8.9 TRAFFIC AND PARKING

8.9.1 Introduction

As described in Section 8.1, "Project Description," the E. 54th Street/Second Avenue Shaft Site is located on the northeast corner of the Second Avenue intersection with E. 54th Street. The construction of Shaft 33B at this site would require eliminating an existing enclosed sidewalk café that is currently occupying City-owned sidewalks and laying out a construction area entirely within the streets and sidewalks of Second Avenue and E. 54th Street. The elimination of the sidewalk café is expected to delay the initiation of Shaft 33B construction by approximately six months. In contrast to the preferred and alternative Shaft Sites previously discussed, water main connections from the E. 54th Street/Second Avenue Shaft Site would follow a substantially shorter route to the Third Avenue trunk main. This route would include connections to the latter stages of the First Avenue or Sutton Place route at Second Avenue and E. 55th and E. 56th Streets. As demonstrated in Section 3.9, "Traffic and Parking" of Chapter 3, "Impact Methodologies," and Section 4.9, "Traffic and Parking" for the preferred Shaft Site, the activation and operation of Shaft 33B and its water main connections would not generate vehicular trips exceeding the CEQR requirements for a detailed analysis, and therefore, would not be expected to have a potential for significant adverse traffic impacts. Since this conclusion would also be applicable for the E. 54th Street/Second Avenue Shaft Site, the following discussions address conditions related to the construction of the shaft and water main connections.

8.9.2 Shaft Site Construction Traffic Conditions

Construction of Shaft 33B at the E. 54th Street/Second Avenue Shaft Site would take 61 (using the raise bore construction method) to 70 (using the surface excavation method) months to complete, as described in Section 8.1. Similar to the construction at the preferred Shaft Site, the peak trucking activity would involve a maximum of 30 truck trips on a typical day or up to 5 truck trips during any peak hour. These truck estimates developed for a conservative impact assessment would be applicable for either the raise bore or surface excavation construction method. The arrival and departure routes of these truck trips would follow NYCDOT designated truck routes. Vehicle trips generated by construction employees would also be negligible and are typically made outside of the Study Area peak hours.

As described above, the E. 54th Street/Second Avenue Shaft Site would require a construction area flanking the northeast corner of the Second Avenue intersection with E. 54th Street. On Second Avenue, 11 feet of roadway width would be obstructed along the east curb for about half of the block between E. 54th and E. 55th Streets, while on E. 54th Street, 19 to 28 feet of roadway width would be required from the north curb line for approximately 220 feet (just under one-third of the block length between First and Second Avenues). Since the E. 54th Street cross-section on the east side of Second Avenue is only 34 feet wide, the south sidewalk would also be

narrowed for approximately 250 feet from the intersection to maintain a 16-foot wide traffic lane. A quantitative analysis was conducted to determine if these lane closures would result in a potential for temporary construction-related adverse traffic impacts, as presented at the end of this section.

During the construction of the regulator/valve chambers, which would be approximately three months long, construction could extend slightly beyond the site boundaries described above. This work would be coordinated to occur in stages, so that through traffic on E. 54th Street could be maintained. The findings from the detailed traffic analysis would also be representative of conditions anticipated during this phase of construction at the E. 54th Street/Second Avenue Shaft Site. With regard to truck staging and delivery activities at the site, entering and exiting movements are expected to cause minimal disruptions to the use of the adjacent roadways. Trucks would likely access the site via Second Avenue onto the eastern end of the construction site on E. 54th Street and depart from the same location towards First Avenue. The entering maneuver would entail pulling along the north curb just east of the construction site and backing into the site, whereas the exiting maneuver would simply involve exiting head-out and merging with the E. 54th Street traffic stream. A flag person would be present to guide the safe execution of these maneuvers. In addition, NYCDEP would commit to providing the funding for a traffic enforcement agent(s) (TEA) at the E. 54th Street/Second Avenue Shaft Site as needed during its construction to facilitate vehicular and pedestrian flow.

