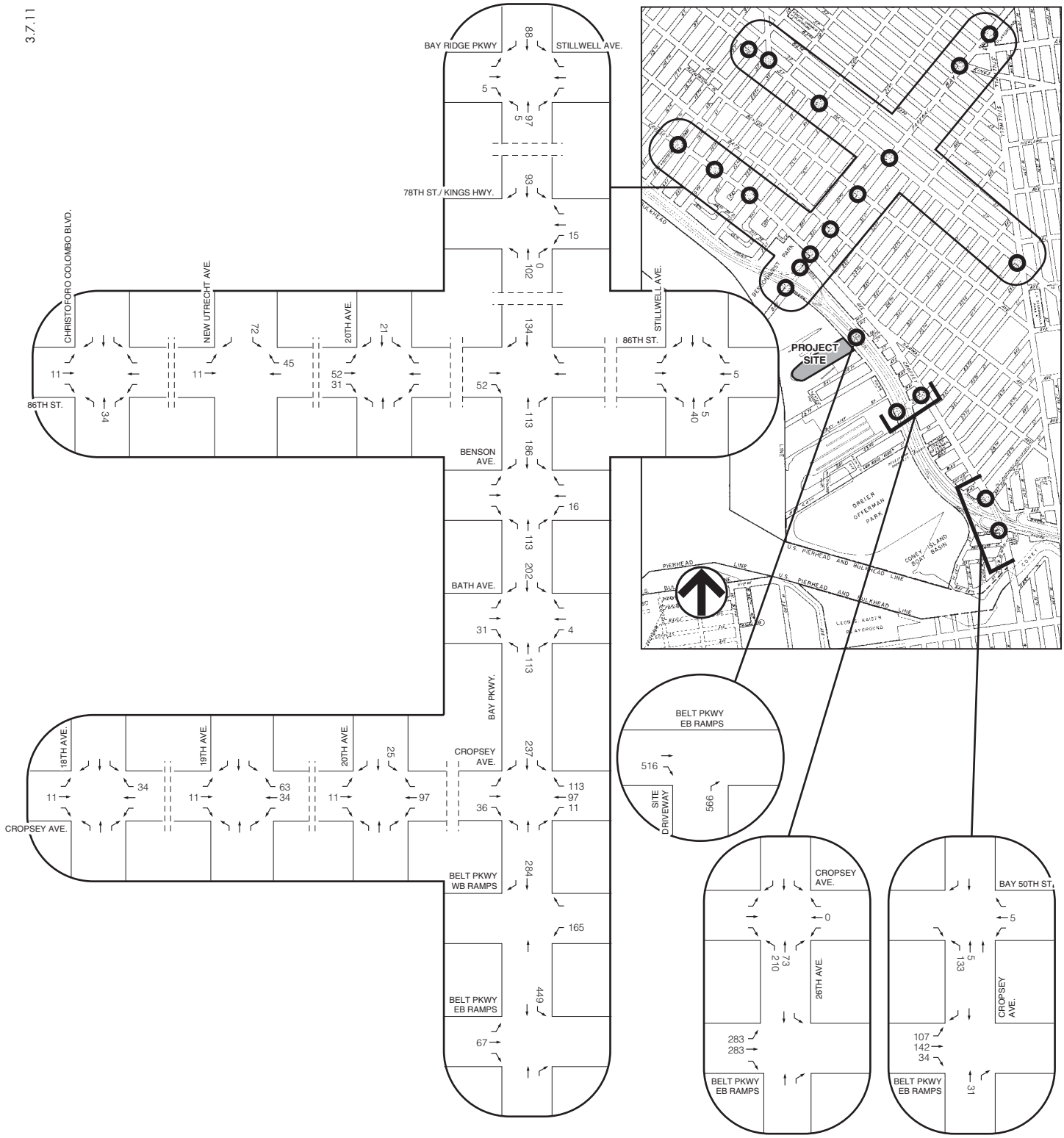


Project Generated Traffic Volumes
Weekday PM Peak Hour

BROOKLYN BAY CENTER

Figure 11-11

3.7.11

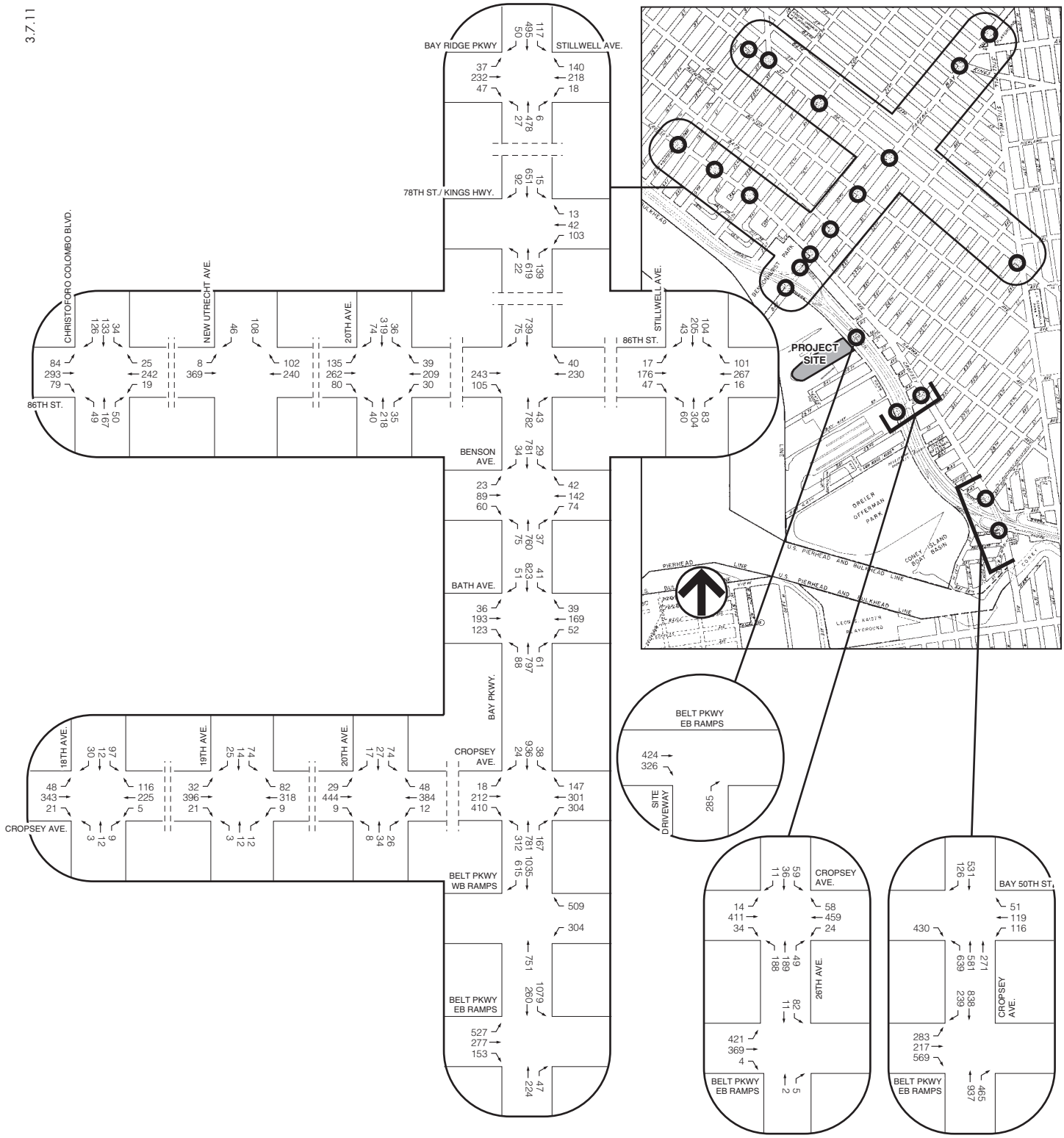


Project Generated Traffic Volumes
Saturday Peak Hour

BROOKLYN BAY CENTER

Figure 11-12

3.7.11



2013 Build Traffic Volumes
Weekday Midday Peak Hour

BROOKLYN BAY CENTER

Figure 11-13

Table 11-8
2013 No Build and Build Scenarios Level of Service Analysis
Signalized Intersections

