4.9 TRAFFIC AND PARKING

4.9.1 Introduction

As discussed in Chapter 2, "Purpose and Need and Project Overview," construction of Shaft 33B at the preferred Shaft Site would occur in four stages and take 52 months to complete. The 52-month period includes an eight-month period during which no active construction would occur on the site. Potential traffic and parking impacts associated with this proposed action at the preferred Shaft Site are described below. The methodology used to prepare this assessment is described in Chapter 3, "Impact Methodologies," Section 3.9, "Traffic and Parking." Potential traffic and parking impacts from the combined construction of the water main connections and the preferred Shaft Site are discussed in Chapter 5, "Water Main Connections," Section 5.9, "Traffic and Parking."

4.9.2 Existing Conditions

Study Area Roadways and Traffic Volumes

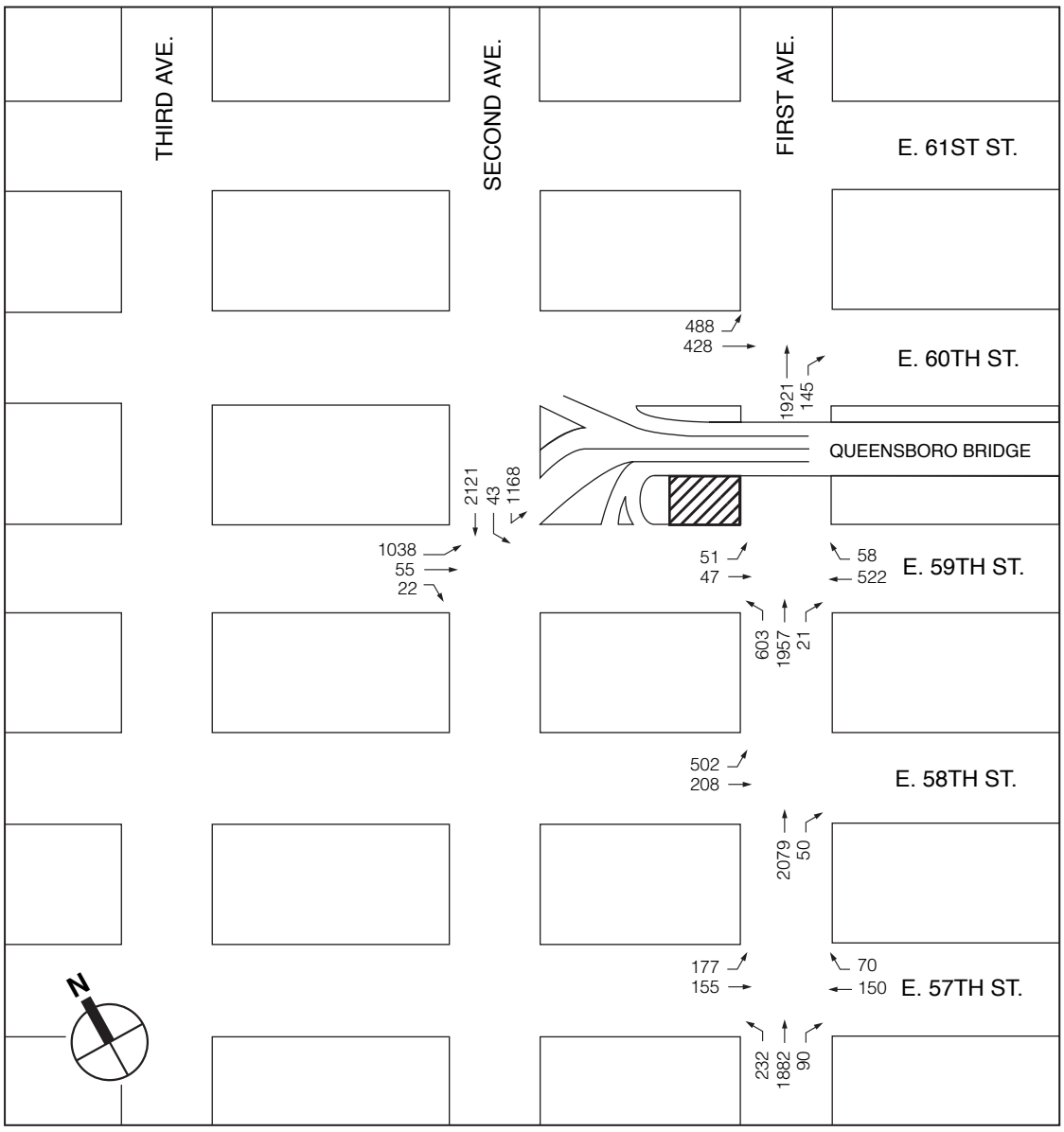
The preferred Shaft Site is located near the Queensboro Bridge, which is a congested area in the Upper East Side of Manhattan. Near the Queensboro Bridge, congestion on southbound Second Avenue extends northward from E. 60th Street in the commuter peak hours. On First Avenue, vehicles also experience congestion approaching the Queensboro Bridge during the commuter periods.

Figures 4.9-1, 4.9-2, and 4.9-3 show the traffic volumes for existing conditions of the Study Area during the weekday 8:00 to 9:00 a.m., 12:00 to 1:00 p.m. and 5:00 to 6:00 p.m. peak hours (AM, midday, and PM), respectively. Additional intersections addressed in the evaluation of potential impacts from the construction of the water main connections are discussed in Section 5.9. Traffic volumes, based on the traffic counts performed in November 2004, are described for each street in the Study Area (refer to Figure 3.9-1 in Section 3.9). The Study Area roadway characteristics and peak hour traffic volumes are described below.

Queensboro Bridge

The Queensboro Bridge connects the Borough of Manhattan with the Borough of Queens. The span of the Bridge runs parallel to the streets of Manhattan and falls between E. 59th Street and E. 60th Street. A total of nine lanes on two levels are available for vehicles on the Queensboro Bridge–four Manhattan-bound lanes and five Queens-bound lanes. The upper roadway has two lanes of Queens-bound traffic and two lanes of Manhattan-bound traffic. The lower roadway has an inner roadway with two Manhattan-bound lanes and two Queens-bound lanes and an outer roadway with one Queens-bound lane. Trucks are permitted only on the lower inner roadway. A bicycle and pedestrian path is located on the northern outer roadway.

The Queens-bound upper roadway, with its entrances at E. 57th and E. 58th Streets, is reversed between 6:00 a.m. and 10:00 a.m. on weekdays to accommodate Manhattan-bound High Occupancy Vehicles (HOVs) carrying two or more occupants. NYPD Traffic enforcement agents



NOT TO SCALE

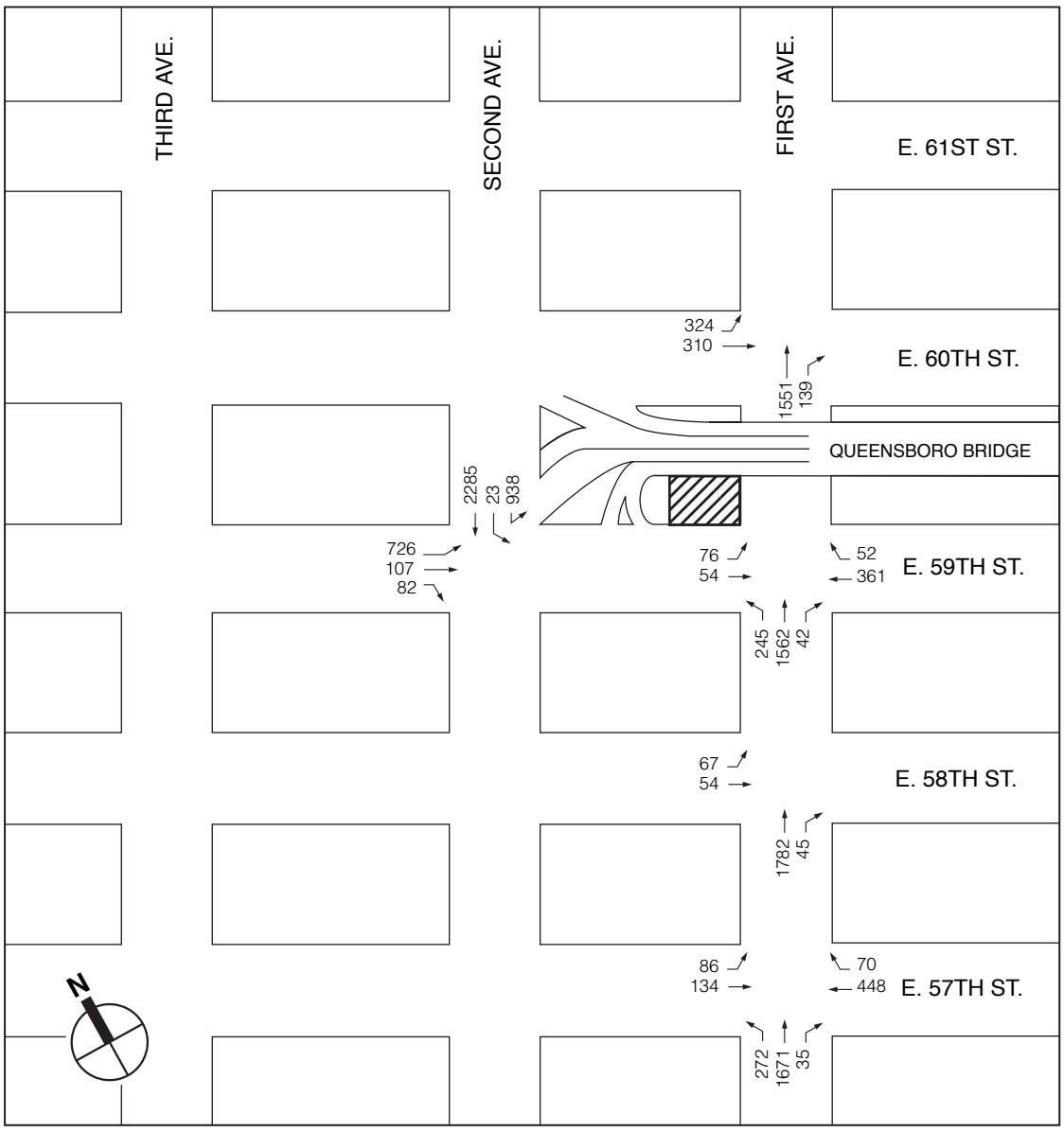
Legend:

Preferred Shaft 33B Site

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
PROPOSED SHAFT 33B TO CITY WATER TUNNEL NO. 3
STAGE 2-MANHATTAN LEG
PREFERRED SHAFT SITE

2004 EXISTING TRAFFIC VOLUME NETWORK, SHAFT STUDY AREA
AM PEAK HOUR

FIGURE 4.9-1



NOT TO SCALE

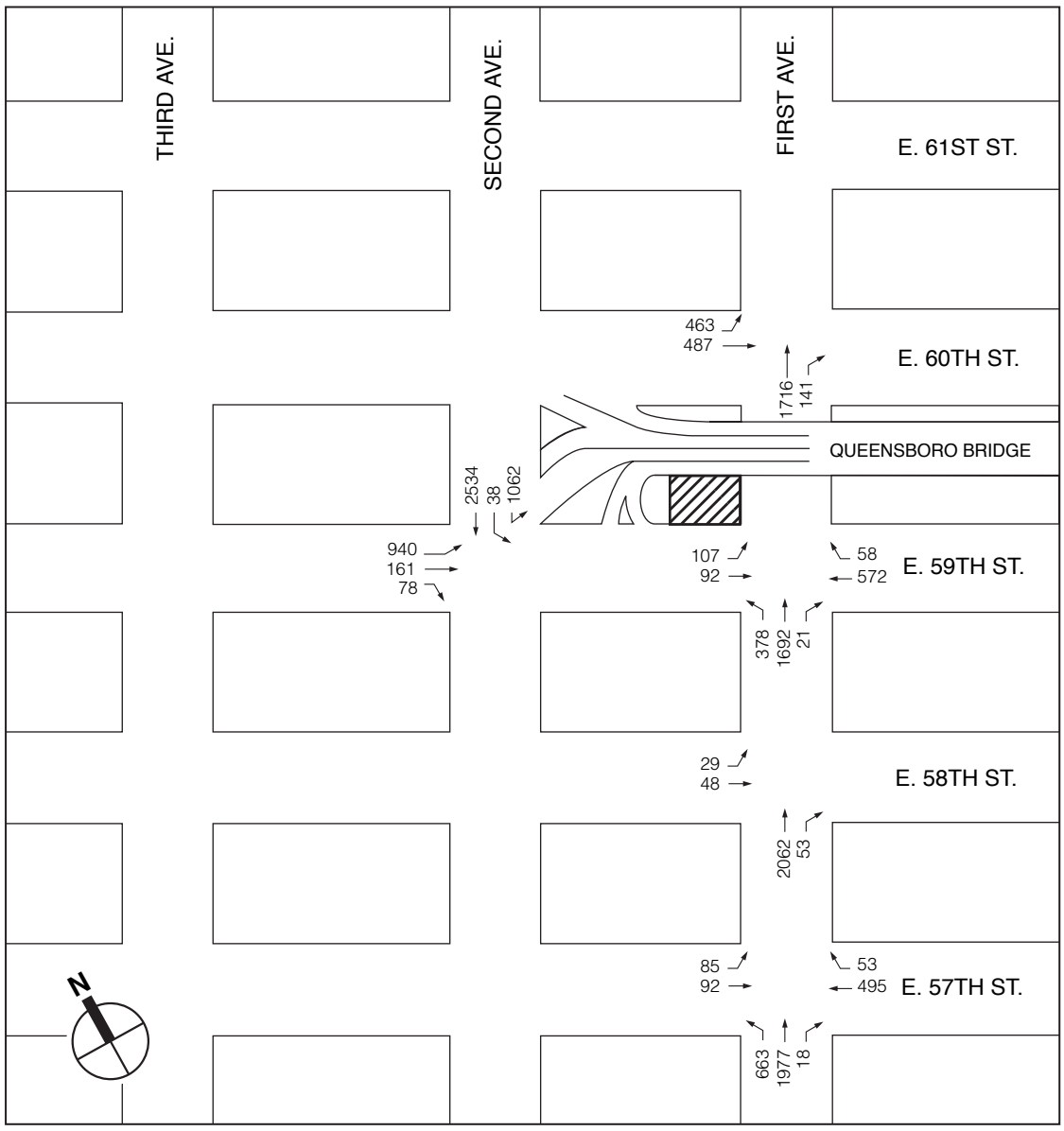
Legend:

