


SUB-CHAPTER 6B: TRANSIT AND PEDESTRIANS

6B.1. INTRODUCTION

This sub-chapter describes the potential impacts upon pedestrians and transit of construction and operation of an emergency ventilation plant for the 8th Avenue and 7th Avenue Subway Lines. It also describes the results of pedestrian data surveys, pedestrian analysis, and safety requirements. Section 6B.2 defines the study area for pedestrian and transit studies, Section 6B.3 describes the data collection program and methodology used in analysis, and Section 6B.4 characterizes pedestrian conditions and transit service in the study area in 2007. Within Section 6B.5, the impact of the project alternatives upon pedestrian operations and transit service in the study area are evaluated. Section 6B.6 provides a summary of the adverse impacts identified in Section 6B.5. Where the potential for impacts is identified, mitigation measures are described, as appropriate.

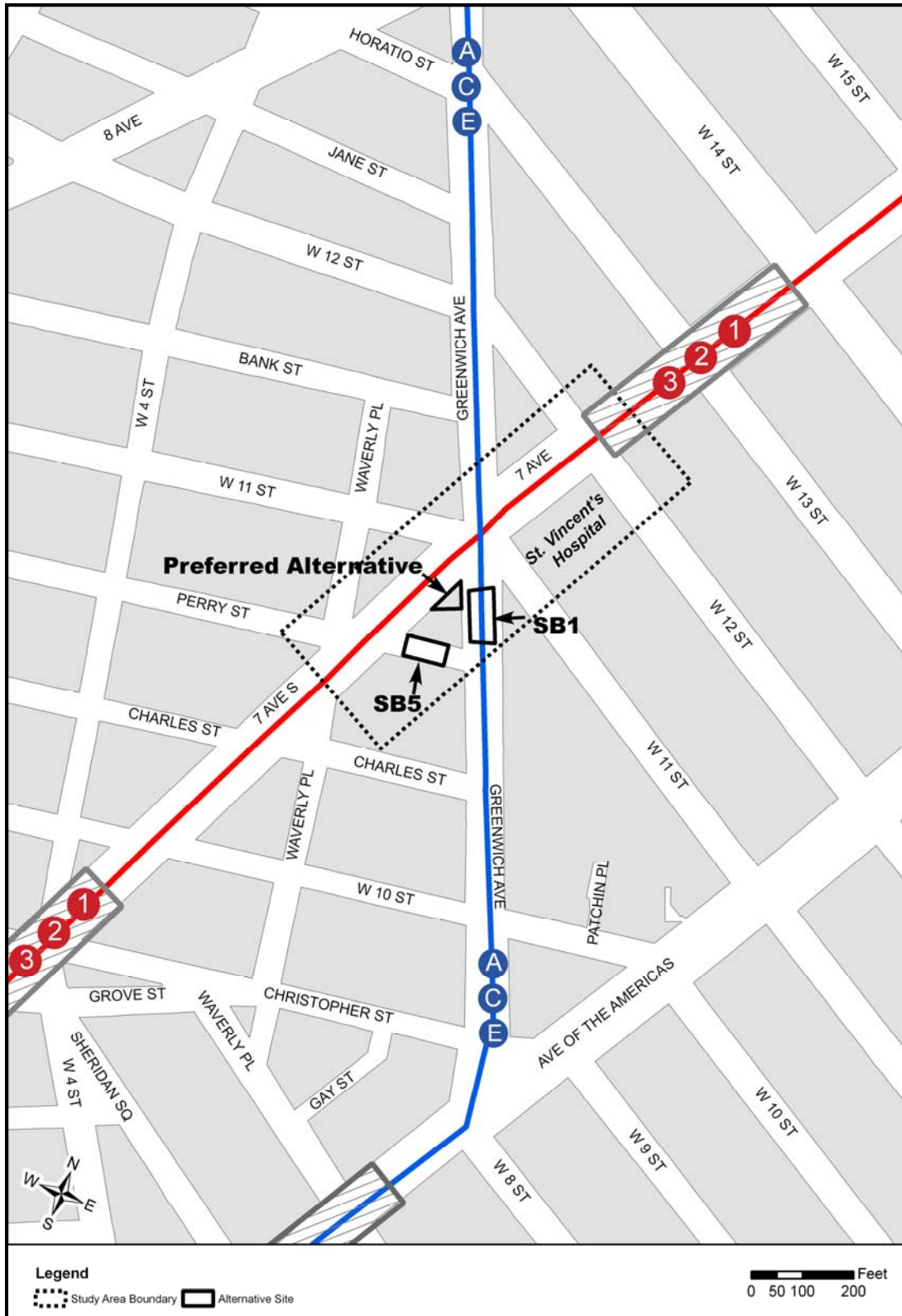
6B.2. STUDY AREA

It is anticipated that impacts upon pedestrians or transit that may occur during operation or construction of the proposed emergency ventilation plant would be localized within or in close proximity to the ventilation plant site and the anticipated construction area. The study area considered for pedestrian and transit studies was designed to address specific pedestrian and transit issues that may occur during the construction or operation of the Preferred Alternative and Alternatives SB1 and SB5 and is illustrated on Figure 6B-1. It encompasses the area framed by Seventh Avenue from approximately West 12th Street to Charles Street and by Greenwich Avenue from Bank Street to Charles Street. This should be considered an active pedestrian area considering its proximity to St. Vincent's Hospital and the other attractions in the West Greenwich Village area. The pedestrian study area includes the intersection of Seventh Avenue with Greenwich Avenue, which as noted in Section 6A.3, was recently modified to improve pedestrian safety. Also, the southernmost entrance to and exit from the 14th Street Station of the 7th Avenue Subway Line and the  Canarsie Line is located within this focused study area at Seventh Avenue and West 12th Street. The M20 bus operates on Seventh Avenue within the study area with bus stops at Seventh Avenue and West 12th Street and on Seventh Avenue southwest of Perry Street.