Intersections	Weekday MD Peak Hour								Weekday PM Peak Hour								Saturday Peak Hour							
	2013 No Build				2013 Build				2013 No Build				2013 Build				2013 No Build				2013 Build			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
18th Avenue and 86th Street																								
Eastbound	LTR	0.51	21.9	C	LTR	0.52	22.0	C	LTR	0.56	28.4	C	LTR	0.56	28.6	C	LTR	0.88	37.2	D	LTR	0.89	38.2	D
Westbound	LTR	0.27	18.2	B	LTR	0.27	18.2	B	LTR	0.24	22.6	C	LTR	0.24	22.6	C	LTR	0.41	19.9	B	LTR	0.41	19.9	B
Northbound	LTR	0.33	15.7	B	LTR	0.35	15.9	B	LTR	0.34	19.8	B	LTR	0.36	20.0	C	LTR	0.50	18.5	B	LTR	0.54	19.2	B
Southbound	LTR	0.38	16.3	B	LTR	0.38	16.3	B	LTR	0.36	20.1	C	LTR	0.36	20.1	C	LTR	0.37	16.3	B	LTR	0.37	16.3	B
	Intersection		18.6	B	Intersection		18.6	B	Intersection		23.6	C	Intersection		23.7	C	Intersection		26.0	C	Intersection		26.4	C
Bay Parkways and Bay Ridge Parkway																								
Eastbound	LTR	0.32	22.6	C	LTR	0.32	22.6	C	LTR	0.42	30.2	C	LTR	0.42	30.3	C	LTR	0.48	24.9	C	LTR	0.49	25.0	C
Westbound	LTR	0.43	24.2	C	LTR	0.43	24.2	C	LTR	0.44	30.7	C	LTR	0.44	30.7	C	LTR	0.60	27.2	C	LTR	0.60	27.2	C
Northbound	LT	0.30	11.7	B	LT	0.34	12.0	B	LT	0.30	14.6	B	LT	0.34	15.0	B	LT	0.37	12.4	B	LT	0.44	13.3	B
	R	0.01	9.4	A	R	0.01	9.4	A	R	0.00	11.7	B	R	0.00	11.7	B	R	0.00	9.3	A	R	0.00	9.3	A
Southbound	LT	0.45	13.5	B	LT	0.49	14.1	B	LT	0.51	17.8	B	LT	0.56	18.7	B	LT	0.38	12.5	B	LT	0.44	13.4	B
	R	0.08	10.0	A	R	0.08	10.0	A	R	0.08	12.4	B	R	0.08	12.4	B	R	0.06	9.9	A	R	0.06	9.9	A
	Intersection		16.8	B	Intersection		16.9	B	Intersection		22.1	C	Intersection		22.3	C	Intersection		19.1	B	Intersection		19.0	B
Bay Parkway and 78th Street-Kings Highway																								
Westbound	LTR	0.36	31.3	C	LTR	0.39	31.8	C	LTR	0.57	43.3	D	LTR	0.58	43.9	D	LTR	0.49	33.6	C	LTR	0.52	34.4	C
Northbound	LTR	0.43	8.3	A	LTR	0.47	8.6	A	LTR	0.45	10.8	B	LTR	0.48	11.2	B	LTR	0.37	7.7	A	LTR	0.43	8.2	A
Southbound	LTR	0.39	7.8	A	LTR	0.42	8.1	A	LTR	0.48	11.2	B	LTR	0.51	11.6	B	LTR	0.38	7.7	A	LTR	0.43	8.2	A
	Intersection		10.2	B	Intersection		10.5	B	Intersection		15.7	B	Intersection		16.0	B	Intersection		11.2	B	Intersection		11.5	B
Bay Parkway and 86th Street																								
Eastbound	TR	0.68	32.9	C	TR	0.77	38.1	D	TR	0.60	36.8	D	TR	0.68	40.3	D	TR	0.86	45.5	D	TR	1.02	77.0	E +
Westbound	TR	0.56	28.4	C	TR	0.56	28.4	C	TR	0.59	36.2	D	TR	0.59	36.2	D	TR	0.77	37.0	D	TR	0.77	37.0	D
Northbound	TR	0.50	14.0	B	TR	0.54	14.6	B	TR	0.54	18.1	B	TR	0.58	18.8	B	TR	0.48	13.6	B	TR	0.54	14.6	B
Southbound	TR	0.46	13.4	B	TR	0.51	14.1	B	TR	0.49	17.1	B	TR	0.53	17.9	B	TR	0.49	13.7	B	TR	0.56	14.9	B
	Intersection		18.5	B	Intersection		19.7	B	Intersection		22.7	C	Intersection		23.6	C	Intersection		23.1	C	Intersection		28.9	C
Bay Parkway and Benson Avenue																								
Eastbound	LTR	0.46	30.3	C	LTR	0.46	30.3	C	LTR	0.62	47.6	D	LTR	0.62	47.6	D	LTR	0.67	37.9	D	LTR	0.67	37.9	D
Westbound	LTR	0.68	38.1	D	LTR	0.73	41.2	D	LTR	1.04	109.4	F	LTR	1.11	131.9	F +	LTR	1.10	107.5	F	LTR	1.15	123.9	F +
Northbound	LTR	0.60	13.1	B	LTR	0.65	14.2	B	LTR	0.62	13.8	B	LTR	0.68	15.2	B	LTR	0.63	13.9	B	LTR	0.77	18.0	B
Southbound	LTR	0.46	10.9	B	LTR	0.53	11.9	B	LTR	0.46	11.0	B	LTR	0.52	11.9	B	LTR	0.48	11.1	B	LTR	0.59	12.7	B