As detailed in Section 8.1, construction at the E. 54th Street/Second Avenue Shaft Site could be conducted using either the raise bore method or the surface excavation method to a depth of approximately 300 feet. However, unlike the other alternative sites and the preferred Shaft Site, blasting would likely not initiate until a depth of approximately 50 feet below the surface. Blasting would be used to excavate the rest of the shaft, and temporary halting of vehicular and pedestrian traffic near the blast site would likely be required by FDNY for up to approximately another 50 feet (to a total of approximately 100 feet below surface). For the raise bore method, two months of blasting to reach the 100-foot depth is expected, while for the surface excavation method, three months of blasting to reach this level is expected. It is anticipated that during these blasting periods that flag persons would halt vehicular and pedestrian traffic at designated locations prior to blasting. As determined necessary by FDNY, warning whistles would be used to alert the area that blasting was about to begin. Blasting would be conducted only once the area near the site is clear of vehicular and pedestrian traffic.

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 E. 54th Street/Second Avenue 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., Second Avenue, E. 57th Street, 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 E. 54th Street/Second Avenue Shaft Site, the cordon for short-term stoppage of vehicular and pedestrian traffic is expected to include:

- E. 54th Street eastbound west of Second Avenue; and,
- Second Avenue southbound between the blast site and E. 55th Street.

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 E. 54th Street/Second Avenue Shaft Site during these blasting events would be restricted. 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.

As stated above, if required by FDNY, intermittent blast events conducted at the Shaft Site would halt vehicular and pedestrian traffic flows adjacent to the site. However, 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 E. 54th Street/Second Avenue 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 E. 54th Street/Second Avenue 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 would be stopped at Second Avenue and E. 54th Street for 5 minutes, the temporary backups accumulating on Second Avenue could potentially extend for several blocks past E. 57th Street and the Queensboro Bridge entrance/exit at E. 59th and E. 60th Streets. Even if gridlock conditions were avoided at the Queensboro Bridge lower roadway portal, motorists from Queens may elect to continue west on E. 60th Street to seek alternate routes. Along E. 54th Street, traffic backups could extend beyond Third Avenue although motorists could elect to divert to several other viable routes cross-town routes. Once the traffic starts flowing again, diversions to other routes would discontinue and traffic queues would dissipate. No major long-term diversions would be expected from these temporary stoppages due to blasting at the E. 54th Street/Second Avenue Shaft Site. 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.

Parking and staging of construction vehicles would be accommodated on-site. During the construction of Shaft 33B, curb lanes within the work zone would be temporarily occupied. Along Second Avenue, the construction would displace 108 feet of curb space (the equivalent of 4 to 5 spaces), currently used for metered commercial parking outside of the AM peak period. Along E. 54th Street, the construction would displace 200 feet of curb space along each side of the street (the equivalent of 16 to 20 spaces) that is currently used for truck loading/unloading activities during daytime hours. In addition, to provide adequate space for the truck movements described above, approximately four more spaces along the north curb east of the construction boundaries need to be temporarily displaced. This condition is expected to last for the entire duration of construction at the E. 54th Street/Second Avenue Shaft Site. Within the Manhattan Central Business District (CBD), this temporary displacement of curb space does not constitute a potential significant adverse impact.

Traffic Operations Analysis

A quantitative traffic analysis was conducted to address potential construction impacts associated with the anticipated lane closures required for the construction of Shaft 33B at the E. 54th Street/Second Avenue Shaft Site. For this assessment, a Study Area of the two intersections adjacent to the construction site, Second Avenue at E. 54th Street and Second Avenue at E. 55th Street, was identified.

Existing Conditions

Figure 8.9-1 shows the traffic volumes at the two Study Area intersections 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 analysis hours. Descriptions of the affected roadways and peak hour traffic volumes are presented below.

Second Avenue

Second Avenue is a 70-foot wide southbound roadway within the Study Area. In the AM peak hour, six travel lanes plus a dedicated bus lane along the west curb are typically available. Since the east curb lane is only 8 feet in width, when available, it is used primarily for left-turn traffic only. During the midday and PM peak periods, the avenue operates with five travel lanes. Both curb lanes are used to accommodate loading activities in the midday while during the afternoon a bus lane operates along the west curb and loading activities are permitted along the east curb. Adjacent land uses are predominantly residential with ground floor retail establishments. Within the Study Area, Second Avenue carries traffic volumes ranging from 1,700 vph to 3,000 vph. It serves as a main route for vehicles entering midtown Manhattan via the Queensboro Bridge and provides access to the Queens-Midtown Tunnel.