6B.3. METHODOLOGY

The construction and operation of an emergency ventilation plant for the 8th Avenue and 7th Avenue Subway Lines would generate negligible pedestrian activity and transit trips. The primary issues for evaluation would be related to potential impacts during construction upon pedestrian levels of service, pedestrian safety, and disruption to bus or subway service. Therefore, the methodology utilized and described below is directed towards an evaluation of pedestrian circulation and an identification of transit services that may be affected by proposed construction staging plans and related activities. Impact criteria utilized follows the guidelines of the *City Environmental Quality Review (CEQR) Technical Manual*.

FIGURE 6B-1: STUDY AREA: PEDESTRIAN AND TRANSIT ANALYSIS



6B.3.1. DATA COLLECTION

Manual pedestrian counts were conducted in the study area during a mid-week day (i.e., Tuesday, Wednesday, or Thursday) in September 2007 during the AM (8:00 to 9:30), Midday (12:00 to 1:30) and PM (3:00 to 5:30) periods. These periods were selected to encompass normal commuting and Midday periods as well as the afternoon period when schoolchildren are usually dismissed and walking home in the community. The pedestrian data was collected on both crosswalks and at mid-block sidewalk locations. Directional pedestrian volumes were recorded in 5-minute intervals so that peak 15-minute volumes could be identified for analysis.

6B.3.2. TRANSIT ANALYSIS METHODOLOGY

Transit line capacity analysis was not performed due to the anticipation that the proposed emergency ventilation plant would generate negligible additional transit trips both during construction and in operation. Interruptions to subway service may occur during certain construction activities and would be managed by MTA NYCT with similar measures as employed on other construction projects that require temporary short term service interruptions.