	Intersection		16.9	B	Intersection		17.8	B	Intersection		28.2	C	Intersection		31.1	C	Intersection		33.2	C	Intersection		36.1	D
Bay Parkway and Bath Avenue																								
Eastbound	LTR	0.80	44.0	D	LTR	0.85	49.4	D +	LTR	0.95	77.7	E	LTR	1.00	91.3	F +	LTR	1.12	111.9	F	LTR	1.21	146.4	F +
Westbound	LTR	0.68	37.6	D	LTR	0.71	39.7	D	LTR	1.11	130.0	F	LTR	1.12	133.6	F +	LTR	1.11	108.4	F	LTR	1.12	110.6	F
Northbound	LT	0.59	13.0	B	LT	0.66	14.5	B	LT	0.72	16.4	B	LT	0.79	19.3	B	DefL	1.09	99.7	F	DefL	1.46	251.7	F +
																	T	0.71	16.7	B	T	0.82	21.7	C
	R	0.10	7.9	A	R	0.10	7.9	A	R	0.07	7.5	A	R	0.07	7.5	A	R	0.05	7.5	A	R	0.05	7.5	A
Southbound	LTR	0.50	11.4	B	LTR	0.58	12.5	B	LTR	0.48	11.2	B	LTR	0.54	12.1	B	LTR	0.54	11.9	B	LTR	0.66	13.9	B
	Intersection		19.6	B	Intersection		21.2	C	Intersection		36.9	D	Intersection		39.5	D	Intersection		54.3	D	Intersection		71.5	E
Bay Parkway and Cropsey Avenue																								
Eastbound	L	0.11	35.3	D	L	0.12	35.5	D	L	0.15	36.3	D	L	0.16	36.6	D	L	0.08	33.2	C	L	0.10	34.5	C
	T	0.53	42.9	D	T	0.53	42.9	D	T	0.48	41.6	D	T	0.48	41.6	D	T	0.67	45.9	D	T	0.67	45.9	D
	R	0.78	44.1	D	R	0.83	48.1	D	R	0.85	51.1	D	R	0.90	56.6	E +	R	0.60	33.7	C	R	0.67	36.2	D
Westbound	L	0.89	79.0	E	L	0.91	82.6	F +	L	0.76	66.0	E	L	0.78	67.0	E	L	1.07	121.8	F	L	1.10	133.4	F +
	TR	0.29	23.8	C	TR	0.39	25.4	C	TR	0.33	24.5	C	TR	0.43	26.0	C	TR	0.57	28.6	C	TR	0.77	34.5	C
Northbound	L	1.15	139.7	F	L	1.14	134.0	F	L	1.20	168.4	F	L	1.41	241.9	F +	L	1.22	163.4	F	L	1.34	219.2	F +
	TR	0.61	23.4	C	TR	0.61	23.4	C	TR	0.68	25.0	C	TR	0.68	25.0	C	TR	0.62	23.4	C	TR	0.62	23.4	C
Southbound	L	0.24	28.8	C	L	0.24	28.8	C	L	0.38	35.0	D	L	0.38	35.0+	D	L	0.22	28.3	C	L	0.22	28.3	C
	TR	0.65	32.9	C	TR	0.77	36.8	D	TR	0.68	33.7	C	TR	0.78	37.3	D	TR	0.78	37.2	D	TR	0.96	53.6	D +
	Intersection		45.2	D	Intersection		45.6	D	Intersection		44.9	D	Intersection		50.9	D	Intersection		47.7	D	Intersection		56.4	E
Bay Parkway and Belt Parkway Westbound Ramps																								
Westbound	L	0.19	28.8	C	L	0.28	30.1	C	L	0.20	29.0	C	L	0.29	30.2	C	L	0.14	28.2	C	L	0.29	30.2	C
	R	0.74	42.1	D	R	0.74	42.1	D	R	0.68	40.0	D	R	0.68	40.0	D	R	0.58	36.9	D	R	0.58	36.9	D
Northbound	T	0.38	14.0	B	T	0.38	14.0	B	T	0.44	14.8	B	T	0.44	14.8	B	T	0.42	14.5	B	T	0.42	14.5	B
Southbound	T	0.47	15.3	B	T	0.57	17.0	B	T	0.49	15.4	B	T	0.57	16.9	B	T	0.56	16.7	B	T	0.72	20.2	C
	R	0.84	31.0	C	R	0.84	31.0	C	R	0.88	35.6	D	R	0.88	35.6	D	R	0.75	25.5	C	R	0.75	25.5	C
	Intersection		23.8	C	Intersection		24.2	C	Intersection		24.0	C	Intersection		24.3	C	Intersection		20.8	C	Intersection		22.4	C
Bay Parkway and Belt Parkway Eastbound Ramps																								
Eastbound	L	0.48	36.9	D	L	0.48	36.9	D	L	0.64	41.9	D	L	0.64	41.9	D	L	0.52	38.0	D	L	0.52	38.0	D
	LT	0.54	36.4	D	LT	0.58	37.3	D	LT	0.67	39.8	D	LT	0.71	41.0	D	LT	0.58	37.4	D	LT	0.65	39.1	D
Northbound	T	0.25	33.8	C	T	0.25	33.8	C	T	0.28	34.2	C	T	0.28	34.2	C	T	0.52	38.2	D	T	0.52	38.2	D
	R	0.14	32.9	C	R	0.14	32.9	C	R	0.13	32.8	C	R	0.13	32.8	C	R	0.30	36.0	D	R	0.30	36.0	D
Southbound	DefL	0.74	33.3	C	DefL	1.00	62.7	E +	DefL	0.78	35.9	D	DefL	1.02	67.9	E +	DefL	0.63	34.1	C	DefL	1.09	94.5	F +
	T	0.28	15.6	B	T	0.28	15.6	B	T	0.33	16.3	B	T	0.33	16.3	B	T	0.62	21.8	C	T	0.62	21.8	C
	Intersection		32.4	C	Intersection		45.9	D	Intersection		34.9	C	Intersection		48.1	D	Intersection		33.2	C	Intersection		54.6	D