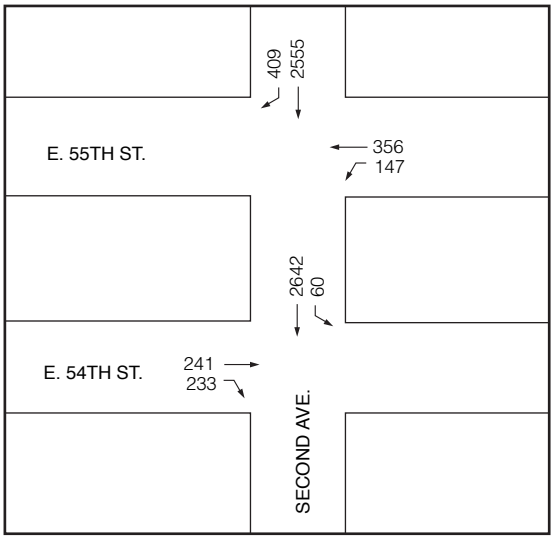
E. 55th Street

E. 55th Street is a westbound cross-town street with a roadway width of approximately 34 feet. The street accommodates a bicycle lane east of Second Avenue, and commercial parking/standing is permitted along parts of both sides of the street. E. 55th Street at Second Avenue carries traffic volumes of approximately 500 vph, 400 vph, and 450 vph in the AM, midday, and PM peak hours, respectively. Approximately 25 to 50 percent of this traffic turns left onto southbound Second Avenue. Adjacent land uses between Second and Third Avenues are primarily commercial and institutional, including the United States Post Office. Between First and Second Avenues, adjacent buildings are mostly residential with ground floor retail.

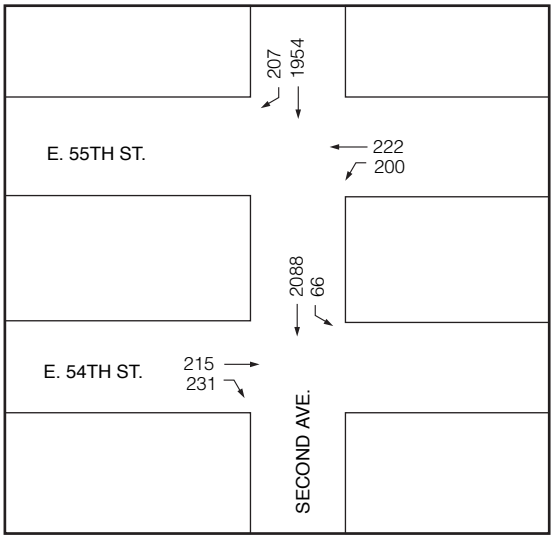
E. 54th Street

E. 54th Street is an eastbound cross-town street with roadway widths of approximately 34 feet between First and Second Avenues and 30 feet between Second and Third Avenues. Truck loading and unloading activities occur on both sides of the street during daytime hours. E. 54th Street between Second and Third Avenues carries peak traffic volumes of approximately 470 vph, 450 vph, and 530 vph in the AM, midday, and PM peak hours, respectively. Approximately 40 to 50 percent of this traffic turns right onto southbound Second Avenue.

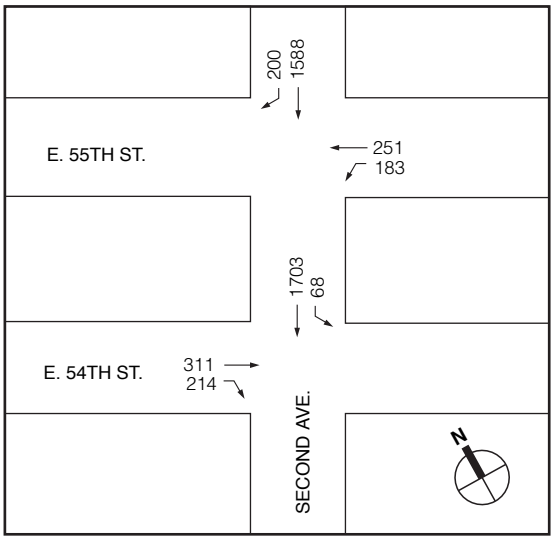
AM PEAK HOUR



MIDDAY PEAK HOUR



PM PEAK HOUR



NOT TO SCALE

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
PROPOSED SHAFT 33B TO CITY WATER TUNNEL NO. 3
STAGE 2-MANHATTAN LEG
E. 54TH STREET/ SECOND AVENUE SHAFT SITE

2004 EXISTING TRAFFIC VOLUMES, SHAFT 33B
SECOND AVENUE AND EAST 54TH STREET ALTERNATIVE

FIGURE 8.9-1

Existing capacity analysis results for the two Study Area intersections are presented in Table 8.9-1. 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.