Preferred Shaft 33B Site

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
PROPOSED SHAFT 33B TO CITY WATER TUNNEL NO. 3
STAGE 2-MANHATTAN LEG
PREFERRED SHAFT SITE

2004 EXISTING TRAFFIC VOLUME NETWORK, SHAFT STUDY AREA
MIDDAY PEAK HOUR

FIGURE 4.9-2



NOT TO SCALE

Legend:

Preferred Shaft 33B Site

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
PROPOSED SHAFT 33B TO CITY WATER TUNNEL NO. 3
STAGE 2-MANHATTAN LEG
PREFERRED SHAFT SITE

2004 EXISTING TRAFFIC VOLUME NETWORK, SHAFT STUDY AREA
PM PEAK HOUR

FIGURE 4.9-3

(TEAs) control traffic during the AM peak period at the upper ramp and at E. 57th and E. 58th Streets. Based on the *2003 Manhattan River Crossing Report*, the Queensboro Bridge carries a total two-way traffic volume of 10,220 vehicles per hour (vph) in the AM peak hour, 8,248 vph in the midday peak hour, and 10,718 vph in the PM peak hour.

The Queensboro Bridge has three entrances and three exits on the Manhattan side, as illustrated in Figure 4.9-4. One ramp serves as an entrance to the Queens-bound upper level roadway between First and Second Avenues with access at E. 57th Street and E. 58th Street. Two ramps are available to enter the lower level, one ramp on E. 59th Street between First and Second Avenues that leads to the outer roadway and one on E. 59th Street at Second Avenue that leads to the inner roadway. An exit from the Manhattan-bound upper level is located between First and Second Avenues ending at E. 62nd Street, and the two exits from the lower level are located at Second Avenue and E. 60th Street, and on E. 60th Street between First and Second Avenues. During the AM and PM peak periods, adjacent streets are typically congested.

First Avenue

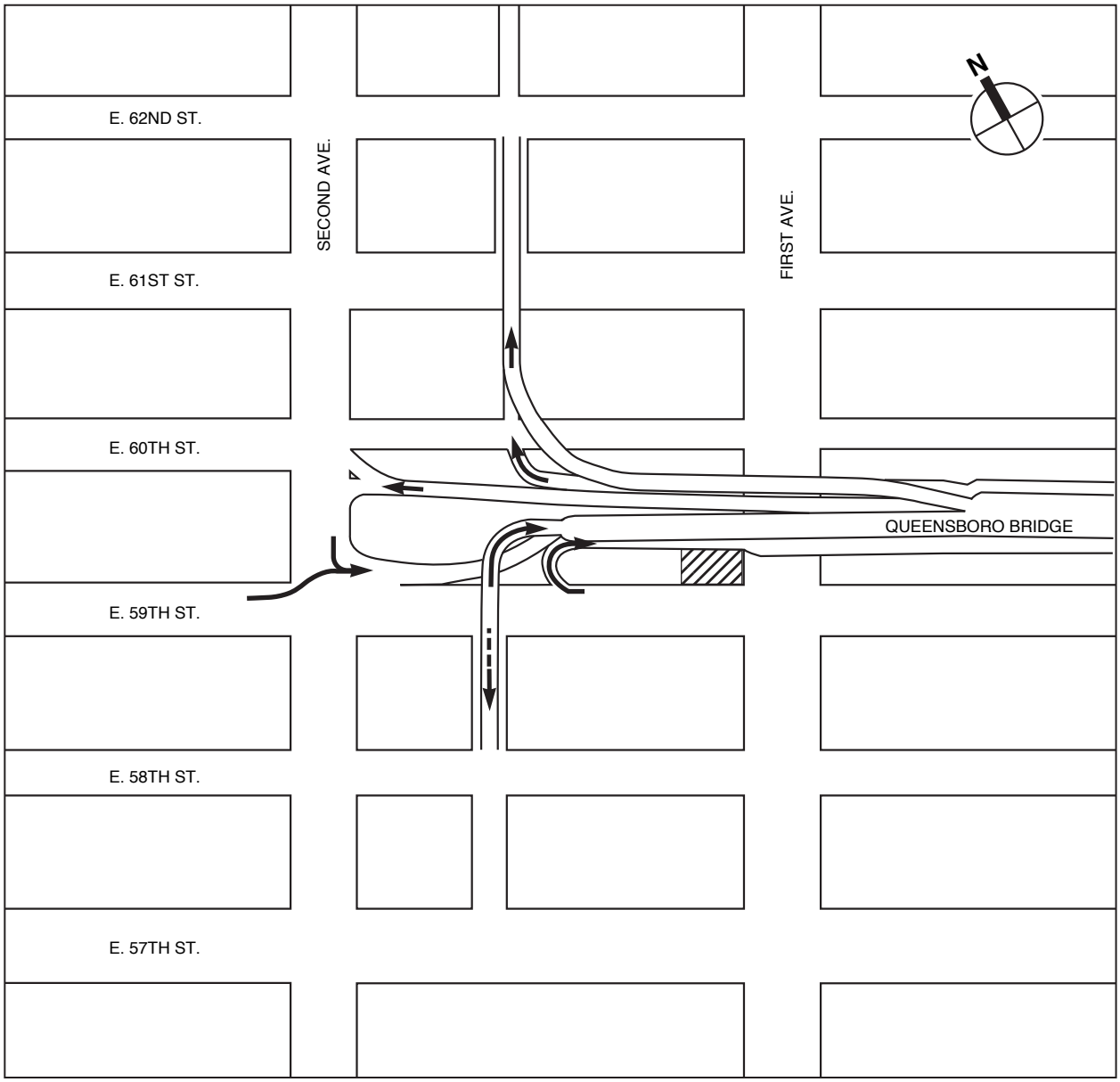
First Avenue is a seven-lane, 70-foot wide northbound roadway. In the AM and midday peak hours, there are typically five lanes available to serve northbound traffic, plus a parking lane on both sides of the avenue. In the PM peak hour, there are six lanes available to traffic. Parking is not permitted on either side while a bus lane operates along the east curb. First Avenue at E. 59th Street carries approximately 2,600, 1,850, and 2,100 vph during the AM, midday, and PM peak periods, respectively. In the Study Area, access to the Bridge is provided from First Avenue at E. 57th Street to the upper level and from E. 59th Street to the lower level outer roadway. Along First Avenue, the adjacent land uses consist of primarily residential buildings with ground floor retail. Loading and unloading activities at curbside are common during the AM and midday peak periods and prohibited in the PM peak period.

Second Avenue

Second Avenue is a southbound roadway that operates with six lanes north of the Queensboro Bridge and widens to a seven-lane, 70-foot wide roadway south of the Queensboro Bridge. In the AM and PM peak hours, six lanes are typically available to serve the heavy southbound traffic within the Study Area, while a bus lane operates along the west curb. During the midday peak hour, the Avenue operates with five travel lanes with both curbs available to accommodate loading activities. Just south of E. 59th Street, Second Avenue carries traffic volumes of approximately 2,150 vph, 2,500 vph, and 2,350 vph during the AM, midday, and PM peak hours, respectively. In the Study Area, the Avenue is used as a main route for vehicles entering and leaving Manhattan via the Queensboro Bridge at the E. 59th Street entrance and E. 60th Street exit. Like First Avenue, Second Avenue within the Study Area is predominantly residential with ground floor retail establishments.

E. 57th Street

E. 57th Street is a two-way cross street with an average roadway width of 60 feet. In the Study Area, it carries heavy traffic volumes in the AM and PM peak hours and connects to an access street between First and Second Avenues leading to the Queensboro Bridge's upper level. Loading activity is permitted on both sides of the street. Between First Avenue and the



Legend:

Preferred Shaft 33B Site

Traffic Flow

Reversed Traffic Flow During Weekday Morning Peak Period (6:00 a.m. to 10:00 a.m.)

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
PROPOSED SHAFT 33B TO CITY WATER TUNNEL NO. 3
STAGE 2-MANHATTAN LEG
PREFERRED SHAFT SITE

QUEENSBORO BRIDGE ACCESS CONFIGURATIONS

FIGURE 4.9-4

Queensboro Bridge approach, two-way peak hour traffic volumes along E. 57th Street are approximately 700 vph, 950 vph, and 1,350 vph during the AM, midday, and PM peak hours, respectively.

E. 58th Street

E. 58th Street is a one-way eastbound cross street with an average roadway width of 33 feet in the Study Area. In the AM peak period, E. 58th Street at First Avenue carries heavy traffic volumes due to the HOV traffic exiting the Queensboro Bridge's upper level. Parking is allowed on both sides of E. 58th Street at all times except during the AM peak period when parking is not permitted on the south side. E. 58th Street between First and Second Avenues carries peak traffic volumes of approximately 700 vph in the AM, declining to 120 vph and 80 vph in the midday and PM peak hours, respectively.

E. 59th Street

E. 59th Street is a two-way cross street at First Avenue, and is traversed by vehicles from the south along First Avenue and the east from York Avenue/Sutton Place. Parking is not permitted on either side of E. 59th Street in the vicinity of the preferred Shaft Site. From early morning through the evening, NYPD TEAs are presently located near the preferred Shaft Site to ensure that trucks do not access the Queensboro Bridge Queens bound outer roadway. Between First Avenue and the Queensboro Bridge approach, E. 59th Street carries two-way peak traffic volumes of approximately 1,200 vph, 750 vph, and 1,150 vph in the AM, midday, and PM peak hours, respectively, while east of First Avenue, the volumes decline to 650 vph, 510 vph and 740 vph during the same time periods.

E. 60th Street

E. 60th Street operates eastbound east of Second Avenue and westbound west of Second Avenue. Vehicles exiting the Manhattan-bound lower level inner ramp at Second Avenue traverse E. 60th Street westbound to reach other destinations, and vehicles exiting the Manhattan-bound lower level outer ramp travel eastbound to reach First Avenue. Parking is not permitted on either side of E. 60th Street in the vicinity of the preferred Shaft Site. E. 60th Street carries one-way peak traffic volumes of approximately 900 vph, 650 vph, and 950 vph in the AM, midday, and PM peak hours, respectively, between the Queensboro Bridge exit and First Avenue.

Truck traffic is subject to NYCDOT regulations. First, Second, and Third Avenues are designated north-south local truck routes, and E. 57th and E. 59th Streets are designated east-west local truck routes within the Study Area. As described above, trucks on the Queensboro Bridge are permitted only on the lower inner roadways.

Traffic Operations Analysis

Table 4.9-1 shows the results of the capacity analysis under existing conditions, at the five Study Area intersections in the three peak hours analyzed. Those intersection approaches that operate at mid-LOS D (delay in excess of 45 seconds) or worse, or have a high v/c ratio (generally 0.90 and above), are considered congested (or likely to become congested with normal increases in traffic). The analysis results show that various street movements meet the above criteria in the

analysis peak hours, largely because of high traffic volumes crossing the Queensboro Bridge, as detailed below.