Notes:
L = Left Turn, T = Through, R = Right Turn, DefL = Defacto Left Turn; LOS = Level of Service.
+ implies a significant adverse impact

Table 11-8 (cont'd)
2013 No Build and Build Scenarios Level of Service Analysis
Signalized Intersections

Intersections	Weekday MD Peak Hour								Weekday PM Peak Hour								Saturday Peak Hour							
	2013 No Build				2013 Build				2013 No Build				2013 Build				2013 No Build				2013 Build			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
Stillwell Avenue and 86th Street																								
Eastbound	LTR	0.21	18.7	B	LTR	0.21	18.7	B	LTR	0.23	23.6	C	LTR	0.23	23.6	C	LTR	0.30	19.6	B	LTR	0.30	19.7	B
Westbound	LT	0.26	19.3	B	LT	0.27	19.3	B	LT	0.27	24.2	C	LT	0.27	24.2	C	LT	0.48	22.1	C	LT	0.49	22.2	C
	R	0.24	19.9	B	R	0.24	19.9	B	R	0.24	24.5	C	R	0.24	24.5	C	R	0.56	26.9	C	R	0.56	26.9	C
Northbound	LTR	0.29	13.7	B	LTR	0.31	13.8	B	LTR	0.33	18.0	B	LTR	0.34	18.2	B	LTR	0.29	13.6	B	LTR	0.32	13.9	B
Southbound	LTR	0.59	32.8	C	LTR	0.60	33.1	C	LTR	0.64	40.3	D	LTR	0.65	40.7	D	LTR	0.62	33.7	C	LTR	0.64	34.4	C
	Intersection		20.9	C	Intersection		20.9	C	Intersection		26.5	C	Intersection		26.5	C	Intersection		22.6	C	Intersection		22.6	C
26th Avenue and Cropsey Avenue																								
Eastbound	LTR	0.32	11.9	B	LTR	0.32	11.9	B	LTR	0.33	12.0	B	LTR	0.33	12.0	B	LTR	0.44	13.2	B	LTR	0.44	13.2	B
Westbound	LTR	0.39	12.6	B	LTR	0.39	12.7	B	LTR	0.43	13.1	B	LTR	0.43	13.1	B	LTR	0.72	18.1	B	LTR	0.72	18.1	B
Northbound	LTR	0.60	29.8	C	LTR	0.95	59.9	E +	LTR	0.72	34.1	C	LTR	1.04	82.4	F +	LTR	0.76	36.6	D	LTR	1.47	253.8	F +
Southbound	LTR	0.26	22.8	C	LTR	0.28	23.2	C	LTR	0.22	22.1	C	LTR	0.24	22.4	C	LTR	0.23	22.3	C	LTR	0.23	22.4	C
	Intersection		16.8	B	Intersection		26.3	C	Intersection		18.3	B	Intersection		34.1	C	Intersection		19.9	B	Intersection		78.6	E
Avenue Z and Bay 50th Street																								
Westbound	LTR	0.65	34.7	C	LTR	0.66	35.0	C	LTR	0.63	33.9	C	LTR	0.64	34.1	C	LTR	0.51	30.3	C	LTR	0.52	30.6	C
Northbound	T	0.16	8.6	A	T	0.16	8.6	A	T	0.22	9.0	A	T	0.22	9.0	A	T	0.31	9.8	A	T	0.31	9.8	A
Southbound	TR	0.59	23.9	C	TR	0.59	23.9	C	TR	0.52	22.7	C	TR	0.52	22.7	C	TR	0.79	29.2	C	TR	0.79	29.2	C
	Intersection		23.0	C	Intersection		23.1	C	Intersection		21.0	C	Intersection		21.0	C	Intersection		23.0	C	Intersection		23.1	C
Cropsey Avenue and Bay 50th Street																								
Westbound	LTR	0.65	34.7	C	LTR	0.66	35.0	C	LTR	0.63	33.9	C	LTR	0.64	34.1	C	LTR	0.51	30.3	C	LTR	0.52	30.6	C
Northbound	DefL	0.57	23.7	C	DefL	0.64	25.7	C	DefL	0.61	24.6	C	DefL	0.67	26.7	C	DefL	0.45	27.6	C	DefL	0.49	23.0	C
	T	0.60	14.6	B	T	0.61	14.8	B	T	0.58	13.9	B	T	0.58	14.0	B	T	0.87	23.2	C	T	0.94	34.2	C
Southbound	TR	0.59	23.9	C	TR	0.59	23.9	C	TR	0.52	22.7	C	TR	0.52	22.7	C	TR	0.79	29.2	C	TR	0.79	29.2	C
	Intersection		22.8	C	Intersection		23.5	C	Intersection		22.3	C	Intersection		23.1	C	Intersection		26.4	C	Intersection		29.9	C
Cropsey Avenue and Belt Parkway Eastbound Service Road																								
Eastbound	L	0.29	16.8	B	L	0.36	17.8	B	L	0.26	16.5	B	L	0.32	17.3	B	L	0.17	15.5	B	L	0.31	17.0	B
	TR	0.19	15.7	B	TR	0.28	16.7	B	TR	0.18	15.6	B	TR	0.26	16.5	B	TR	0.48	19.8	B	TR	0.67	24.1	C
	R	0.74	26.8	C	R	0.76	28.0	C	R	0.75	27.5	C	R	0.77	28.6	C	R	0.67	24.4	C	R	0.72	26.1	C
Northbound	TR	0.72	22.7	C	TR	0.73	23.0	C	TR	0.71	22.3	C	TR	0.71	22.5	C	TR	0.79	24.4	C	TR	0.80	24.8	C