6B.3.3. PEDESTRIAN ANALYSIS METHODOLOGY

LOS ANALYSIS METHODS FOR CROSSWALKS/CORNERS

The capacity of a crosswalk or corner is evaluated in terms of speed, density, space, and flow. Level of service (LOS) is evaluated on the basis of square feet per pedestrian. The calculation of pedestrian flow for crosswalks is based upon the maximum surge, which represents the worst-case pedestrian flow. The maximum surge is defined as the point where the maximum numbers of pedestrians are in the crosswalk. This generally occurs shortly after the green/walk phase of a crosswalk begins. The number of opposing left-turn and right-turn vehicles are incorporated into the crosswalk analysis. LOS between A and D reflect acceptable operating conditions, while LOS E and F represent undesirable operating conditions. Under LOS F conditions, pedestrian flow is sporadic and unstable, resulting in unavoidable contact among pedestrians. The peak 15-minute period volume is used to perform all surface pedestrian analyses. The LOS criteria for crosswalks and corners, as defined in the HCM, are presented in Table 6B-1.

TABLE 6B-1: LOS CRITERIA FOR CROSSWALKS/CORNERS

LOS	Space (Square Feet/Pedestrian)
A	≥130
B	≥40 to <130
C	≥24 to <40
D	≥15 to <24
E	≥6 to <15
F	<6

Source: Highway Capacity Manual (HCM); Special Report 209, 3rd Edition, 1994

LOS ANALYSIS METHODS FOR SIDEWALKS/WALKWAYS

The LOS of sidewalks and walkways is based upon the calculation of the average number of pedestrians per minute per foot of effective walkway width. However, walkways are directly influenced by other elements of the transportation network. To more accurately estimate the dynamics of walking, a platoon factor is applied in the calculation of pedestrian flow. This reflects the tendency of pedestrians to move in congregated groups (platoons) and generally results in an LOS one level lower than average flow rates. A comfortable walking experience usually occurs at LOS C/D or better. At LOS D, individual walking speeds and the ability to pass other pedestrians may be restricted. At LOS E, individual walking speeds become a function of the pedestrian platoon and often result in flow interruptions. Severe restriction and unavoidable contact with other pedestrians is typical of LOS F conditions. A summary of the LOS criteria is presented in Table 6B-2.

TABLE 6B-2: LOS CRITERIA FOR SIDEWALKS/WALKWAYS

LOS	Space (Square Feet/Pedestrian)	Flow Rate (Pedestrians/Minute/Foot)
A	≥ 130	≤ 2
B	≥ 40 to < 130	> 2 to ≤ 7
C	≥ 24 to < 40	> 7 to ≤ 10
D	≥ 15 to < 24	> 10 to ≤ 15
E	≥ 6 to < 15	> 15 to ≤ 25
F	< 6	Variable

Source: Highway Capacity Manual (HCM); Special Report 209, 3rd Edition, 1994

6B.3.4. IMPACT CRITERIA

IMPACT CRITERIA FOR CROSSWALKS/CORNERS

The threshold for determining impacts to crosswalks and corners is associated with a minimum average space of 15 square feet per pedestrian (the breakpoint between LOS D and E). Crosswalks or corners that have an average space above 15 square feet per pedestrian (LOS A through D) for projected analysis year conditions may be affected if the space per pedestrian falls to 14 square feet per pedestrian or lower under conditions with the proposed project under construction or in-place. Crosswalks or corners that have a projected analysis year average space below 15 square feet per pedestrian (LOS E or F) may be affected if the space per pedestrian falls by one square foot per pedestrian or more under conditions with the proposed project under construction or in-place. The maximum surge conditions are used in the analysis of crosswalks.

IMPACT CRITERIA FOR SIDEWALKS/WALKWAYS

For sidewalk and walkway locations, an impact may take place at a location that has a projected future condition flow rate over 15 pedestrians per foot per minute (the breakpoint between LOS D and E) if an increase in the pedestrian flow rate of two pedestrians per-foot per-minute or more is projected under future conditions with the proposed project under construction or in-place. Platoon (group of pedestrians) conditions are used in the analysis of sidewalks/walkways.