Table 4.9-1
2004 Existing Conditions – Preferred Shaft Site Study Area

Analysis Intersection	AM Peak Hour					Midday Peak Hour					PM 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	
E. 60th Street (EB)	EB-LT	0.75	31.4	C		EB-LT	0.52	26.3	C		EB-LT	0.77	32.1	C	
First Avenue (NB)	NB-T	0.58	12.9	B		NB-T	0.53	12.3	B		NB-T	0.44	11.4	B	
	NB-R	0.23	10.6	B		NB-R	0.25	13.9	B		NB-R	0.24	10.7	B	
E. 59th Street (E-W)	EB-LT	0.26	18.5	B		EB-LT	0.41	22.0	C		EB-LT	0.74	37.7	D	
First Avenue (NB)	WB-TR	0.51	20.7	C		WB-TR	0.38	18.8	B		WB-TR	0.56	21.5	C	
	NB-L	0.94	44.4	D	*	NB-L	0.60	20.5	C		NB-L	0.65	20.9	C	
	NB-LTR	0.95	28.9	C	*	NB-LTR	0.74	18.1	B		NB-LT	0.72	17.5	B	
											NB-R	0.07	11.2	B	
E. 58th Street (EB)	EB-L	1.02	70.9	E	*	EB-LT	0.23	19.4	B		EB-LT	0.15	18.4	B	
First Avenue (NB)	EB-T	0.34	20.9	C											
	NB-TR	0.71	14.7	B		NB-TR	0.65	13.9	B		NB-T	0.53	12.3	B	
											NB-R	0.09	9.3	A	
E. 57th Street (E-W)	EB-DfL	0.87	61.3	E	*	EB-DfL	0.61	40.7	D		EB-DfL	0.64	44.1	D	
First Avenue (NB)	EB-T	0.38	24.2	C		EB-T	0.33	23.3	C		EB-T	0.19	20.9	C	
	WB-TR	0.32	22.2	C		WB-TR	0.60	26.7	C		WB-TR	0.64	27.7	C	
	NB-LTR	0.99	40.5	D	*	NB-LTR	0.91	29.5	C	*	NB-L	1.02	78.0	E	*
											NB-LT	0.99	40.5	D	*
											NB-R	0.06	15.3	B	
E. 59th Street (EB)	EB-TR	0.99	56.4	E	*	EB-TR	0.83	37.3	D		EB-TR	1.05	74.0	E	*
Second Avenue (SB)	SB-L	0.72	11.7	B		SB-L	0.81	15.1	B		SB-L	0.59	8.4	A	
	SB-LT	0.92	14.1	B	*	SB-LT	0.87	11.6	B		SB-LT	0.93	14.7	B	*

Notes: EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound

L-Left, T-Through, R-Right, DfL-Analysis considers a Defacto Left Lane on this approach.

Defacto left lane: As per HCM 2000, page 16-135, when the proportion of left turns in the left-hand lane group is 1.0, this left-hand lane should be analyzed as an exclusive left-turn lane (a de facto left-turn lane), since occupied entirely by left-turning vehicles.

V/C Ratio - Volume to Capacity Ratio, SEC/VEH - Seconds per vehicle

LOS - Level of service

* Denotes Congested Locations (marginally unacceptable LOS D, LOS E, LOS F, or V/C > 0.90)

Analysis is based on the 2000 *Highway Capacity Manual Methodology* (HCS 2000).

AM Peak Hour

- First Avenue and E. 59th Street – The northbound left-turn movement operates at LOS D with a v/c ratio of 0.94 and an average delay of 44.4 seconds per vehicle (spv) while the left-thru-right movement operates at LOS C with a v/c ratio of 0.95 and an average delay of 28.9 spv.
- First Avenue and E. 58th Street – The eastbound left-turn movement operates at LOS E with a v/c ratio of 1.02 and an average delay of 70.9 spv.
- First Avenue and E. 57th Street – The eastbound de facto left turn operates at LOS E with a v/c ratio of 0.87 and an average delay of 61.3 spv while the northbound approach operates at LOS D with a v/c ratio of 0.99 and an average delay of 40.5 spv.
- Second Avenue and E. 59th Street – The eastbound approach operates at LOS E with a v/c ratio of 0.99 and an average delay of 56.4 spv while the southbound approach operates at LOS B with a v/c ratio of 0.92 and an average delay of 14.1 spv.

Midday Peak Hour

- First Avenue and E. 57th Street – The northbound approach operates at LOS C with a v/c ratio of 0.91 and an average delay of 29.5 spv.

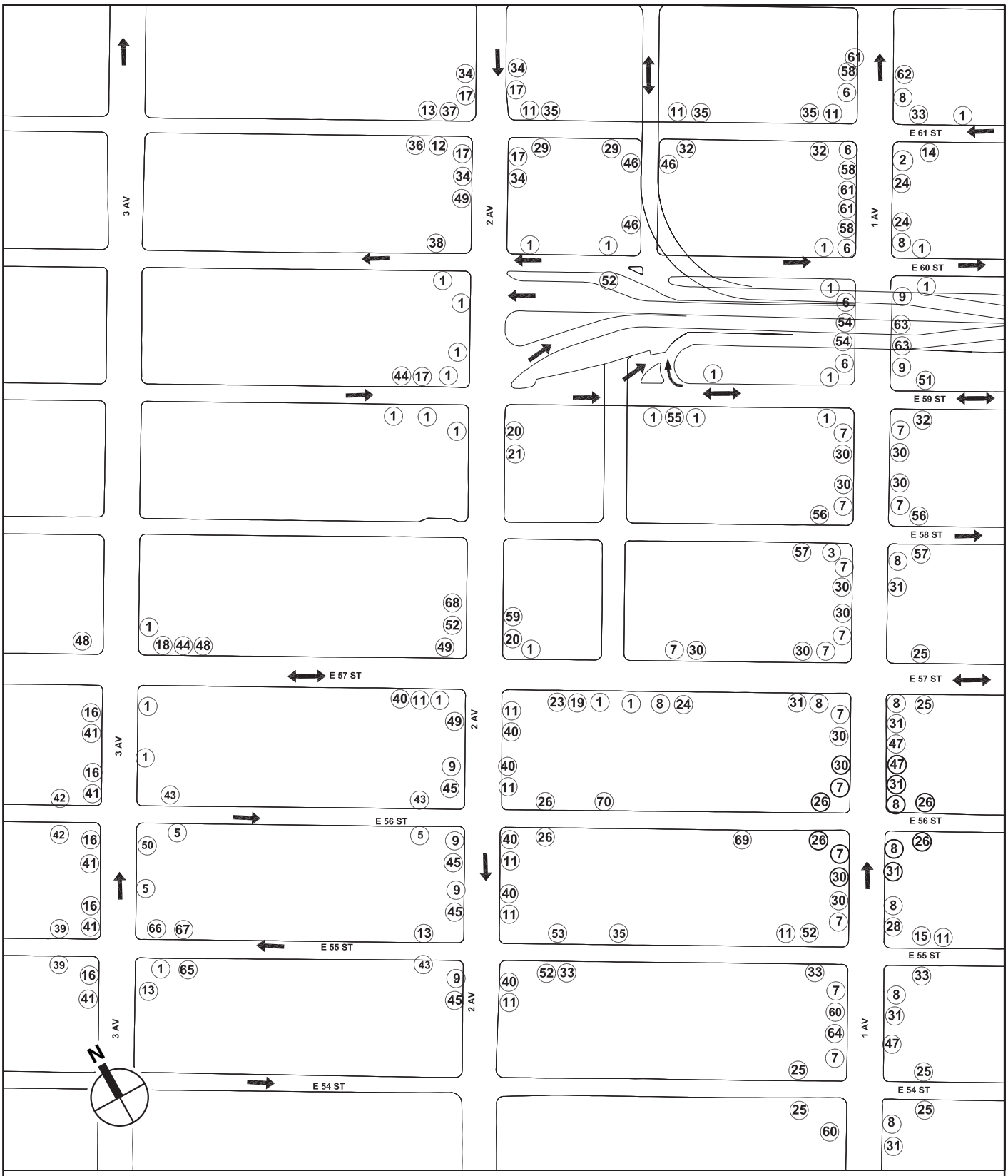
PM Peak Hour

- First Avenue and E. 57th Street – The northbound left-turn movement operates at LOS E with a v/c ratio of 1.02 and an average delay of 78.0 spv while the left-thru movement operates at LOS D with a v/c ratio of 0.99 and an average delay of 40.5 spv.
- Second Avenue and E. 59th Street – The eastbound approach operates at LOS E with a v/c ratio of 1.05 and an average delay of 74.0 spv while the southbound approach operates at LOS B with a v/c ratio of 0.93 and an average delay of 14.7 spv.

Parking Analysis

Figures 4.9-5 and 4.9-6 show the parking regulations along the streets in the Study Area. Parking is prohibited in the vicinity of the preferred Shaft Site and along the access streets to the Queensboro Bridge entrances such as Second Avenue between E. 59th and E. 60th streets, E. 59th Street between First and Second Avenues, and E. 60th Street between First and Second Avenues. Except for the east side of the street between E. 59th and E. 60th Streets (which allows one hour parking between 10:00 a.m. and 4:00 p.m.) parking is not permitted along First Avenue from 7:00 a.m. to 7:00 p.m. on the east side and to 8:00 p.m. on the west side. Generally, Second Avenue has no standing regulations on the west side during 7:00 to 10:00 a.m. and 4:00 to 7:00 p.m. On the east side of Second Avenue, there is no standing 7:00 to 10:00 a.m. with loading permitted 10:00 a.m. to 7:00 p.m. Field observations indicate that trucks and service vehicles utilize the available curbside space made available by parking restrictions on the avenues and cross streets during most of the day.

The preferred Shaft Site is currently used by NYCDOT as a staging area for the ongoing Queensboro Bridge Rehabilitation Program. The site is also used for vehicle parking by



NOTE: *This figure has been updated for the Final EIS*

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
PROPOSED SHAFT 33B TO CITY WATER TUNNEL NO. 3
STAGE 2-MANHATTAN LEG
PREFERRED SHAFT SITE

ON-STREET PARKING REGULATIONS (MAP)

FIGURE 4.9-5

1. No Standing Anytime
2. No Standing 7am–Midnight
3. No Standing 7am–10am Monday–Friday
4. No Standing 7am–3pm Monday–Friday
5. No Standing 7am–7pm Monday–Friday
6. No Standing 3pm–7pm Monday–Friday
7. No Standing 3pm–8pm Monday–Friday
8. No Standing 4pm–7pm Monday–Friday
9. No Standing 7am–10am/4pm–7pm Monday–Friday
10. No Standing 7am–Midnight Except Sunday
11. No Standing 7am–10am Except Sunday
12. No Standing 7am–11am Except Sunday
13. No Standing 7am–7pm Except Sunday
14. No Standing 8am–7pm Except Sunday
15. No Standing 8am–10am Except Sunday
16. No Standing 4pm–7pm Except Sunday
17. No Standing 7am–10am/3pm–8pm Except Sunday
18. No Standing 7am–10am/4pm–7pm Except Sunday
19. No Standing 3pm–Midnight Including Sunday
20. No Standing 7am–10am/3pm–7pm Including Sunday
21. No Standing 10am–3pm/7pm–Midnight Including Sunday
22. No Standing 7am–4pm Except Trucks Loading & Unloading
23. No Standing 7am–3pm Monday–Friday Except Trucks Loading & Unloading
24. No Standing 7am–4pm Monday–Friday Except Trucks Loading & Unloading
25. No Standing 8am–6pm Monday–Friday Except Trucks Loading & Unloading
26. No Standing 8am–7pm Monday–Friday Except Trucks Loading & Unloading
27. No Standing 7am–3pm Monday–Friday Except Trucks Loading & Unloading Except Sunday
28. No Standing 7am–4pm Monday–Friday Except Trucks Loading & Unloading Except Sunday
29. No Standing 7am–Midnight Except Trucks Loading & Unloading Except Sunday
30. No Standing 7am–3pm Except Trucks Loading & Unloading Except Sunday
31. No Standing 7am–4pm Except Trucks Loading & Unloading Except Sunday
32. No Standing 7am–7pm Except Trucks Loading & Unloading Except Sunday
33. No Standing 8am–7pm Except Trucks Loading & Unloading Except Sunday
34. No Standing 10am–3pm Except Trucks Loading & Unloading Except Sunday
35. No Standing 10am–7pm Except Trucks Loading & Unloading Except Sunday
36. No Standing 11am–7pm Except Trucks Loading & Unloading Except Sunday
37. No Standing 10am–3pm/8pm–Midnight Except Trucks Loading & Unloading Including Sunday
38. No Standing Except Commercial Vehicles Metered Parking 3 Hour Limit 8am–Midnight Except Sunday
39. No Standing Except Commercial Vehicles Metered Parking 3 Hour Limit 9am–6pm Monday–Friday
40. No Standing Except Commercial Vehicles Metered Parking 3 Hour Limit 10am–7pm Except Sunday
41. No Standing Except Commercial Vehicles Metered Parking 3 Hour Limit 7am–4pm Except Sunday
42. No Standing Except Commercial Vehicles Metered Parking 3 Hour Limit 7am–6pm Monday–Friday
43. No Standing Except Commercial Vehicles Metered Parking 3 Hour Limit 7am–7pm Except Sunday
44. No Standing Except Commercial Vehicles Metered Parking 3 Hour Limit 10am–3pm Monday–Saturday
45. No Standing Except Commercial Vehicles Metered Parking 3 Hour Limit 10am–4pm Except Sunday
46. No Standing (Bus Layover Area/ No Engine Idling Max Fine $800)
47. Buses and Right Turns Only 4pm–7pm Monday – Friday
48. Buses Only 7am–10am/4pm–7pm Monday–Friday
49. Buses and Right Turns Only 7am–10am/4pm–7pm Monday – Friday
50. Buses and Right Turns Only 7am–7pm Monday – Friday
51. No Stopping Anytime
52. No Parking Anytime
53. No Parking Anytime (Temporary Construction Regulation)
54. No Parking 7am–3pm Monday–Friday
55. No Parking 7am–7pm Except Sunday
56. No Parking 10am–11:30am Monday & Thursday
57. No Parking 10am–11:30am Tuesday & Friday
58. No Parking 7:30am–8am Monday, Tuesday, Thursday & Friday
59. No Parking 10am–3pm/7pm–Midnight Including Sunday
60. No Parking 8:30am–9am, Except Sunday
61. 1 Hour Parking 8am–3pm Monday–Friday 9am–7pm Saturday & Sunday
62. 1 Hour Parking 9am–4pm Monday–Friday 9am–7pm Saturday & Sunday
63. 1 Hour Parking 10am–4pm Monday–Friday 9am–7pm Saturday & Sunday
64. 1 Hour Parking 9am–3pm Monday–Friday 9am–7pm Saturday & Sunday
65. Dept Vehicles with Consul–Diplomats
66. Bus Layover Area No Standing 7am–10am 4pm–7pm Monday–Friday
67. NYCT Only No Standing 10am–4pm Monday–Friday
68. No Standing 7am–10pm/3pm–8pm Monday–Friday
69. No Standing 7am–7pm Monday–Friday Except Authorized Vehicles (NYP License Plates Only)
70. No Standing Any Time Except Authorized Vehicles (US Goverment Vehicles Only)