Southbound	T	0.60	20.8	C	T	0.60	20.8	C	T	0.57	20.3	C	T	0.57	20.3	C	T	0.46	18.5	B	T	0.46	18.5	B
	R	0.39	18.6	B	R	0.39	18.6	B	R	0.32	17.5	B	R	0.32	17.5	B	R	0.71	26.6	C	R	0.71	26.6	C
	Intersection		21.9	C	Intersection		22.2	C	Intersection		21.8	C	Intersection		22.0	C	Intersection		22.8	C	Intersection		23.6	C
New Utrecht Avenue and 86th Street																								
Eastbound	LT	0.55	22.2	C	LT	0.56	22.4	C	LT	0.56	26.8	C	LT	0.56	27.0	C	LT	0.89	39.3	D	LT	0.91	41.5	D
Westbound	T	0.34	18.3	B	T	0.34	18.3	B	T	0.34	22.1	C	T	0.34	22.1	C	T	0.57	22.6	C	T	0.57	22.6	C
	R	0.07	0.1	A	R	0.09	0.1	A	R	0.11	0.2	A	R	0.13	0.2	A	R	0.12	0.2	A	R	0.16	0.3	A
Southbound	LR	0.17	15.0	B	LR	0.24	15.8	B	LR	0.16	19.5	B	LR	0.22	20.3	C	LR	0.22	15.5	B	LR	0.32	16.8	B
	Intersection		17.8	B	Intersection		17.5	B	Intersection		20.4	C	Intersection		20.1	C	Intersection		27.5	C	Intersection		27.2	C
20th Avenue and 86th Street																								
Eastbound	LTR	0.92	46.1	D	LTR	1.00	64.7	E +	LTR	0.89	46.2	D	LTR	0.97	61.0	E +	LTR	1.10	90.6	F	LTR	1.26	150.9	F +
Westbound	LTR	0.45	17.3	B	LTR	0.45	17.3	B	LTR	0.48	22.3	C	LTR	0.49	22.4	C	LTR	0.65	22.4	C	LTR	0.65	22.5	C
Northbound	LTR	0.66	30.5	C	LTR	0.66	30.7	C	LTR	0.68	37.8	D	LTR	0.69	38.1	D	LTR	0.78	38.9	D	LTR	0.79	40.6	D
Southbound	LTR	0.92	53.4	D	LTR	0.95	58.2	E	LTR	0.85	49.9	D	LTR	0.87	52.2	D	LTR	0.65	30.2	C	LTR	0.69	31.5	C
	Intersection		39.4	D	Intersection		47.2	D	Intersection		40.4	D	Intersection		46.2	D	Intersection		55.1	E	Intersection		83.6	F
18th Avenue and Cropsey Avenue																								
Eastbound	LTR	0.54	16.0	B	LTR	0.55	16.2	B	LTR	0.51	18.8	B	LTR	0.52	19.0	B	LTR	0.48	14.7	B	LTR	0.49	15.0	B
Westbound	LTR	0.44	14.2	B	LTR	0.47	14.6	B	LTR	0.33	15.4	B	LTR	0.35	15.7	B	LTR	0.52	15.5	B	LTR	0.57	16.8	B
Northbound	LTR	0.04	19.8	B	LTR	0.04	19.8	B	LTR	0.07	25.6	C	LTR	0.07	25.6	C	LTR	0.08	20.2	C	LTR	0.08	20.2	C
Southbound	LTR	0.42	26.4	C	LTR	0.42	26.4	C	LTR	0.38	31.1	C	LTR	0.38	31.1	C	LTR	0.45	26.2	C	LTR	0.45	26.2	C
	Intersection		17.0	B	Intersection		17.2	B	Intersection		20.2	C	Intersection		20.3	C	Intersection		17.6	B	Intersection		18.1	B
19th Avenue and Cropsey Avenue																								
Eastbound	LTR	0.58	12.7	B	LTR	0.59	12.8	B	LTR	0.61	13.3	B	LTR	0.62	13.5	B	LTR	0.49	11.0	B	LTR	0.51	11.2	B
Westbound	LTR	0.47	10.8	B	LTR	0.53	11.8	B	LTR	0.37	9.5	A	LTR	0.43	10.3	B	LTR	0.46	10.6	B	LTR	0.59	12.8	B
Northbound	LTR	0.06	13.9	B	LTR	0.06	13.9	B	LTR	0.06	13.9	B	LTR	0.06	13.9	B	LTR	0.08	14.1	B	LTR	0.08	14.1	B
Southbound	LTR	0.29	16.8	B	LTR	0.29	16.8	B	LTR	0.38	17.9	B	LTR	0.38	17.9	B	LTR	0.31	16.9	B	LTR	0.31	16.9	B
	Intersection		12.5	B	Intersection		12.9	B	Intersection		12.9	B	Intersection		13.1	B	Intersection		11.8	B	Intersection		12.7	B
20th Avenue and Cropsey Avenue																								
Eastbound	LTR	0.62	13.5	B	LTR	0.63	13.7	B	LTR	0.63	13.5	B	LTR	0.63	13.7	B	LTR	0.54	11.8	B	LTR	0.56	12.2	B
Westbound	LTR	0.51	11.3	B	LTR	0.57	12.4	B	LTR	0.40	9.9	A	LTR	0.45	10.6	B	LTR	0.53	11.6	B	LTR	0.64	13.9	B
Northbound	LTR	0.15	14.8	B	LTR	0.15	14.8	B	LTR	0.15	14.9	B	LTR	0.15	14.9	B	LTR	0.23	15.9	B	LTR	0.23	15.9	B
Southbound	LTR	0.25	16.0	B	LTR	0.30	16.8	B	LTR	0.35	17.5	B	LTR	0.39	18.3	B	LTR	0.35	17.7	B	LTR	0.44	19.3	B
	Intersection		13.0	B	Intersection		13.6	B	Intersection		13.0	B	Intersection		13.4	B	Intersection		12.9	B	Intersection		14.2	B