6B.4. AFFECTED ENVIRONMENT

As noted above, the definition of 2007 existing conditions for transit and pedestrian studies was limited to the defined study area in the vicinity of the alternative sites for construction of the emergency ventilation plant. Existing conditions (2007) were also defined regarding existing service on the 7th and 8th Avenue Subway Lines.

6B.4.1. TRANSIT

The 14th Street Station of the 7th Avenue Subway Lines and L Canarsie Line is located north of the project area, with the closest entrance/exit located at Seventh Avenue and West 12th Street. The tunnel for the 7th Avenue Subway Line extends under Seventh Avenue, and the tunnel for the 8th Avenue Subway Lines extends under Greenwich Avenue at the project site. The subway lines operate between northern Manhattan/Bronx to lower Manhattan/Brooklyn. The ① and ② trains operate 24 hours a day, 7 days a week while ③ train service is suspended late nights between 11:30 PM and 6:00 AM. They share the same corridor in Manhattan from West 96th Street to Chambers Street with the ① train providing local service and the ② and ③ trains providing express service within this segment except late night. The A train and C train operate from northern Manhattan to Queens and Brooklyn, respectively. The A train operates 24 hours a day, 7 days a week while C train service is suspended late nights. They share the same corridor from West 168th Street in Manhattan to Euclid Avenue in Brooklyn with the A train providing express service except late nights. The E train provides service from Queens to Lower Manhattan 24 hours a day, 7 days a week.

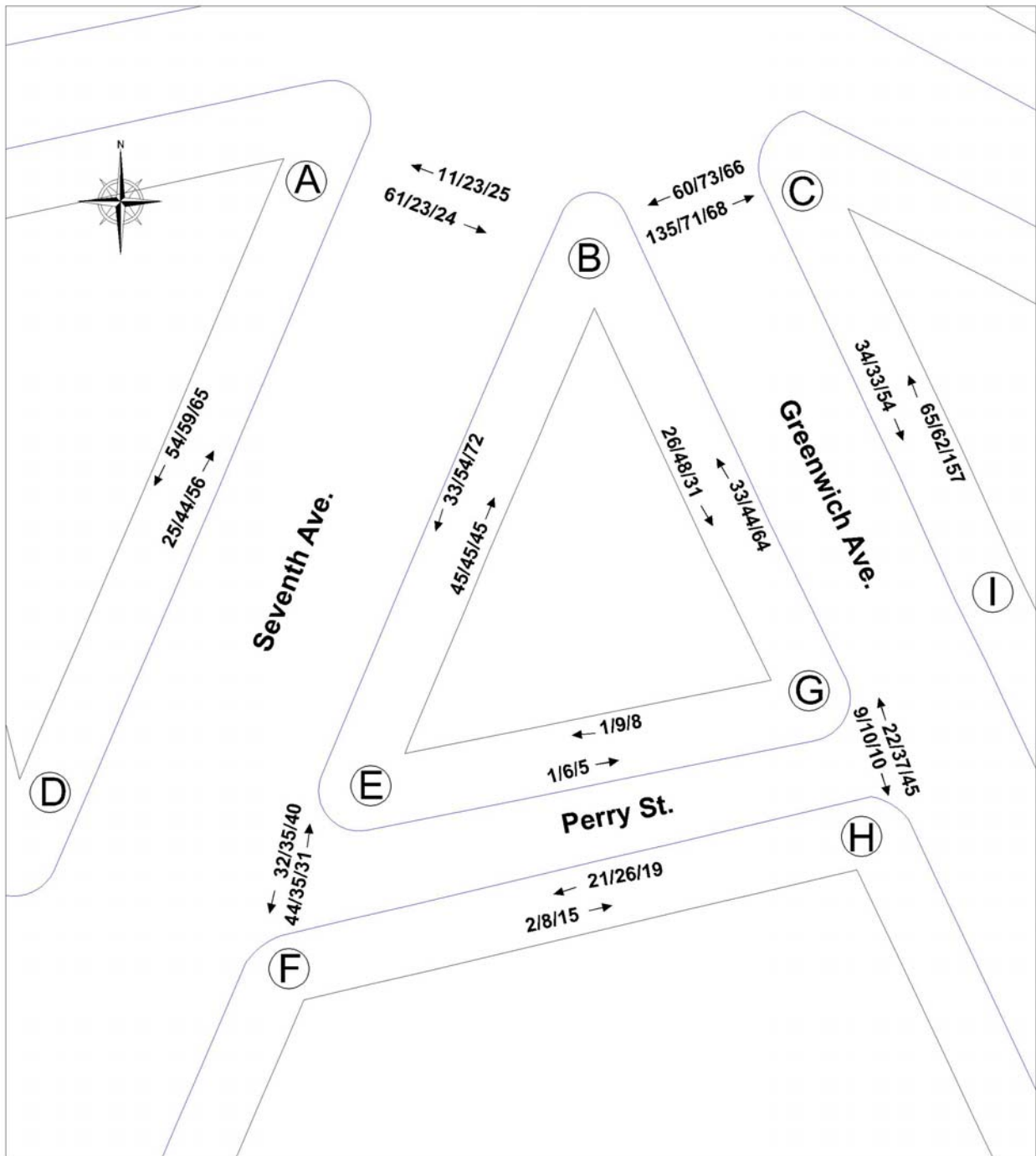
The M20 bus, which provides local service from Lincoln Center to Battery Park City on weekday headways of 10 to 15 minutes, travels southwest on Seventh Avenue through the project area. M20 bus stops are located at Seventh Avenue and 12th Street and on Seventh Avenue southwest of Perry Street.