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
PROPOSED SHAFT 33B TO CITY WATER TUNNEL NO. 3
STAGE 2-MANHATTAN LEG
PREFERRED SHAFT SITE

ON-STREET PARKING REGULATIONS (LEGEND)

FIGURE 4.9-6

NYCDOT and DSNY. Under existing conditions, the staging area/parking lot (which accommodates approximately 15 parking spaces) is accessible from both E. 59th and E. 60th Streets.

Safety Analysis

Accident data for intersections within the Study Area and vicinity were obtained from NYSDOT. This information provides the most recent three years of available accident data. Accidents are classified 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 in the most recent three-year period for which data are available. As shown in Table 4.9-2, the Study Area intersection with the highest number of total accidents is Second Avenue and E. 59th Street with 319 accidents, of which 61 resulted in injuries and 6 involved pedestrians or bicyclists. Also, five intersections had 5 or more pedestrian/bicycle accidents in at least one year within the three-year period and are therefore considered high pedestrian accident locations. Three of these intersections are located on E. 57th Street at First, Second, and Third Avenues. The remaining two intersections are First Avenue and E. 59th Street and Third Avenue and E. 55th Street.

Table 4.9-2
Accident Data

Intersection		Number of Accidents								
North-South Roadway	East-West Roadway	Total	Reportable	Non-Reportable	Fatalities	Injuries	Pedestrian-Bicycle Related			
							Total	1999	2000	2001
First Avenue	E. 54th Street	26	11	15	0	12	6	4	1	1
First Avenue	E. 55th Street	50	16	34	0	14	5	3	2	0
First Avenue	E. 56th Street	47	18	29	0	16	6	3	0	3
First Avenue	**E. 57th Street**	144	36	108	0	43	11	**5***	4	2
First Avenue	E. 58th Street	51	7	44	0	8	1	1	0	0
First Avenue	**E. 59th Street**	103	33	70	0	30	9	**5***	2	2
First Avenue	E. 60th Street	103	47	56	0	40	7	4	2	1
Second Avenue	E. 54th Street	38	9	29	0	12	2	1	1	0
Second Avenue	E. 55th Street	58	13	45	0	8	5	4	1	0
Second Avenue	E. 56th Street	46	5	41	0	2	0	0	0	0
Second Avenue	**E. 57th Street**	164	42	122	0	33	15	4	2	**9***
Second Avenue	E. 59th Street	319	80	239	0	61	6	2	1	3
Second Avenue	E. 60th Street	137	37	100	0	28	5	2	1	2
Third Avenue	E. 53rd Street	95	29	66	0	36	5	4	0	1
Third Avenue	E. 54th Street	61	17	44	0	20	7	2	2	3
Third Avenue	**E. 55th Street**	79	21	58	0	15	10	3	**5***	2
Third Avenue	E. 56th Street	60	17	43	0	20	5	3	1	1
Third Avenue	**E. 57th Street**	222	54	168	0	48	20	**12***	2	**6***
Sutton Place	E. 54th Street	3	2	1	0	2	1	0	0	1
Sutton Place	E. 55th Street	9	5	4	0	3	1	0	0	1
Sutton Place	E. 56th Street	7	3	4	0	10	0	0	0	0
Sutton Place	E. 57th Street	39	10	29	0	10	1	1	0	0
Sutton Place	E. 58th Street	11	2	9	0	1	1	0	0	1

Source: NYSDOT
Note: * High vehicular-pedestrian accident location

4.9.3 Future Conditions Without the Project

Traffic Operations Analysis

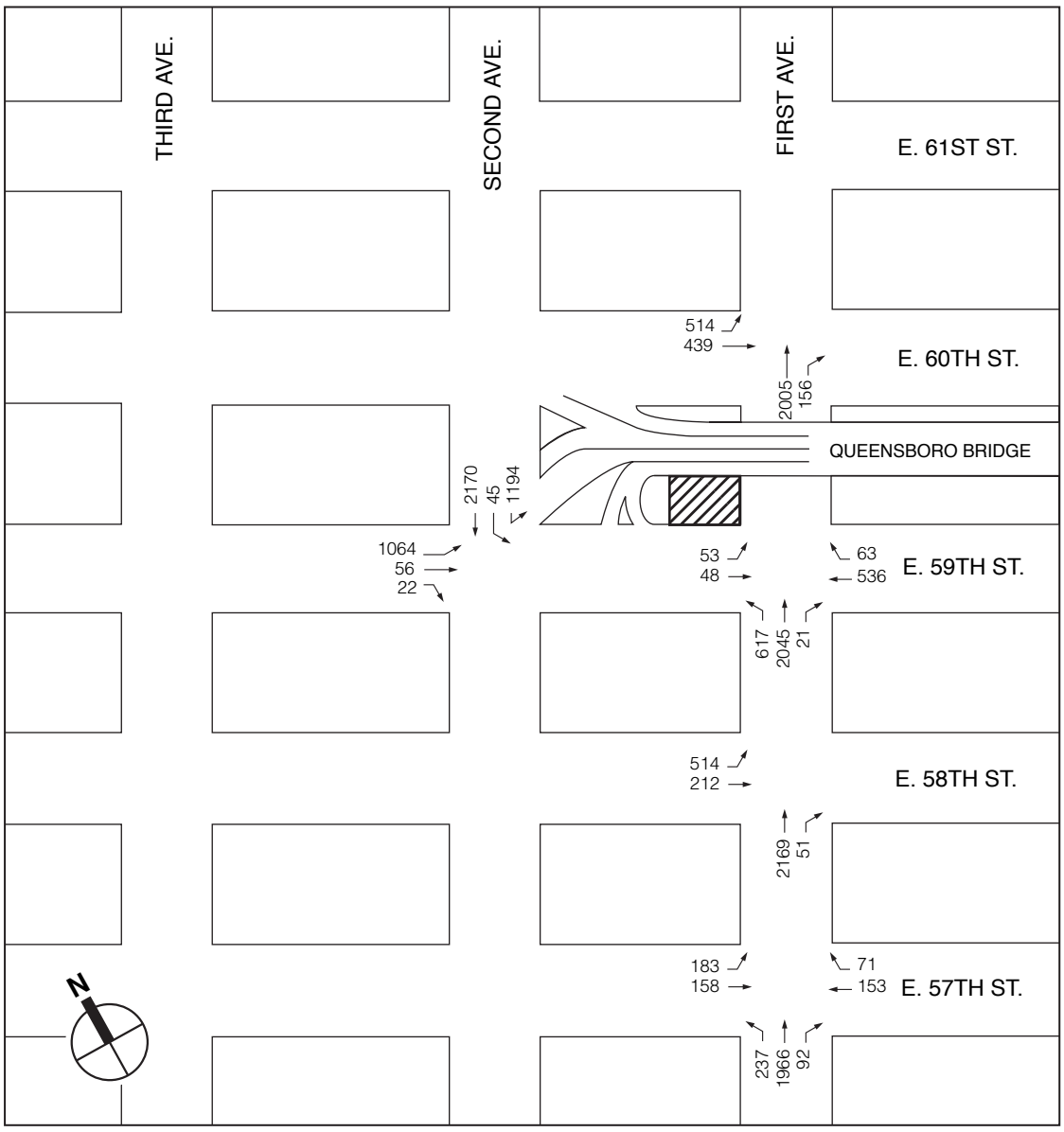
Figures 4.9-7, 4.9-8, and 4.9-9 show the projected weekday AM, midday, and PM peak hour traffic volumes at the Study Area intersections for 2008 conditions in the Future Without the Project (No Build conditions), which incorporate a background growth and trips from future developments in the area, as described in Section 3.9.4, "Future Conditions Without the Project Methodology." Capacity analyses were prepared for each of the intersections previously assessed for existing conditions. As shown in Table 4.9-3, with continued growth in travel demand and additional traffic added to the existing roadways from potential future development projects, intersections that were congested under existing conditions are expected to realize a nominal deterioration in level of service by 2008.

Parking Analysis

No changes to parking regulations and nominal increases in parking demand are anticipated under the 2008 No Build conditions in the Study Area.

Safety Analysis

With nominal increases in traffic projected, pedestrian safety under the 2008 No Build conditions is anticipated to be similar to existing conditions within the Study Area.



NOT TO SCALE

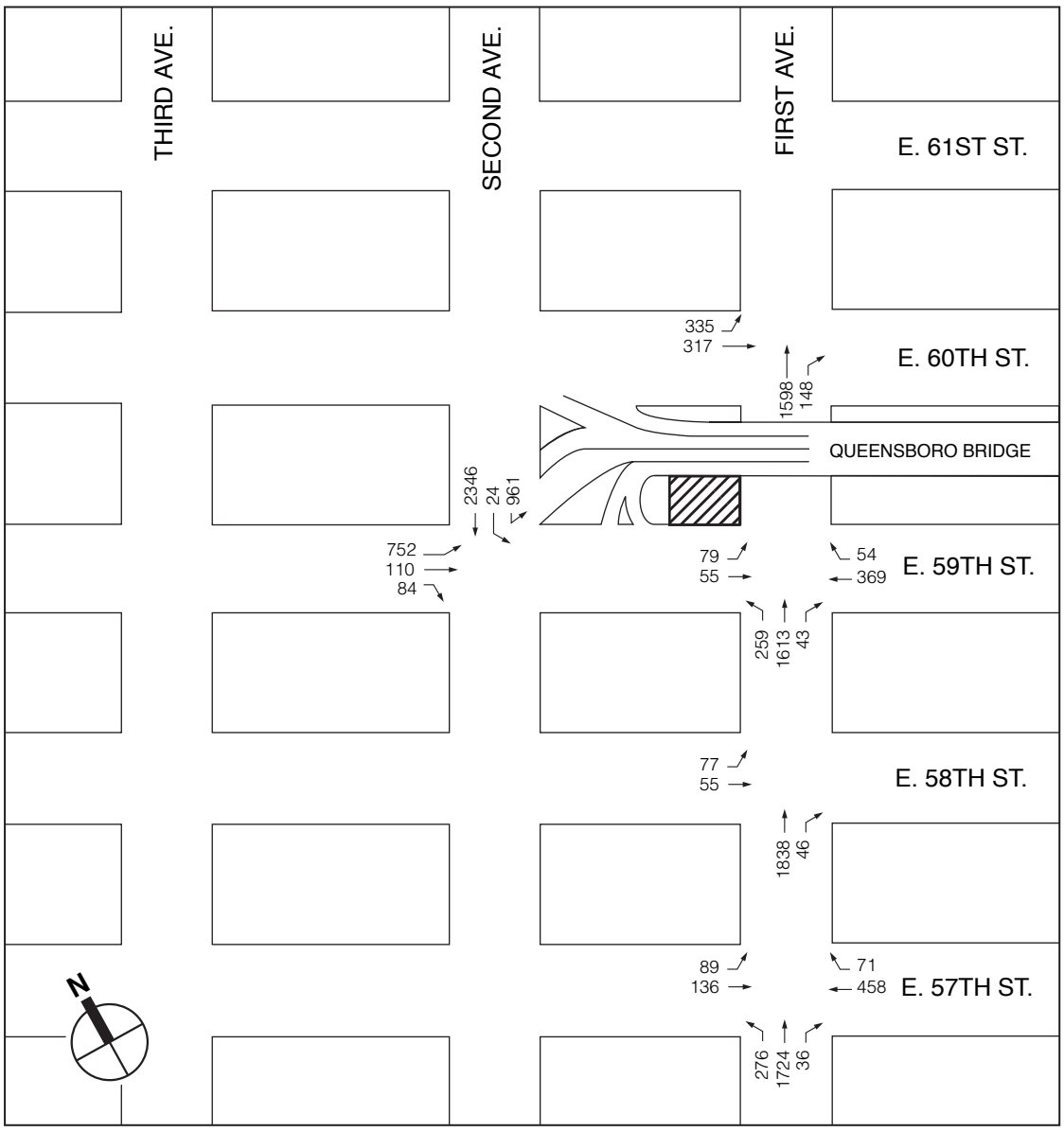
Legend:

Preferred Shaft 33B Site

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
PROPOSED SHAFT 33B TO CITY WATER TUNNEL NO. 3
STAGE 2-MANHATTAN LEG
PREFERRED SHAFT SITE

2008 NO BUILD TRAFFIC VOLUME NETWORK, SHAFT STUDY AREA
AM PEAK HOUR

FIGURE 4.9-7



NOT TO SCALE

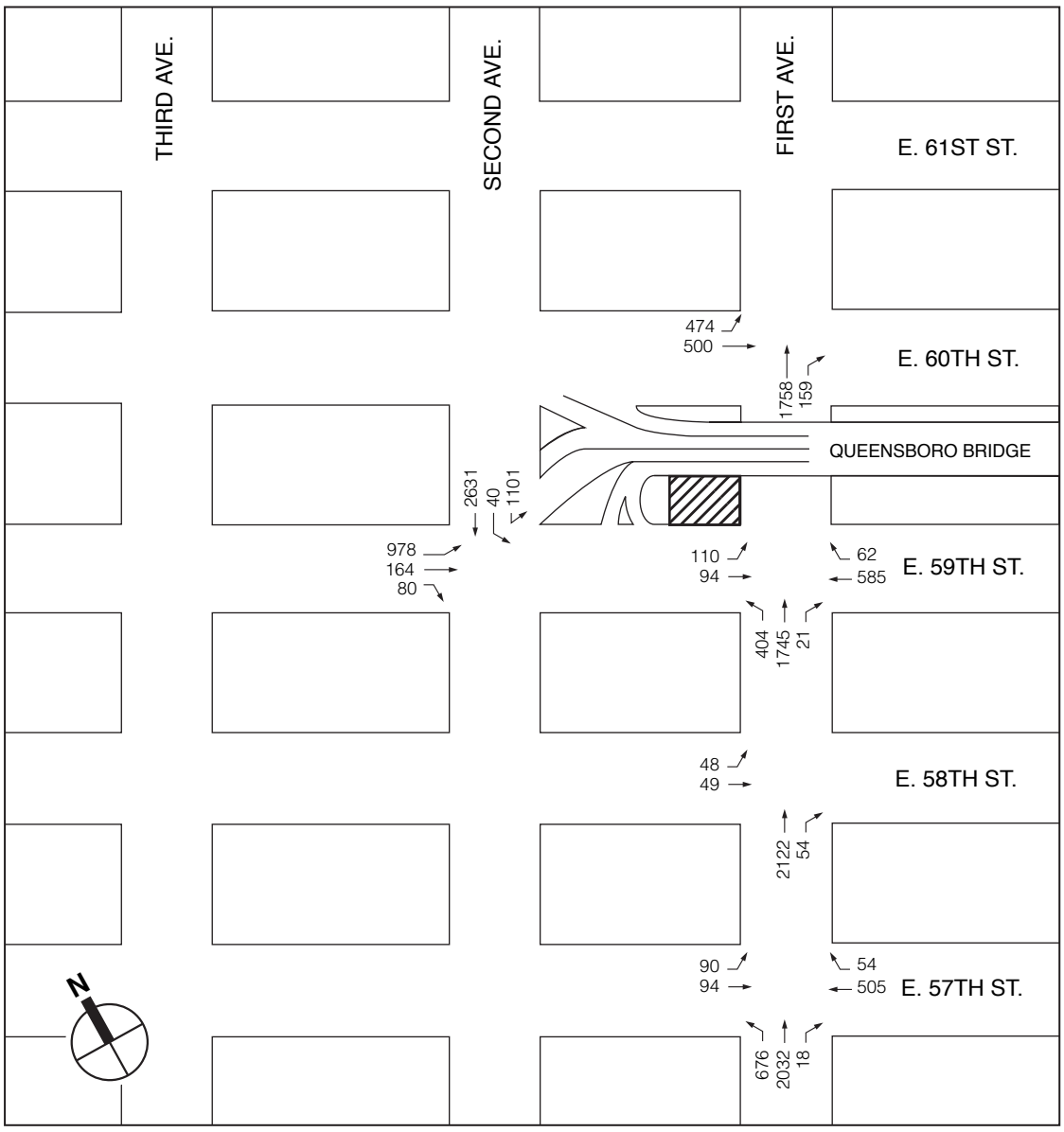
Legend:

Preferred Shaft 33B Site

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
PROPOSED SHAFT 33B TO CITY WATER TUNNEL NO. 3
STAGE 2-MANHATTAN LEG
PREFERRED SHAFT SITE

2008 NO BUILD TRAFFIC VOLUME NETWORK, SHAFT STUDY AREA
MIDDAY PEAK HOUR

FIGURE 4.9-8



NOT TO SCALE

Legend:

Preferred Shaft 33B Site

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
PROPOSED SHAFT 33B TO CITY WATER TUNNEL NO. 3,
STAGE 2-MANHATTAN LEG
PREFERRED SHAFT SITE

2008 NO BUILD TRAFFIC VOLUME NETWORK, SHAFT STUDY AREA
PM PEAK HOUR

FIGURE 4.9-9

Table 4.9-3
2008 No Build and 2004 Existing Conditions Comparison – Preferred Shaft Site Study Area

Analysis Intersection	AM Peak Hour								Midday Peak Hour								PM Peak Hour							
	Existing Conditions				No Build Conditions				Existing Conditions				No Build Conditions				Existing Conditions				No Build Conditions			
	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
E. 60th Street (EB)	EB-LT	0.75	31.4	C	EB-LT	0.78	32.4	C	EB-LT	0.52	26.3	C	EB-LT	0.53	26.5	C	EB-LT	0.77	32.1	C	EB-LT	0.79	32.8	C
First Avenue (NB)	NB-T	0.58	12.9	B	NB-T	0.61	13.2	B	NB-T	0.53	12.3	B	NB-T	0.54	12.5	B	NB-T	0.44	11.4	B	NB-T	0.45	11.5	B
	NB-R	0.23	10.6	B	NB-R	0.25	10.8	B	NB-R	0.25	13.9	B	NB-R	0.27	14.1	B	NB-R	0.24	10.7	B	NB-R	0.27	11.0	B
E. 59th Street (E-W)	EB-LT	0.26	18.5	B	EB-LT	0.28	18.9	B	EB-LT	0.41	22.0	C	EB-LT	0.44	22.7	C	EB-LT	0.74	37.7	D	EB-LT	0.78	42.3	D
First Avenue (NB)	WB-TR	0.51	20.7	C	WB-TR	0.53	21.0	C	WB-TR	0.38	18.8	B	WB-TR	0.38	18.9	B	WB-TR	0.56	21.5	C	WB-TR	0.57	21.8	C
	NB-L	0.94	44.4	D *	NB-L	0.96	48.3	D *	NB-L	0.60	20.5	C	NB-L	0.63	21.7	C	NB-L	0.65	20.9	C	NB-L	0.70	22.6	C
	NB-LTR	0.95	28.9	C *	NB-LTR	0.99	36.2	D *	NB-LTR	0.74	18.1	B	NB-LTR	0.76	18.7	B	NB-LT	0.72	17.5	B	NB-LT	0.74	18.0	B
																	NB-R	0.07	11.2	B	NB-R	0.07	11.2	B
E. 58th Street (EB)	EB-L	1.02	70.9	E *	EB-L	1.04	77.9	E *	EB-LT	0.23	19.4	B	EB-LT	0.25	19.7	B	EB-LT	0.15	18.4	B	EB-LT	0.19	18.9	B
First Avenue (NB)	EB-T	0.34	20.9	C	EB-T	0.35	21.0	C																
	NB-TR	0.71	14.7	B	NB-TR	0.74	15.2	B	NB-TR	0.65	13.9	B	NB-TR	0.67	14.2	B	NB-T	0.53	12.3	B	NB-T	0.55	12.4	B
																	NB-R	0.09	9.3	A	NB-R	0.09	9.3	A
E. 57th Street (E-W)	EB-DfL	0.87	61.3	E *	EB-DfL	0.90	67.9	E *	EB-DfL	0.61	40.7	D	EB-DfL	0.64	43.1	D	EB-DfL	0.64	44.1	D	EB-DfL	0.69	49.9	D *
First Avenue (NB)	EB-T	0.38	24.2	C	EB-T	0.39	24.3	C	EB-T	0.33	23.3	C	EB-T	0.34	23.4	C	EB-T	0.19	20.9	C	EB-T	0.20	20.9	C
	WB-TR	0.32	22.2	C	WB-TR	0.33	22.3	C	WB-TR	0.60	26.7	C	WB-TR	0.61	27.0	C	WB-TR	0.64	27.7	C	WB-TR	0.65	28.0	C
	NB-LTR	0.99	40.5	D *	NB-LTR	1.03	50.9	D *	NB-LTR	0.91	29.5	C *	NB-LTR	0.93	31.8	C *	NB-L	1.02	78.0	E *	NB-L	1.04	83.5	F *
																	NB-LT	0.99	40.5	D *	NB-LT	1.02	47.0	D *
																	NB-R	0.06	15.3	B	NB-R	0.06	15.3	B
E. 59th Street (EB)	EB-TR	0.99	56.4	E *	EB-TR	1.01	62.3	E *	EB-TR	0.83	37.3	D	EB-TR	0.85	38.9	D	EB-TR	1.05	74.0	E *	EB-TR	1.09	87.4	F *
Second Avenue (SB)	SB-L	0.72	11.7	B	SB-L	0.74	12.2	B	SB-L	0.81	15.1	B	SB-L	0.83	16.3	B	SB-L	0.59	8.4	A	SB-L	0.61	8.8	A
	SB-LT	0.92	14.1	B *	SB-LT	0.94	15.8	B *	SB-LT	0.87	11.6	B	SB-LT	0.89	12.6	B	SB-LT	0.93	14.7	B *	SB-LT	0.97	18.7	B *

Notes: EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound

L-Left, T-Through, R-Right, DfL-Analysis considers a Defacto Left Lane on this approach.

Defacto left lane: As per HCM 2000, page 16-135, when the proportion of left turns in the left-hand lane group is 1.0, this left-hand lane should be analyzed as an exclusive left-turn lane (a de facto left-turn lane), since occupied entirely by left-turning vehicles.

V/C Ratio - Volume to Capacity Ratio, SEC/VEH - Seconds per vehicle

LOS - Level of service

* Denotes Congested Intersections (marginally unacceptable mid-LOS D, LOS E, LOS F, or V/C > 0.90)

Analysis is based on the 2000 *Highway Capacity Manual Methodology* (HCS 2000).