Notes:

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

+ implies a significant adverse impact

Table 11-9
2013 No Build and Build Scenarios Level of Service Analysis
Unsignalized Intersections

Intersections	Weekday MD Peak Hour								Weekday PM Peak Hour								Saturday Peak Hour							
	2013 No Build				2013 Build				2013 No Build				2013 Build				2013 No Build				2013 Build			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
26th Avenue and Belt Parkway Service Road																								
Eastbound	LT	0.18	7.7	A	LT	0.27	8.0	A	LT	0.22	7.9	A	LT	0.31	8.2	A	LT	0.22	7.8	A	LT	0.40	8.7	A
Northbound	TR	0.01	11.8	B	TR	0.02	16.4	C	TR	0.13	18.1	C	TR	0.25	33.7	D	TR	0.13	40.6	E	TR	0.60	275.7	F
Southbound	LT	0.32	22.6	C	LT	0.62	60.2	F	LT	0.40	32.7	D	LT	0.83	121.2	F	LT	0.28	39.0	E	LT	1.74	715.3	F

Notes:
L = Left Turn, T = Through, R = Right Turn, DefL = Defacto Left Turn; LOS = Level of Service.
+ implies a significant adverse impact

IMPACT CRITERIA

According to the criteria presented in the *CEQR Technical Manual*, impacts are considered significant (identified by the "+" symbol in the analysis summary table) and require examination of mitigation if they result in an increase of 5 or more seconds of delay in a lane group beyond mid-LOS D when compared to the No Build level. 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. In addition, impacts are considered significant if levels of service decrease from acceptable LOS A, B, or C in the No Build scenario to marginally unacceptable LOS D (a delay in excess of 45 seconds, the midpoint of the LOS D range of delay), or unacceptable LOS E or F in the future Build scenario. In addition, the *CEQR Technical Manual* states that at unsignalized intersections, 90 passenger car equivalents (PCEs) must be identified in the future Build scenario in any peak hour for the minor approach to trigger significant adverse impacts.

SIGNALIZED INTERSECTIONS

Weekday Midday Peak Hour

Bay Parkway and Bath Avenue: The eastbound approach would deteriorate within LOS D from a delay of 44.0 seconds (v/c ratio of 0.80) to a delay of 49.4 seconds (v/c ratio of 0.85).

Bay Parkway and Cropsey Avenue: The westbound left-turn movement would deteriorate from LOS E (v/c ratio of 0.89 and delay of 79.0 seconds) to LOS F (v/c ratio of 0.91 and delay of 82.6 seconds).

Bay Parkway and Belt Parkway eastbound ramps: The southbound defacto left-turn movement would deteriorate from LOS C (v/c ratio of 0.74 and delay of 33.3 seconds) to LOS E (v/c ratio of 1.00 and delay of 62.7 seconds).

Cropsey Avenue and 26th Avenue: The northbound approach would deteriorate from LOS C (v/c ratio of 0.60 and delay of 29.8 seconds) to LOS E (v/c ratio of 0.95 and delay of 59.9 seconds).

20th Avenue and 86th Street: The eastbound approach would deteriorate from LOS D (v/c ratio of 0.92 and delay of 46.1 seconds) to LOS E (v/c ratio of 1.00 and delay of 64.7 seconds).