6B.4.2. PEDESTRIANS

Critical pedestrian elements that could potentially be affected by construction of the emergency ventilation plant include sidewalks on Seventh Avenue between Greenwich Avenue and Perry Street, on Greenwich Avenue between Seventh Avenue and Perry Street, and on Perry Street between Seventh Avenue and Greenwich Street. Likewise, certain intersection crosswalks could potentially be adversely affected during construction, specifically the south crosswalks crossing Seventh Avenue and Greenwich Avenue at the intersection of Seventh Avenue with Greenwich Avenue, and the east crosswalk across Perry Street at the intersection of Seventh Avenue with Perry Street.

Existing 2007 weekday AM, Midday and PM period peak 15-minute pedestrian volumes on these pedestrian facilities are presented on Figure 6B-2 with corners or sidewalk locations designated by letters A through I to facilitate identification of pedestrian flows, sidewalks and crosswalks. As shown, sidewalk pedestrian flows are generally less than 10 pedestrians per minute along Seventh and Greenwich Avenues with significantly lower flows along Perry Street. Pedestrian flows in crosswalks are generally of the same order of magnitude.

FIGURE 6B-2: EXISTING PEDESTRIAN VOLUMES



Legend :

22/39/31 AM/MD/PM Peak 15 Minute Volume (Existing - 2007)

These sidewalks and crosswalks were analyzed for existing 2007 weekday AM, Midday, and PM peak hour conditions, with the findings illustrated in Table 6B-3. This table indicates the effective sidewalk width in feet (reduced from the full sidewalk width to account for the proximity of buildings and their effect on pedestrian behavior, plus that of trees, subway grates, and other obstructions), peak 15 minute pedestrian volume, persons per foot per minute (PFM), average level of service and platoon conditions level of service for each sidewalk analyzed, as well as the length, width, maximum surge pedestrian space (SF/ped) and maximum surge level of service for each crosswalk analyzed in the study area. As shown, except for the east sidewalk of Greenwich Avenue (between corner C and point I), which operates at LOS C during the PM peak period, each sidewalk and crosswalk operates at LOS B or better during each of the time periods analyzed for existing conditions.