4.9.4 Future Conditions With the Project

Construction

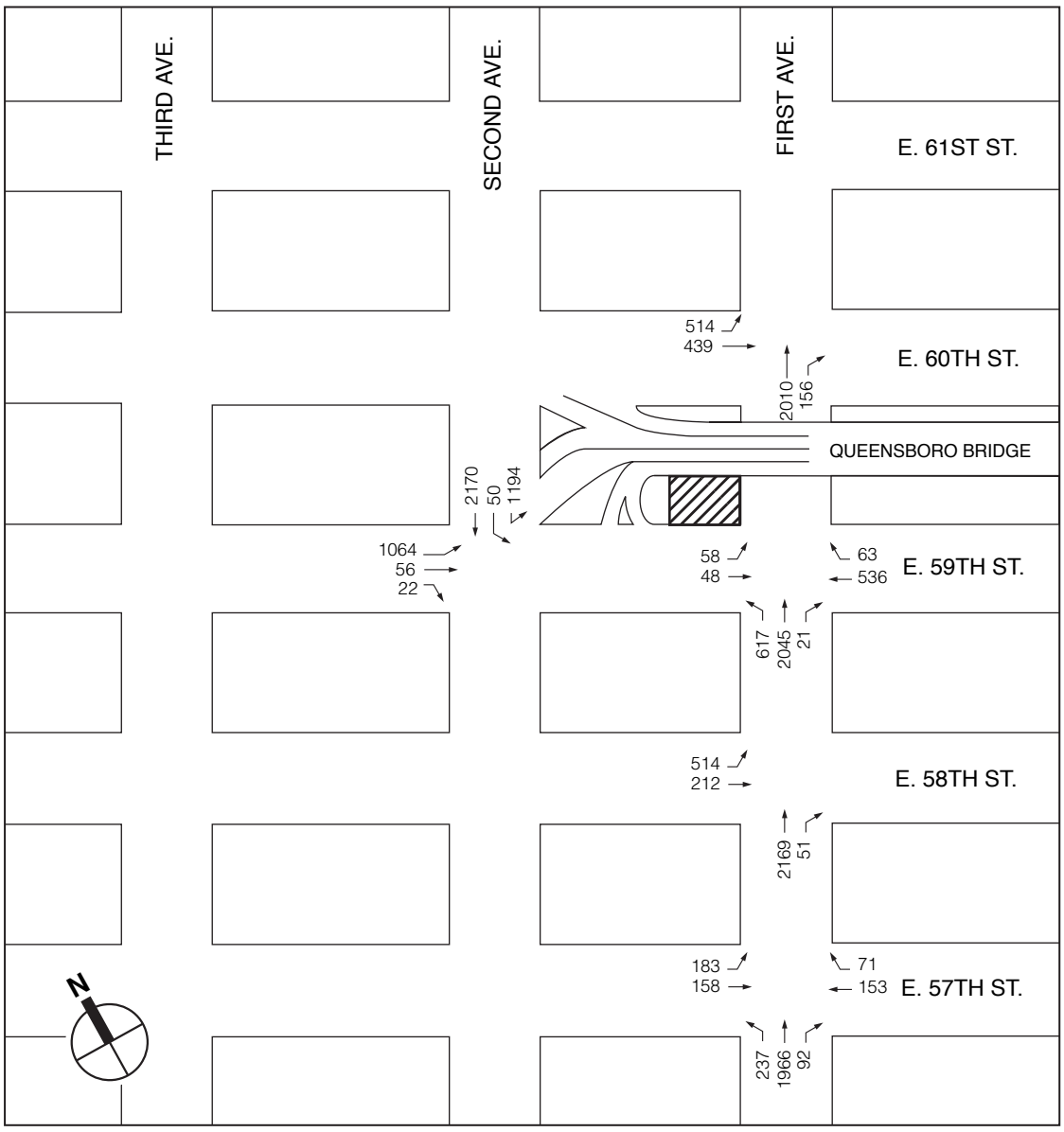
Traffic Operations Analysis

As discussed in Chapter 2, "Purpose and Need and Project Overview," construction of Shaft 33B at the preferred Shaft Site would take 52 months to complete. Based on preliminary engineering estimates, the peak trucking activity would involve a maximum of 30 truck trips on a typical day. Although it is expected that no more than 3 trucks an hour would visit the construction site, the traffic analysis accounted for the typical peaking characteristics of truck deliveries during the morning and midday hours and conservatively assumed that 5 trucks (10 truck trips ends, 5 in and 5 out) would travel to the site in the AM and midday peak hours. In the PM peak hour, the truck activity would be less intensive and a maximum of 3 trucks (6 truck trips ends, 3 in and 3 out) were considered. Vehicle trips generated by construction employees are negligible (10 to 15 personnel working concurrently on site) and are typically made outside of the study peak hours (arriving before 7:00 a.m. and departing between 3:00 and 4:00 p.m., and should a second shift be required, arriving between 2:00 and 3:00 p.m. and departing between 11:00 p.m. and midnight). The 2008 traffic volumes, with truck activity generated by the shaft construction, are shown in Figures 4.9-10, 4.9-11, and 4.9-12. As shown in Section 4.1, "Project Description" for the preferred Shaft Site, the base configuration would require some taking of sidewalk space on the northwest corner of the First Avenue and E. 59th Street intersection, but would not require roadway lane closures. The alternate site configuration would require extending the construction area nine feet into the roadways of both First Avenue and E. 59th Street. A temporary pedestrian sidewalk would be maintained on the west side of First Avenue, next to the east border of the construction area. If the preferred Shaft Site is selected, NYCDEP would commit to providing the funding for as many additional TEAs as appropriate at the Shaft Site during its construction to facilitate vehicular and pedestrian flow near the preferred Shaft Site.

Blasting

As discussed in Chapter 2, blasting would be necessary at the preferred Shaft Site to enlarge the shaft and to form the distribution chamber at the top of the shaft. Blasting would not occur at the surface since the bedrock at the site is more than 20 feet below ground. Blasting procedures are developed on a site-specific basis depending on geological conditions as well as traffic and other environmental conditions at the time of blasting. This sub-section describes the typical approach to blasting based on blasting experience at other NYCDEP shaft sites throughout Manhattan and at other construction projects. The likely approach to be taken at the preferred Shaft Site as it relates to traffic conditions in the Study Area is examined. Blasting would occur during construction of the distribution chamber (Stage 2B) and slashing the shaft (Stage 2C). When blasting would be conducted, one to two blasts would be expected to occur on a given day. The typical blasting sequence is as follows:

- Placement of explosives (1 to 2 hours)
- Placement of blasting mats (1 hour)
- Detonation of explosives (instantaneous)



NOT TO SCALE

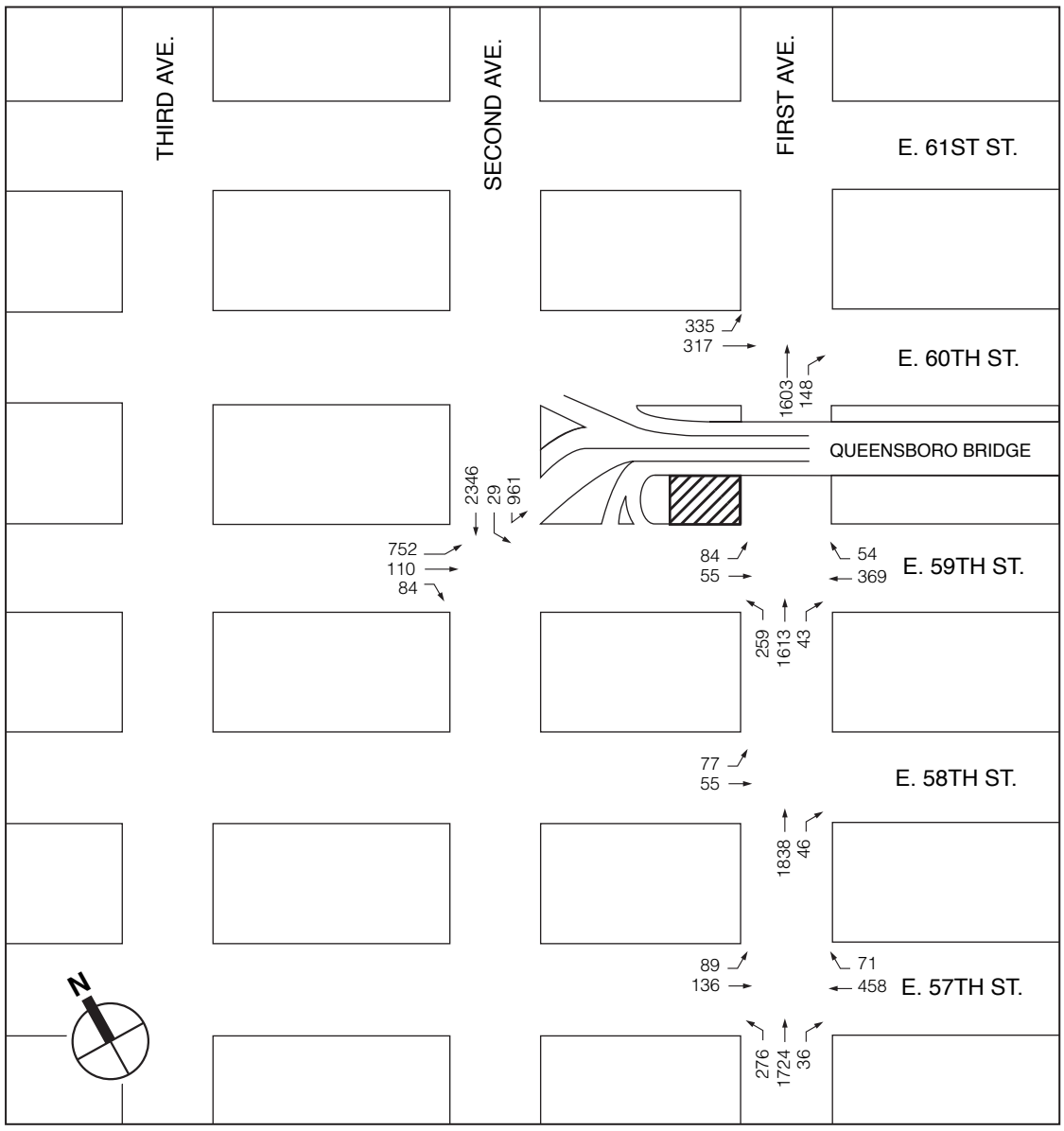
Legend:

Preferred Shaft 33B Site

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
PROPOSED SHAFT 33B TO CITY WATER TUNNEL NO. 3
STAGE 2-MANHATTAN LEG
PREFERRED SHAFT SITE

2008 BUILD TRAFFIC VOLUME NETWORK, SHAFT STUDY AREA
AM PEAK HOUR

FIGURE 4.9-10



NOT TO SCALE

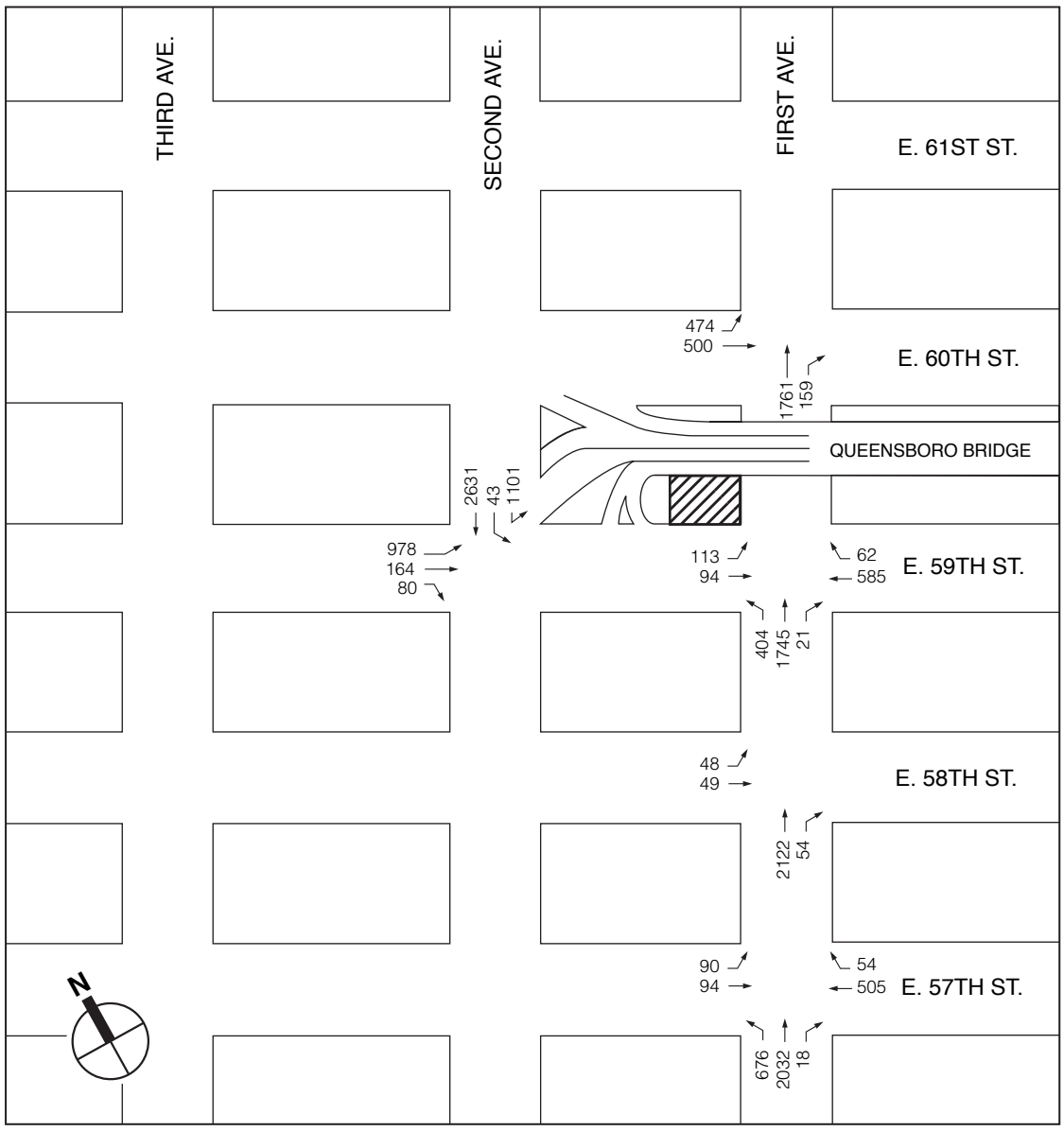
Legend:

Preferred Shaft 33B Site

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
PROPOSED SHAFT 33B TO CITY WATER TUNNEL NO. 3
STAGE 2-MANHATTAN LEG
PREFERRED SHAFT SITE

2008 BUILD TRAFFIC VOLUME NETWORK, SHAFT STUDY AREA
MIDDAY PEAK HOUR

FIGURE 4.9-11



NOT TO SCALE

Legend:

Preferred Shaft 33B Site

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
PROPOSED SHAFT 33B TO CITY WATER TUNNEL NO. 3
STAGE 2-MANHATTAN LEG
PREFERRED SHAFT SITE

2008 BUILD TRAFFIC VOLUME NETWORK, SHAFT STUDY AREA
PM PEAK HOUR

FIGURE 4.9-12

- Removal of blast mats (1 hour)

After this sequence, the Contractor could either place a new round of explosives (if holes are already drilled) or clear the rock down the hole. Because the entire process takes three to four hours or more, it is highly unlikely that more than two blasts would occur on a given day. Based on experience with other construction projects that involve blasting, it is expected that blasting would typically occur during the first shift (7:00 a.m to 3:00 pm). In general, blasting would not occur until 10:00 a.m. since it can take two to three hours to prepare for the blast. The second blast, if it occurred, would generally take place either in the early afternoon (i.e., around 3:30 p.m.) or towards the end of the evening peak period (i.e., around 6:30 p.m.). The New York City Fire Department (FDNY) restricts blasting times to between 7:00 a.m. and 7:00 p.m or sunup to sundown. Although not expected to be needed based on blasting at other Shaft Sites, subject to prior approval of FDNY and as necessary, extension of blasting hours may be granted on a case-by-case basis.