Table 8.9-1
2004 Existing Conditions – E. 54th Street/Second Avenue 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. 54th Street (EB)	EB-TR	0.96	59.9	E *	EB-TR	0.91	51.5	D *	EB-TR	1.02	73.4	E *
Second Avenue (SB)	SB-L	0.10	10.2	B	SB-LT	0.67	11.2	B	SB-LT	0.55	9.8	A
	SB-T	0.79	13.2	B								
E. 55th Street (WB)	WB-LT	0.65	28.9	C	WB-LT	0.50	25.4	C	WB-LT	0.51	25.5	C
Second Avenue (SB)	SB-T	0.64	10.6	B	SB-TR	0.70	11.6	B	SB-T	0.49	9.3	A
	SB-R	0.75	19.9	B					SB-R	0.37	9.9	A

Notes: EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound; L-Left, T-Through, R-Right
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).

AM Peak Hour

- Second Avenue and E. 54th Street – The eastbound approach operates at LOS E with a v/c ratio of 0.96 and an average delay of 59.9 seconds per vehicle (spv).

Midday Peak Hour

- Second Avenue and E. 54th Street – The eastbound approach operates at LOS D with a v/c ratio of 0.91 and an average delay of 51.5 spv.

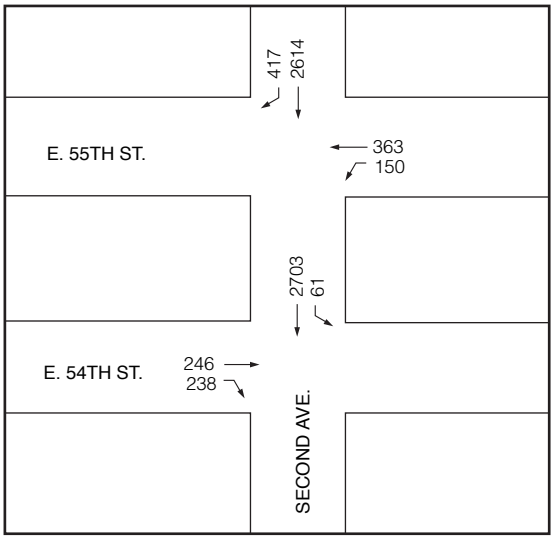
PM Peak Hour

- Second Avenue and E. 54th Street – The eastbound approach operates at LOS E with a v/c ratio of 1.02 and an average delay of 73.4 spv.

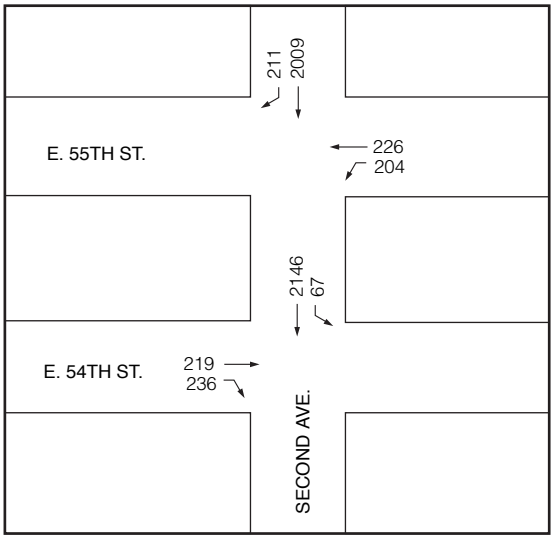
Future Conditions Without the Project

Figure 8.9-2 shows the projected weekday peak hour traffic volumes at the Study Area intersections for 2008 Future Without the Project (No Build), which incorporate continued growth in travel demand and additional traffic added to existing roadways from potential future development projects. As presented in Table 8.9-2, the capacity analysis results show similar operating levels for the No Build conditions as those described for existing conditions.