6B.5. ENVIRONMENTAL IMPACT

6B.5.1. INTRODUCTION

As indicated in Chapters 3 and 4 of this document, there are three alternatives under detailed evaluation for construction of the emergency ventilation plant at the 8th Avenue and 7th Avenue Subway lines. For each alternative (the Preferred Alternative and Alternatives SB1 and SB5), four major construction stages were developed. In this impact analysis, the assessment of pedestrian impacts was performed on each sidewalk and crosswalk for worst case condition specific to the combined alternative and construction stage during which the major impact on that specific sidewalk and crosswalk is anticipated to occur. Likewise, the assessment of impacts to transit service considered each stage of each alternative to identify those stages where adverse impacts to service could occur.

As noted in Section 6A.6.2, no land use development was identified that would increase trip levels above that of background growth, assumed in Manhattan at 0.5 percent per year. Thus, the increase in pedestrian volumes in the study area throughout the construction period is expected to be very modest and would not significantly affect pedestrian analysis results. Therefore, year 2010 was chosen as the future analysis year for pedestrian analysis during construction for consistency with the traffic and parking analysis presented in Sub-Chapter 6A.

6B.5.2. ANALYSIS YEAR 2010 (CONSTRUCTION)

NO ACTION ALTERNATIVE

Pedestrian volumes on the sidewalks and crosswalks in the focused study area were developed for year 2010, the impact analysis year for construction activities. As noted above, between 2007 and 2010, pedestrian activity is anticipated to increase in the study area solely due to general background growth estimated at 0.5 percent per year, resulting in an increase of at most two or three pedestrians per hour to existing pedestrian flow volumes on any sidewalk or crosswalk. No Action 2010 weekday AM, Midday and PM period peak 15 minute pedestrian volumes are illustrated on Figure 6B-3.

Table 6B-4 provides the results of the sidewalk and crosswalk analyses for 2010 No Action conditions. Given the minimal increase in pedestrian activity anticipated, a modest increase in peak 15 minute pedestrian volumes is indicated on sidewalks with no change in PFM, average or platoon conditions LOS, and likewise a slight reduction in maximum surge pedestrian space within crosswalks, but also no change in maximum surge LOS.

No change in transit service is anticipated for 2010 No Action conditions.

TABLE 6B-3: LOS FOR SIDEWALKS AND CROSSWALKS (EXISTING CONDITIONS)

SIDEWALK ANALYSIS

Blockface	Between Points	Effective Sidewalk Width ¹ (Feet)	Peak 15 Minute Volume			Persons per Foot per Minute (PFM)			Average Level of Service			Platoon Conditions Level of Service		
			AM	MD	PM	AM	MD	PM	AM	MD	PM	AM	MD	PM
Greenwich Avenue (between 7th Ave and Perry St)	C/I	4	99	95	211	2	2	4	A	A	B	B	B	C
	B/G	4	59	92	95	1	2	2	A	A	A	B	B	B
7th Avenue (between Greenwich Ave/W 11th St and Perry St)	B/E	4	78	99	117	1	2	2	A	A	A	B	B	B
	A/D	7	79	103	121	1	1	1	A	A	A	B	B	B
Perry Steet (between 7th Ave and Greenwich St)	E/G	7	2	15	13	0	0	0	A	A	A	B	B	B
	F/H	3	23	34	34	1	1	1	A	A	A	B	B	B