Weekday PM Peak Hour

Bay Parkway and Benson Avenue: The westbound approach would deteriorate within LOS F from a delay of 109.4 seconds (v/c ratio of 1.04) to a delay of 131.9 seconds (v/c ratio of 1.11).

Bay Parkway and Bath Avenue: The eastbound approach would deteriorate from LOS E (v/c ratio of 0.95 and delay of 77.7 seconds) to LOS F (v/c ratio of 1.00 and delay of 91.3 seconds).

The westbound approach would deteriorate within LOS F from a delay of 130.0 seconds (v/c ratio of 1.11) to a delay of 133.6 seconds (v/c ratio of 1.12).

Bay Parkway and Cropsey Avenue: The eastbound right-turn movement would deteriorate from LOS D (v/c ratio of 0.85 and delay of 51.1 seconds) to LOS E (v/c ratio of 0.90 and delay of 56.6 seconds). The northbound left-turn movement would deteriorate within LOS F from a delay of 168.4 seconds (v/c ratio of 1.20) to a delay of 241.9 seconds (v/c ratio of 1.41).

Bay Parkway and Belt Parkway eastbound ramps: The southbound defacto left-turn movement would deteriorate from LOS D (v/c ratio of 0.78 and delay of 35.9 seconds) to LOS E (v/c ratio of 1.02 and delay of 67.9 seconds).

Cropsey Avenue and 26th Avenue: The northbound approach would deteriorate from LOS C (v/c ratio of 0.72 and delay of 34.1 seconds) to LOS F (v/c ratio of 1.04 and delay of 82.4 seconds).

20th Avenue and 86th Street: The eastbound approach would deteriorate from LOS D (v/c ratio of 0.89 and delay of 46.2 seconds) to LOS E (v/c ratio of 0.97 and delay of 61.0 seconds).

Saturday PM peak Hour

Bay Parkway and 86th Street: The eastbound approach would deteriorate from LOS D (v/c ratio of 0.86 and delay of 45.5) to LOS E (v/c ratio of 1.02 and delay of 77.0)

Bay Parkway and Benson Avenue: The westbound approach would deteriorate within LOS F from a delay of 107.5 seconds (v/c ratio of 1.10) to a delay of 123.9 seconds (v/c ratio of 1.15).

Bay Parkway and Bath Avenue: The eastbound approach would deteriorate within LOS F from a delay of 111.9 seconds (v/c ratio of 1.12) to a delay of 146.4 seconds (v/c ratio of 1.21). The northbound defacto left-turn movement would deteriorate within LOS F from a delay of 99.7 seconds (v/c ratio of 1.09) to a delay of 251.7 seconds (v/c ratio of 1.46).

Bay Parkway and Cropsey Avenue: The westbound left-turn movement would deteriorate within LOS F from a delay of 121.8 seconds (v/c ratio of 1.07) to a delay of 133.4 seconds (v/c ratio of 1.10). The northbound left-turn movement would deteriorate within LOS F from a delay of 163.4 seconds (v/c ratio of 1.22) to a delay of 219.2 seconds (v/c ratio of 1.34). The southbound through-right movement would deteriorate within LOS D from a delay of 37.2 seconds (v/c ratio of 0.78) to a delay of 53.6 seconds (v/c ratio of 0.96).

Bay Parkway and Belt Parkway eastbound ramps: The southbound defacto left-turn movement would deteriorate from LOS C (v/c ratio of 0.63 and delay of 34.1 seconds) to LOS F (v/c ratio of 1.09 and delay of 94.5 seconds).

Cropsey Avenue and 26th Avenue: The northbound approach would deteriorate from LOS D (v/c ratio of 0.76 and delay of 36.6 seconds) to LOS F (v/c ratio of 1.47 and delay of 253.8 seconds).

20th Avenue and 86th Street: The eastbound approach would deteriorate within LOS F from a delay of 90.6 seconds (v/c ratio of 1.10) to a delay of 150.9 seconds (v/c ratio of 1.26).

PARKING

As stated above, the proposed project would provide up to 690 spaces in a public parking garage to accommodate the parking needs generated by the planned uses. Using the survey data collected as part of the *Gateway Estates II FEIS* (February 2009) and information presented in the *ITE Trip Generation Manual, 8th Edition* and other approved studies, the 24-hour entry and exit vehicle volumes were projected for the typical weekday and Saturday for the retail

component. For the open space component and public parking component, the parking accumulation for a weekday and weekend was assumed to follow the same pattern as the open space land use from the *Brooklyn Bridge Park FEIS* (December 2005). The accumulation of these vehicle volumes to a peak occupancy level represents the parking demand of the proposed development on each of these days.

As shown in **Table 11-10**, the weekday peak parking demand is expected to reach 323 spaces at 1 PM. In comparison, the Saturday peak parking demand would reach 585 spaces at 3 PM. An occupancy level of 95 percent at an off-street parking facility is typically considered at capacity. Hence, to adequately accommodate the peak parking demand of 585 spaces, a minimum parking supply of 616 spaces would be necessary. With potentially up to 690 spaces constructed, the proposed project is expected to provide adequate parking on-site and not result in added demand to the area's parking resources. Therefore, the proposed project is not expected to result in any significant adverse parking impacts.