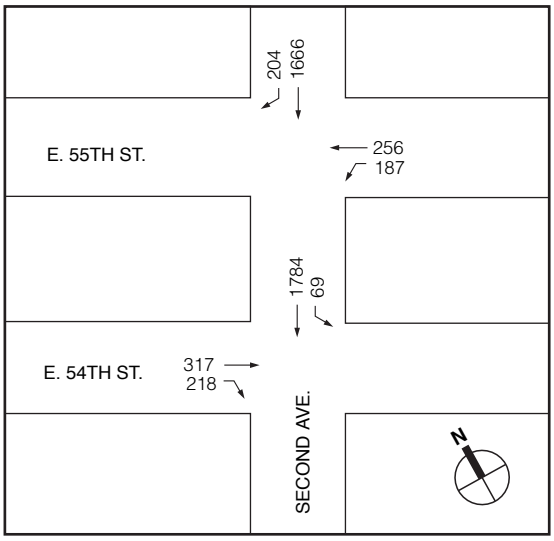
AM PEAK HOUR



MIDDAY PEAK HOUR



PM PEAK HOUR



NOT TO SCALE

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
PROPOSED SHAFT 33B TO CITY WATER TUNNEL NO. 3
STAGE 2-MANHATTAN LEG
E. 54TH STREET/ SECOND AVENUE SHAFT SITE

2008 NO BUILD TRAFFIC VOLUMES, SHAFT 33B
SECOND AVENUE AND EAST 54TH STREET ALTERNATIVE

FIGURE 8.9-2

Future Conditions With the Project

As described above, the E. 54th Street/Second Avenue Shaft Site would extend 11 feet into the Second Avenue roadway between E. 54th and E. 55th Streets, effectively making the 8-foot wide east curb lane and the adjacent lane unavailable for traffic. With the 12-foot wide west curb lane designated as a bus-only lane during the AM and PM peak periods and used for curbside activities during the midday hours, there would be four available traffic lanes along Second Avenue during all analysis peak periods. Although only about half of the block between E. 54th and E. 55th Streets would be occupied by the construction zone, for analysis purposes, the upstream[1] approach at E. 55th Street was also conservatively assumed to follow the same lane channelization, with the curb lane and the adjacent lane unavailable to traffic at all times. On E. 54th Street, the widest section of the construction area would extend 26 feet into the roadway. To maintain a minimum roadway width of 16 feet, the south sidewalk would be narrowed, allowing eight additional feet of roadway space. No Standing regulations would be posted on both sides of E. 54th Street from Second Avenue to the end of the construction zone to ensure the available use of the roadway for through traffic.

Figure 8.9-3 illustrates the future 2008 Build conditions traffic volumes, which incorporate the conservative truck trip estimates described above and analyzed in Section 4.9 for the preferred Shaft Site. Five truck trips (10 truck trip-ends, 5 in and 5 out) were assumed for both the AM and midday peak hours, while three truck trips (6 truck trip-ends, 3 in and 3 out) were assumed for the PM peak hour. Table 8.9-3 presents the impact analysis results for the E. 54th Street/Second Avenue Shaft Site.

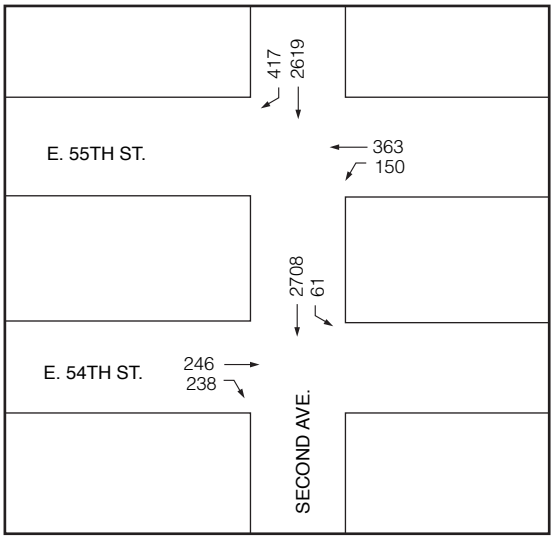
The results show that the construction of Shaft 33B at this location would result in increases in vehicle delays, most notably along southbound Second Avenue at E. 54th Street during the AM peak hour, where operating levels are anticipated to deteriorate from LOS B to marginally acceptable LOS D. However, conditions at neither analysis intersection constitute adverse impacts in accordance with CEQR impact thresholds, as detailed in Section 3.9.5, "Future Conditions With the Project Methodology." Potential construction-related impacts associated with pedestrian flow in the vicinity of the construction site are addressed in Section 8.10, "Transit and Pedestrians."