Blasting would be expected to occur for roughly eight months and is conducted in a manner that is protective of public health and safety. For approximately four months (or up to a depth of about 100 feet below the surface) at the beginning of the blasting process, the expected protective measures would include vehicular and pedestrian traffic being prohibited from traveling adjacent to the site. Typically, a few minutes prior to blasting, warning whistles would alert the area that blasting was about to begin. The typical warning whistle communication protocol could result in the halting of vehicular and pedestrian traffic near the blast site as follows:

- 1 long whistle—vehicular and pedestrian traffic stopped
- 2 short whistles—blast will commence
- 3 long whistles—all clear: blast is completed and traffic flow can resume

This warning whistle communication protocol could take up to five minutes to implement. Because traffic levels in the area surrounding the preferred Shaft Site are substantial throughout the day, traffic stoppage for a 5-minute period could result in sustained traffic back-ups for several key travel corridors (i.e., First Avenue, Second Avenue, and Queensboro Bridge). The FDNY has indicated that they could issue a waiver to the protocol and reduce the whistle warning time to one minute. The contractor intends to seek this wavier. The waiver would permit a blasting sequence that is safe and functional, and would minimize the need for traffic and pedestrian stoppages during such events. This blasting sequence would be as follows:

- The contractor would notify flag persons who are on standby at locations designated for traffic and pedestrian stoppages that everything is properly set up for the blast. Personnel from FDNY and the New York City Police Department (NYPD) would likely be on site during the initial blasts and may also participate in the traffic halting process, if warranted.
- At this time, the contractor would blow one long whistle, as noted above for standard blasting procedures, at which time flag persons would halt vehicular and pedestrian flow at the designated locations. Once traffic is stopped and the area near the site (generally approximately 100 to 150 feet away) is cleared, the flag persons would radio back to the site to confirm that stoppage is complete.

- The contractor would then blow two short whistles to signify that the blast is about to begin and set off the explosives with a trigger.
- Upon the instantaneous completion of the blast, the contractor would blow three short whistles and communicate to the flag persons via radio to indicate the end of the blasting sequence for vehicular and pedestrian traffic movements to proceed.

The duration of the above sequence (including the preliminary notification to the flag persons to get ready) is estimated to be approximately 2 to 4 minutes, with the temporary stoppage of traffic lasting about 1 minute. This duration would only be slightly longer than the typical signal stoppage (usually 40 to 50 seconds) at nearby intersections, and while increasing delays, would not result in sustained back-ups on the key travel corridors indicated above. Following the all clear signal, nearby traffic is expected to recover to pre-blasting conditions within a few minutes after the one-minute stoppage. For blasting at the preferred Shaft Site, the cordon for short-term stoppage of vehicular and pedestrian traffic is expected to include:

- E. 59th Street westbound at First Avenue;
- E. 59th Street eastbound east of Second Avenue;
- First Avenue northbound at E. 59th Street;
- Second Avenue entrance to the Queensboro Bridge lower-level inner roadway; and,
- Queensboro Bridge ramp approach to the Queens-bound upper-level roadway.

If the blasting occurs during the morning peak period when the Queens-bound upper level roadway on the Queensboro Bridge is reversed for Manhattan-bound traffic (6:00 a.m. to 10:00 a.m. on weekdays), the blockage would need to occur east of the blast site on the upper level roadway. Executing such measures would be more difficult operationally due to the higher travel speeds on the upper level roadway and logistically due to the walking distance required of assigned flag persons to get to and from the traffic stoppage location on the upper level roadway. If blasting is to occur during this time, FDNY would determine, after the first three blast sequences, if future stoppages would be necessary.

In addition, similar to the momentary stoppages imposed on vehicular and pedestrian traffic, egress of vehicles from the parking garage across the street from the preferred Shaft Site during these blasting events would be restricted. NYCDEP would implement protective measures, including monitoring and control measures, to minimize or avoid vibration effects. Construction specifications would require adherence to all applicable rules and regulations, including the rules and regulations of FDNY, and would require the use of modern blasting techniques including triggered multiple charges, blast mats, etc. Based on discussions with FDNY, at times when the passage of emergency vehicles coincides with blasting events, the execution of the above sequence would be halted until the passage of the emergency vehicles is completed.

During approximately the first four months of blasting, intermittent blast events conducted at the Shaft Site would halt vehicular and pedestrian traffic flows adjacent to the site. However, during this four-month period, blast events would likely occur only once or twice a day, with traffic stoppages enduring for approximately one minute for each blast in accordance with the whistle waiver NYCDEP would seek from FDNY. While three blasts a day could possibly occur, due to the length of the typical preparation needed to execute the blasting sequence described above,

three blast events in one day is considered unlikely and would not occur on a regular basis, if at all. In addition, blasts may not occur every day during this period and would likely occur outside of the peak traffic hours based on typical blasting procedures employed. During the construction of Shaft 25B (another shaft site in Manhattan), traffic stoppages due to blasting activities have generally been 3 to 4 minutes long and those anticipated for Shaft 33B at the preferred Shaft Site are expected to be shorter with the acquisition of a whistle waiver from FDNY. If the stoppage of traffic was undertaken for a longer period of time at the preferred Shaft Site (i.e., 5 minutes), temporary additional queuing could occur along the affected corridors. For example, even outside of peak hour traffic conditions, if the traffic were stopped at First Avenue and E. 59th Street for 5 minutes, the temporary backups accumulating on First Avenue could potentially extend past the United Nations and into the First Avenue tunnel between E. 41st and E. 48th Streets. If motorists traveling northbound on First Avenue for destinations above E. 59th Street observe that traffic is halted for more than a couple of signal cycles (90 seconds each along First Avenue), they may divert to Sutton Place, the Franklin Delano Roosevelt (FDR) Drive, or other routes while the stoppage is in effect. However, once the traffic starts flowing again, diversions to other routes would discontinue and no major long-term diversions onto other routes, including the FDR Drive, would be expected from these temporary stoppages during the first four months of blasting. The period during blasting, when traffic stoppages would be necessary is short-term and temporary and traffic halting events would be intermittent during the blasting period. Thus, consistent with the impact assessment guidance provided in the *CEQR Technical Manual*, such intermittent and temporary conditions would not have the potential to result in significant adverse impacts. The detailed impact analysis of traffic conditions associated with the project addresses the typical construction peak activities at the preferred Shaft Site, which are more characteristic of traffic conditions that would occur throughout the construction period.

Base Configuration

The base configuration of the preferred Shaft Site is not expected to result in lane reductions on either First Avenue or E. 59th Street, as construction would be confined to the project site and on sidewalks in the northwest corner of the intersection. However, during an approximately three-month period when the construction of regulator and valve chambers associated with the water main connections takes place, some construction activities would occur on the western portion of First Avenue outside of the boundaries of the preferred Shaft Site. This stage of construction would require some temporary lane closures, similar to those characterized for the alternate site configuration below. As explained in Chapter 2, the construction-induced traffic would be minimal. The maximum number of worker trips is expected to be 10 to 15 a day each way and these trips typically occur outside of peak traffic hours (7:00 a.m. to 10:00 a.m. and 4:00 p.m. to 7:00 p.m.). Up to five truck trips (ten truck trip-ends) to the preferred Shaft Site would be expected during the peak traffic hours. Because there would be a minimum amount of induced traffic and no operational changes, the traffic analysis results for 2008 Build conditions, as presented in Table 4.9-4, show that the project would not result in potential significant adverse impacts to Study Area intersections. Furthermore, since operating levels at the Study Area intersections would be similar for future conditions with or without construction at the preferred Shaft Site, peak period queuing conditions along the adjacent travel corridors would also not realize any perceptible change.

Table 4.9-4
2008 Build and No Build Conditions Comparison – Preferred Shaft Site Study Area

Analysis Intersection	AM Peak Hour								Midday Peak Hour								PM Peak Hour							
	No Build Conditions				Build Conditions				No Build Conditions				Build Conditions				No Build Conditions				Build Conditions			
	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
E. 60th Street (EB)	EB-LT	0.78	32.4	C	EB-LT	0.78	32.4	C	EB-LT	0.53	26.5	C	EB-LT	0.53	26.5	C	EB-LT	0.79	32.8	C	EB-LT	0.79	32.8	C
First Avenue (NB)	NB-T	0.61	13.2	B	NB-T	0.61	13.2	B	NB-T	0.54	12.5	B	NB-T	0.54	12.5	B	NB-T	0.45	11.5	B	NB-T	0.45	11.5	B
	NB-R	0.25	10.8	B	NB-R	0.25	10.8	B	NB-R	0.27	14.1	B	NB-R	0.27	14.1	B	NB-R	0.27	11.0	B	NB-R	0.27	11.0	B
E. 59th Street (E-W)	EB-LT	0.28	18.9	B	EB-LT	0.31	19.5	B	EB-LT	0.44	22.7	C	EB-LT	0.47	23.7	C	EB-LT	0.78	42.3	D	EB-LT	0.81	45.4	D
First Avenue (NB)	WB-TR	0.53	21.0	C	WB-TR	0.53	21.0	C	WB-TR	0.38	18.9	B	WB-TR	0.38	18.9	B	WB-TR	0.57	21.8	C	WB-TR	0.57	21.8	C
	NB-L	0.96	48.3	D	NB-L	0.96	48.3	D	NB-L	0.63	21.7	C	NB-L	0.63	21.7	C	NB-L	0.70	22.6	C	NB-L	0.70	22.6	C
	NB-LTR	0.99	36.2	D	NB-LTR	0.99	36.2	D	NB-LTR	0.76	18.7	B	NB-LTR	0.76	18.7	B	NB-LT	0.74	18.0	B	NB-LT	0.74	18.0	B
																	NB-R	0.07	11.2	B	NB-R	0.07	11.2	B
E. 58th Street (EB)	EB-L	1.04	77.9	E	EB-L	1.04	77.9	E	EB-LT	0.25	19.7	B	EB-LT	0.25	19.7	B	EB-LT	0.19	18.9	B	EB-LT	0.19	18.9	B
First Avenue (NB)	EB-T	0.35	21.0	C	EB-T	0.35	21.0	C																
	NB-TR	0.74	15.2	B	NB-TR	0.74	15.2	B	NB-TR	0.67	14.2	B	NB-TR	0.67	14.2	B	NB-T	0.55	12.4	B	NB-T	0.55	12.4	B
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First Avenue (NB)	EB-T	0.39	24.3	C	EB-T	0.39	24.3	C	EB-T	0.34	23.4	C	EB-T	0.34	23.4	C	EB-T	0.20	20.9	C	EB-T	0.20	20.9	C
	WB-TR	0.33	22.3	C	WB-TR	0.33	22.3	C	WB-TR	0.61	27.0	C	WB-TR	0.61	27.0	C	WB-TR	0.65	28.0	C	WB-TR	0.65	28.0	C
	NB-LTR	1.03	50.9	D	NB-LTR	1.03	50.9	D	NB-LTR	0.93	31.8	C	NB-LTR	0.93	31.8	C	NB-L	1.04	83.5	F	NB-L	1.04	83.5	F
																	NB-LT	1.02	47.0	D	NB-LT	1.02	47.0	D
																	NB-R	0.06	15.3	B	NB-R	0.06	15.3	B
E. 59th Street (EB)	EB-TR	1.01	62.3	E	EB-TR	1.01	62.3	E	EB-TR	0.85	38.9	D	EB-TR	0.85	38.9	D	EB-TR	1.09	87.4	F	EB-TR	1.09	87.4	F
Second Avenue (SB)	SB-L	0.74	12.2	B	SB-L	0.74	12.3	B	SB-L	0.83	16.3	B	SB-L	0.83	16.5	B	SB-L	0.61	8.8	A	SB-L	0.61	8.8	A
	SB-LT	0.94	15.8	B	SB-LT	0.94	15.8	B	SB-LT	0.89	12.6	B	SB-LT	0.89	12.6	B	SB-LT	0.97	18.7	B	SB-LT	0.97	18.9	B

Notes: EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound

L-Left, T-Through, R-Right, DfL-Analysis considers a Defacto Left Lane on this approach.