Table 11-10
Estimated Parking Demand

Time Period	Destination Retail/Public Walkway								Public Parking		Total	
	Weekday				Saturday				Weekday	Saturday	Weekday	Saturday
	In	Out	Total	Accumulation	In	Out	Total	Accumulation	Accumulation	Accumulation	Accumulation	Accumulation
12-1 AM	0	0	0	0	0	0	0	0	0	0	0	0
1-2	0	0	0	0	0	0	0	0	0	0	0	0
2-3	0	0	0	0	0	0	0	0	0	0	0	0
3-4	0	0	0	0	0	0	0	0	0	0	0	0
4-5	0	0	0	0	0	0	0	0	0	0	0	0
5-6	0	0	0	0	0	0	0	0	0	0	0	0
6-7	0	0	0	0	0	0	0	0	0	0	0	0
7-8	72	8	80	64	94	15	109	79	0	0	64	79
8-9	108	64	172	108	141	86	227	134	0	0	108	134
9-10	159	101	260	166	209	138	347	205	0	0	166	205
10-11	221	158	379	229	289	144	433	350	0	1	229	351
11-12	257	204	461	282	337	277	614	410	1	1	283	411
12-1 PM	304	264	568	322	391	340	731	461	1	1	323	462
1-2	271	279	550	314	457	388	845	530	1	2	315	532
2-3	236	276	512	274	487	434	921	583	2	2	276	585
3-4	262	254	516	282	451	480	931	554	2	2	284	556
4-5	263	275	538	270	477	527	1,004	504	2	1	272	505
5-6	284	264	548	290	428	450	878	482	1	1	291	483
6-7	331	311	642	310	253	376	629	359	1	0	311	359
7-8	281	329	610	262	131	215	346	275	0	0	262	275
8-9	181	321	502	122	42	171	213	146	0	0	122	146
9-10	122	244	366	0	25	171	196	0	0	0	0	0
10-11	0	0	0	0	0	0	0	0	0	0	0	0
11-12	0	0	0	0	0	0	0	0	0	0	0	0

F. PEDESTRIAN SAFETY

Accident data for the study area intersections were obtained from the New York State Department of Transportation (NYSDOT) for the time period between January 1, 2007 and December 31, 2009. The data obtained quantify the total number of reportable accidents (involving fatality, injury, or more than $1,000 in property damage), fatalities, and injuries during the study period, as well as a yearly breakdown of pedestrian- and bicycle-related accidents at each location. According to the *CEQR Technical Manual*, a high pedestrian/bicycle accident location is one where there were five or more pedestrian and bicycle-related accidents in any year of the most recent three-year period for which data are available.

During this period, a total of 56 pedestrian-related accidents and 9 bicycle-related accidents occurred at the study area intersections. Based on the accident data, two study area intersections would be classified as high pedestrian/bicycle accident locations: Bay Parkway at Cropsey Avenue and Bay Parkway at 86th Street. **Table 11-11** depicts total accident characteristics by intersection during the study period, as well as a breakdown of pedestrian and bicycle accidents by year and location.

Table 11-11
Accident Data

Intersection		Accidents by Year								
North-South Roadway	East-West Roadway	Pedestrian			Bicycle			Combined Ped/Bike		
		2007	2008	2009	2007	2008	2009	2007	2008	2009
18th Avenue	86th Street	0	4	2	0	0	0	0	4	2
Bay Parkway	Bay Ridge Parkway	0	2	1	0	0	0	0	2	1
Bay Parkway	**86th Street**	2	4	2	0	1	0	2	**5**	2
Bay Parkway	Benson Avenue	2	0	1	1	0	0	3	0	1
Bay Parkway	Bath Avenue	0	1	2	0	0	0	0	1	2
Bay Parkway	**Cropsey Avenue**	5	4	2	0	0	2	**5**	4	4
Bay Parkway	Belt Pkwy EB Ramps	0	0	0	0	0	0	0	0	0
Bay Parkway	Belt Pkwy WB Ramps	0	0	3	0	0	1	0	0	4
Stillwell Avenue	86th Street	0	1	2	0	0	0	0	1	2
Bay 50th Street	Cropsey Avenue	0	0	0	1	0	0	1	0	0
Belt Pkwy EB Svc Rd	Cropsey Avenue	0	0	0	0	0	0	0	0	0
Bay Parkway	78th Street	0	0	3	0	0	0	0	0	3
26th Avenue	Shore Pkwy SB	0	0	0	1	0	0	1	0	0
26th Avenue	Cropsey Avenue	0	1	1	0	0	0	0	1	1
New Utrecht Avenue	86th Street	1	0	1	0	0	2	1	0	3
20th Avenue	86th Street	4	4	0	0	0	0	4	4	0
18th Avenue	Cropsey Avenue	0	0	1	0	0	0	0	0	1
19th Avenue	Cropsey Avenue	0	0	0	0	0	0	0	0	0
20th Avenue	Cropsey Avenue	0	0	0	0	0	0	0	0	0

Note: Intersections that are bolded reflect the occurrence of five or more vehicle/pedestrian/bike accidents in a twelve-month period.
Source: NYSDOT January 1, 2007 to December 31, 2009 accident data.

Under the Build scenario, most of the pedestrian activity generated by the proposed actions would consist of short trips to neighboring retail uses or trips to the nearby bus stops serving the area. Both high vehicular-pedestrian accident intersections are located where there would not be any project-generated pedestrian trips. A review of the accident histories at these two locations indicates that the majority of the pedestrian-related accidents were caused by pedestrian inattentiveness and driver failure to yield the right of way. Overall, there were very few distinct trends in the accident patterns beyond typical vehicular and pedestrian traffic conflicts. Therefore, it was concluded that the proposed project would not result in significant adverse safety impacts at these locations. Nonetheless, some feasible measures for NYCDOT to implement as soon as possible to improve pedestrian safety at these locations are recommended below.

A field reconnaissance of conditions at these intersections was conducted to identify specific geometric and operational issues and to determine whether measures could be recommended to improve pedestrian safety. At the intersection of Bay Parkway and Cropsey Avenue, pedestrian and bicycle safety could also be improved by the installation of a high-visibility crosswalk on the southbound approach. At the intersection of Bay Parkway and 86th Street, pedestrian and bicycle safety could also be improved by installing high-visibility crosswalks on all approaches. Along with these measures, safety at these locations could be further enhanced with the installation of signs warning turning vehicles to yield to pedestrians and warning pedestrians to wait for pedestrian signals at all crossing locations. ✷