8.9.3 Water Main Connection Construction Traffic Conditions

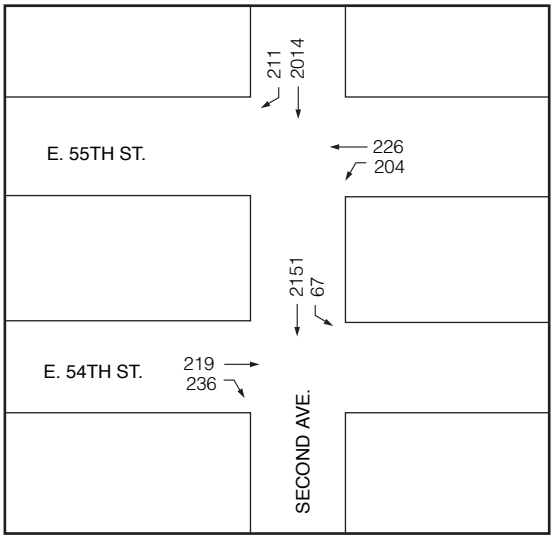
As described above, water main connections from the E. 54th Street/Second Avenue Shaft Site would follow a substantially shorter route to the Third Avenue trunk main. This route would include connections to the latter stages of the First Avenue or Sutton Place route at Second Avenue and E. 55th and E. 56th Streets. As described in Section 8.1, the estimated duration of this work would be approximately 22 months.

[1] "Upstream" from a street segment or an intersection refers to the one prior in the direction of travel. So, for southbound Second Avenue, E. 55th Street is upstream from E. 54th Street. "Downstream" from a street segment or an intersection refers to the one after in the direction of travel. So, for southbound First Avenue, E. 54th Street is downstream from E. 55th Street.

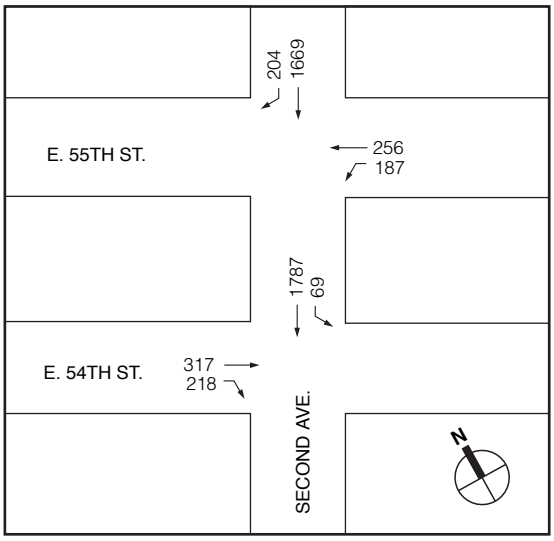
AM PEAK HOUR



MIDDAY PEAK HOUR



PM PEAK HOUR



NOT TO SCALE

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
PROPOSED SHAFT 33B TO CITY WATER TUNNEL NO. 3
STAGE 2-MANHATTAN LEG
E. 54TH STREET/ SECOND AVENUE SHAFT SITE

2008 BUILD TRAFFIC VOLUMES, SHAFT 33B
SECOND AVENUE AND EAST 54TH STREET ALTERNATIVE

FIGURE 8.9-3

Table 8.9-2
2008 No Build and 2004 Existing Conditions Comparison – E. 54th Street/Second Avenue 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. 54thStreet (EB)	EB–TR	0.96	59.9	E *	EB–TR	0.98	64.7	E *	EB–TR	0.91	51.5	D *	EB–TR	0.93	54.8	D *	EB–TR	1.02	73.4	E *	EB–TR	1.04	79.2	E *
Second Avenue (SB)	SB-L	0.10	10.2	B	SB-L	0.10	10.2	B	SB-LT	0.67	11.2	B	SB-LT	0.68	11.4	B	SB-LT	0.55	9.8	A	SB-LT	0.57	10.0+	B
	SB-T	0.79	13.2	B	SB-T	0.81	13.6	B																
E. 55th Street (WB)	WB-LT	0.65	28.9	C	WB-LT	0.66	29.2	C	WB-LT	0.50	25.4	C	WB-LT	0.51	25.6	C	WB-LT	0.51	25.5	C	WB-LT	0.52	25.7	C
Second Avenue (SB)	SB-T	0.64	10.6	B	SB-T	0.65	10.8	B	SB-TR	0.70	11.6	B	SB-TR	0.71	11.9	B	SB-T	0.49	9.3	A	SB-T	0.51	9.5	A
	SB-R	0.75	19.9	B	SB-R	0.77	20.7	C									SB-R	0.37	9.9	A	SB-R	0.38	10.0+	B

Notes: EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound; L-Left, T-Through, R-Right
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).