Defacto left lane: As per HCM 2000, page 16-135, when the proportion of left turns in the left-hand lane group is 1.0, this left-hand lane should be analyzed as an exclusive left-turn lane (a de facto left-turn lane), since occupied entirely by left-turning vehicles.

V/C Ratio - Volume to Capacity Ratio, SEC/VEH - Seconds per vehicle

LOS - Level of service

Analysis is based on the 2000 *Highway Capacity Manual Methodology* (HCS 2000).

Although only a nominal amount of truck traffic is projected to enter and exit the site, some disruption along E. 59th Street could be expected. On arrival, trucks would likely pull into the site head-first, similar to the existing maneuver made by NYCDOT and DSNY vehicles. Upon departure, existing maneuvers generally involve exiting head-out and making a left-turn onto eastbound E. 59th Street or backing out and making a U-turn onto the eastbound roadway. For the construction trucks, the exiting maneuver would entail backing out of the site onto eastbound E. 59th Street. This maneuver would require a flag-person to halt traffic flow on E. 59th Street in front of the project site for approximately 30 seconds on each occasion. While this traffic disruption would be more pronounced than the activities currently taking place at the existing site driveway, it would occur no more than 5 times in any hour during the peak construction months. Furthermore, as shown in the construction truck estimates presented in Chapter 2, "Purpose and Need and Project Overview," typical truck activity at the shaft site is projected to be approximately 1 to 3 trucks a day. At the present time, NYPD TEAs are in place on E. 59th Street for most of the day to enforce the ban on trucks on the Queens bound outer roadway. Based on observations made on this E. 59th Street segment, average-sized delivery trucks are able to reverse direction on E. 59th Street without creating persistent queued conditions. It is anticipated that such temporary and occasional disruption from daily deliveries to the preferred Shaft Site would not result in sustained traffic back-ups on neighboring streets, Sutton Place, or the FDR Drive. When larger trucks (55-footers) need to access the site for deliveries, which would generally occur two to three times a month on average or up to once a day during peak construction activities, the likely duration of disruption to traffic flow may be more evident. It is expected that these trucks would approach the site from Second Avenue and back into the site, with the help of a flag person. This maneuver, which would involve a flag person controlling traffic on both the eastbound and westbound roadways of E. 59th Street, could take approximately 2 minutes to complete, and would be necessary to ensure that these large trucks could readily exit the site head-out onto the eastbound roadway. For these larger trucks' entering maneuver, some temporary queuing of traffic could be expected from the 2-minute traffic stoppage, which is slightly longer than one signal cycle (90 seconds per cycle) at the First Avenue and E. 59th Street intersection. During this traffic disruption, the E. 59th Street eastbound approach, the E. 59th Street westbound through movement, and the First Avenue northbound left-turn movement could be halted during their respective green phases.

This disruption in traffic would cause traffic congestion and increase the queue lengths which already exist on First Avenue and on E. 59th Street. Based on the existing peak hour traffic volumes on First Avenue, approximately 600 vehicles during peak hours (or about 10 vehicles per minute) make a left turn onto E. 59th Street. Therefore, the 2-minute traffic stoppage would result in up to a 20-vehicle build-up in queues for this movement. This is a conservative estimate since part of the 2-minute interruption would take place when northbound First Avenue traffic is stopped at a red light. Delaying the processing of 20 vehicles through the intersection during the peak hour could potentially create an increase in queue by about 400 feet assuming a car spacing of 20 feet during congested flow. This length would be almost two avenue blocks long. The same increase in queues could be expected for the E. 59th Street westbound approach where existing peak hour through volumes are as high as approximately 570 vehicles. Considerably smaller

effects would result for the E. 59th Street eastbound approach where existing volumes are up to 200 vehicles during peak hours. The above characterization is a reasonably conservative estimate of the type of disruptions that could occur during larger trucks' maneuvers in the peak hour time periods at the preferred Shaft Site. However, as described, these maneuvers generally occur two to three times a month on average or up to once a day during peak construction.

With regard to the western sidewalk on First Avenue between E. 59th and E. 60th Streets and the northern sidewalk on E. 59th Street between First Avenue and the end of the Shaft Site work zone, the shaft construction would require a narrowing of both sidewalks to five feet each. Potential impacts associated with these changes are addressed in Section 4.10, "Transit and Pedestrians."

Alternate Site Configuration

The alternate site configuration would require extending the construction area nine feet into the roadways of both First Avenue and E. 59th Street. A temporary pedestrian sidewalk would be maintained outside of the construction area within the second lane from the west curb. Along E. 59th Street, a portion of the roadway would also be taken to provide additional space for construction. A temporary pedestrian sidewalk would be maintained within an area extending nine feet from the north curb of E. 59th Street and outside of the Shaft Site work zone. Under existing conditions, E. 59th Street west of First Avenue consists of a total roadway width of 45 feet, with two westbound receiving lanes of 11 feet each, a 9-foot wide striped area separating eastbound and westbound traffic, and one 14-foot wide eastbound lane. Under the alternate site configuration, E. 59th Street would be re-striped to maintain the existing lane configuration and eliminate the striped area. The eastbound stop bar would also be set back to provide an adequate turning radius for the double left-turn lanes from First Avenue.

It is expected that northbound traffic on First Avenue would not experience measurable operational changes, since the lanes that would be utilized to accommodate the construction area and the temporary sidewalk are currently used mainly for parking/standing and are downstream from north of mostly left-turning traffic on the south side of the intersection. The number of trucks traveling to and from the site would be the same as described above and the construction of regulator and valve chambers associated with the water main connections would take place within the expanded construction area along First Avenue. As a result, no operational changes to traffic are expected, and therefore, no potential significant adverse impacts would result from the alternate site configuration.

With regard to truck maneuvering at the site, entering and exiting movements under the alternate site configuration would be somewhat different from those under the base configuration. Instead of pulling head-first into the construction site, the trucks would likely arrive from Second Avenue and maneuver parallel with the roadway into the southern edge of the construction site. This maneuver would require a flag person to halt westbound E. 59th Street traffic, so that the construction trucks could cross over to the north side of the street. Similarly, upon departure, a flag person would direct these trucks to exit onto First Avenue on the north side of the street. Both of these maneuvers would be expected to disrupt traffic for only short durations (no more

than 30 seconds for each) since no backing up (as under the base configuration) would be required. For the larger trucks, these maneuvers could take slightly longer (likely to still be under 30 seconds for each), and while the departure disruption would be similar to that under the base configuration, the arrival maneuver is expected to result in some time savings, again because backing up would not be required. Furthermore, under the alternate site configuration, these larger trucks could alternately access the site via First Avenue and make use of the eastern extension of the construction site, which includes the sidewalk and curb lane along First Avenue. No significant traffic queues are expected to be formed as a result of these site access movements.

As for the western sidewalk on First Avenue and the northern sidewalk on E. 59th Street, the shaft construction under the alternate site configuration would require the temporary elimination of portions of these sidewalks between the First Avenue and E. 59th Street intersection and the ends of the Shaft Site work zone. The potential options for ensuring safe access to the multi-use area and the potential impacts associated with these changes are addressed in Section 4.10, "Transit and Pedestrians."

Parking Analysis

Base Configuration

The preferred Shaft Site is currently used by NYCDOT for parking and staging activities and by DSNY for parking. Under existing conditions, the parking area (which consists of approximately 15 parking spaces) is accessible at E. 59th and E. 60th Streets. It is estimated that approximately eight parking spaces would be displaced to accommodate the Shaft 33B construction. These spaces would be relocated elsewhere in the vicinity of the site, and the relocation of such spaces would not likely result in significant adverse impacts at the relocated areas. NYCDOT and DSNY access to the remaining parking area would be provided on E. 60th Street and on First Avenue.

As for the adjacent curbside conditions, parking is not allowed along the north curbside of E. 59th Street and this regulation would continue during the construction of Shaft 33B. No changes to parking regulations would occur on E. 59th Street or on First Avenue due to the construction of the shaft. As mentioned earlier, only 10 to 15 construction workers are anticipated to work at the site on a typical day. Due to the high price of off-street parking in Manhattan and the lack of readily accessible on-street parking in the area, it is expected that only a nominal number of construction worker vehicles would be generated from the shaft construction. This limited increase in parking demand is not anticipated to result in a potential for significant adverse impacts to area parking conditions.

Alternate Site Configuration

The alternate site configuration would also displace approximately eight parking spaces to accommodate construction at the preferred Shaft Site. In addition, curbside parking regulations on the west side of First Avenue north of E. 59th Street allow standing from 7:00 a.m. to 3:00 p.m., but no standing is allowed from 3:00 to 7:00 p.m. The required use of the First Avenue

curb lane adjacent to the construction site would result in the displacement of approximately two curbside spaces that are currently available outside of the PM peak period. Removing two public parking spaces and inducing a limited number of construction worker vehicles, as portrayed above, are not expected to result in a potential for significant adverse impacts to area parking conditions.

Safety Analysis

According to the *CEQR Technical Manual*, pedestrian safety is of particular concern if a proposed action would result in additional vehicular and pedestrian traffic near sensitive land uses, such as hospitals, schools, parks, nursing homes, and elderly housing, at high-accident locations or at locations where specific geometric deficiencies have been identified. The *CEQR Technical Manual* also acknowledges the fact that sections of Midtown and Downtown have historically had a substantially higher level of pedestrian activity, and pedestrians there have, to some extent become acclimated to and tolerant of the restricted conditions. These criteria were considered in determining whether the project would potentially result in adverse safety impacts. As stated earlier, the project would not result in an appreciable increase in pedestrian activity and would only route up to five vehicles per hour through the Study Area intersections. NYCDEP will commit to providing the funding for an additional TEA at the preferred Shaft Site during its construction to facilitate vehicular and pedestrian flow near the preferred Shaft Site. Therefore, conditions in the surrounding area are not expected to realize perceptible changes due to the project, and no potential significant adverse impacts on pedestrian safety are anticipated.

Operation

Traffic Operations Analysis

As described in Section 3.9.5, "Future Conditions With the Project Methodology" for the traffic and parking analysis, the operation of Shaft 33B at the preferred Shaft Site would not generate a perceptible number of new trips to the Study Area or result in a loss of roadway space. Therefore, it is not anticipated to result in any potential significant adverse traffic impacts.

Parking Analysis

Either configuration of the preferred Shaft Site would not result in a permanent displacement of parking spaces. Therefore, the operation of Shaft 33B is not anticipated to result in any potential significant adverse parking impacts.

Safety Analysis

For either configuration of the preferred Shaft Site, pedestrian safety during the activation and operation of Shaft 33B would be similar to existing conditions, since minimal activities would result associated with the operation of the shaft. Therefore, the operation of Shaft 33B is not anticipated to result in any potential significant adverse safety impacts.

4.9.5 Conclusion

In conclusion, the above assessment shows that there would not be any predicted significant adverse impacts to the traffic Study Area, nearby parking, and vehicular-pedestrian safety for the construction, activation, and operation of Shaft 33B at the preferred Shaft Site under either the base or alternate site configuration. However, the traffic conditions in the area of the Queensboro Bridge are congested and NYCDEP recognizes that added truck activity, even when small in number and limited in duration, may have the potential to further complicate already difficult operating conditions. In recognition of such, if the preferred Shaft Site is selected, NYCDEP would commit to providing the funding for as many additional TEAs as are appropriate at the Shaft Site during its construction to facilitate vehicular and pedestrian flow nearby. NYCDEP is continuing to consult with NYCDOT to determine the need for additional TEAs to be assigned to critical locations near the preferred Shaft Site to assist in maintaining sufficient traffic flow during the construction period. If NYCDOT determines that additional TEA presence or flag persons would help to effectively manage and maintain traffic flow, NYCDEP would provide the funding for this purpose or require the contractor to provide additional flag persons. Potential traffic and parking impacts from the combined construction of the water main connections and Shaft 33B at the preferred Shaft Site are discussed in Section 5.9, "Traffic and Parking," in Chapter 5, "Water Main Connections."

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