Table 8.9-3
2008 Build and No Build Conditions Comparison – E. 54th Street/Second Avenue 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. 54thStreet (EB)	EB-TR	0.98	64.7	E	EB-TR	0.98	64.7	E	EB-TR	0.93	54.8	D	EB-TR	0.93	54.8	D	EB-TR	1.04	79.2	E	EB-TR	1.04	79.2	E
Second Avenue (SB)	SB-L	0.10	10.2	B	SB-LT	1.04	41.9	D	SB-LT	0.68	11.4	B	SB-LT	0.86	15.9	B	SB-LT	0.57	10.0+	B	SB-LT	0.69	11.8	B
	SB-T	0.81	13.6	B																				
E. 55th Street (WB)	WB-LT	0.66	29.2	C	WB-LT	0.66	29.2	C	WB-LT	0.51	25.6	C	WB-LT	0.51	25.6	C	WB-LT	0.52	25.7	C	WB-LT	0.52	25.7	C
Second Avenue (SB)	SB-T	0.65	10.8	B	SB-T	0.98	26.4	C	SB-TR	0.71	11.9	B	SB-TR	0.90	18.5	B	SB-T	0.51	9.5	A	SB-T	0.65	11.2	B
	SB-R	0.77	20.7	C	SB-R	0.77	20.7	C									SB-R	0.38	10.0+	B	SB-R	0.38	10.0+	B

Notes: EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound; L-Left, T-Through, R-Right
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).

The first part of the water main connections would take place across Second Avenue, which as described in Section 5.9, "Traffic and Parking" for water main connections, would be undertaken during off-peak hours, to the extent possible, by imposing temporary partial closures to minimize disturbance to Second Avenue traffic. To extend the water mains along the west side of Second Avenue to E. 55th and E. 56th Streets, lane and/or sidewalk closures, similar to those described for the First Avenue segments under the Base Scenario and Scenario A, would be required. NYCDDC would coordinate with NYCDOT on the means to provide adequate traffic circulation through the area. It is expected that lane closures due to construction at the alternative Shaft Site and to construction of the Second Avenue segment of water main connections would not occur simultaneously, such that conditions depicted for the First Avenue route would be representative of reasonable worst-case operating conditions along the connection route for the E. 54th Street/Second Avenue Shaft Site. Furthermore, in comparing the existing traffic conditions at the two Study Area intersections analyzed above versus those evaluated along First Avenue south of the preferred Shaft Site, it is expected that should temporary adverse traffic impacts occur during the construction of water main connections from the E. 54th Street/Second Avenue Shaft Site, the extent of increased delays would be markedly less. This finding is consistent with the area's traffic patterns, in that bottlenecks are often created at the Queensboro Bridge, resulting in notably more congested levels upstream from the access points. Therefore, south of E. 59th Street on Second Avenue and north of E. 59th Street on First Avenue, traffic flow is typically less congested than the respective upstream segments. Nevertheless, it is expected that NYCDDC and NYCDOT would endeavor to address potential traffic disruptions that would result from this construction project similar to the manner discussed in Section 5.9.

8.9.4 Conclusions

The construction, activation, and operation of Shaft 33B at the E. 54th Street/Second Avenue Shaft Site would not result in any potential significant adverse impacts to Study Area traffic and parking conditions. However, in recognition of existing traffic congestion in the area of the Queensboro Bridge, NYCDEP would commit to providing the funding for TEA(s) at the Shaft Site as needed during its construction to facilitate vehicular and pedestrian flow nearby. Where potential temporary construction-related adverse impacts could occur during water main connections, conceptual mitigation measures and traffic management strategies explored in Section 5.16, "Mitigation Measures" for water main connections in the context of the preferred Shaft Site would also be applicable to the water main connections from the E. 54th Street/Second Avenue Shaft Site. Although congested traffic conditions could occur during the water main construction, they would be temporary adverse impacts and not persist beyond the completion of the construction efforts. The construction of Shaft 33B and its water main connections at the E. 54th Street/Second Avenue Shaft Site would not result in potential significant adverse traffic impacts.

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