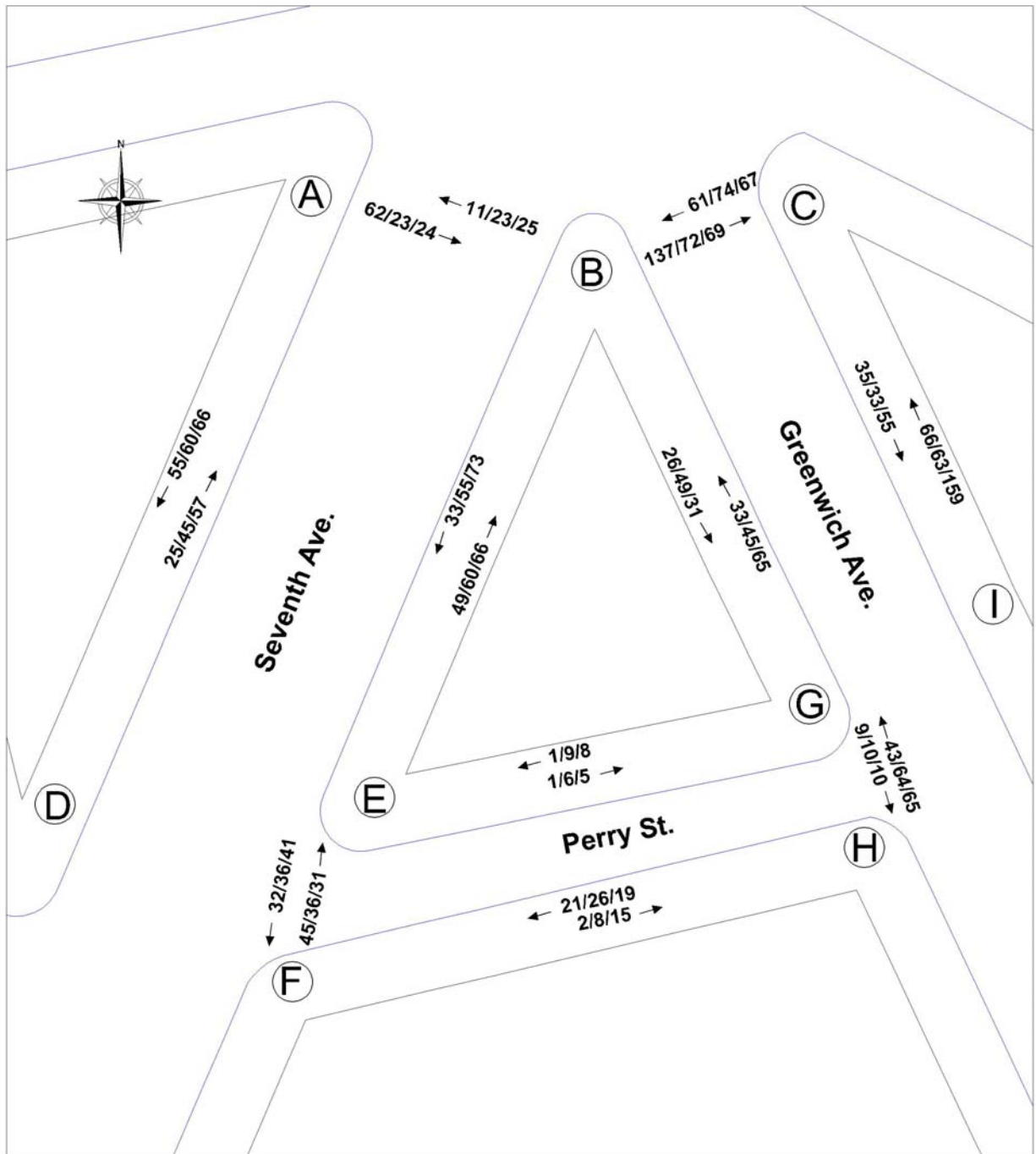
Note:

1. Total sidewalk width minus the sum of widths and clear distances from obstructions.

CROSSWALK ANALYSIS

Intersection	Between Points	Length (ft)	Width (ft)	Maximum Surge Pedestrian Space (SF/ped)			Maximum Surge Level of Service		
				AM	MD	PM	AM	MD	PM
7th Avenue @ Greenwich Avenue	B/C	42	23	55	74	80	B	B	B
	A/B	50	18	115	179	168	B	A	A
7th Avenue @ Perry St	E/F	35	10	63	68	68	B	B	B

FIGURE 6B-3: NO ACTION 2010 PEDESTRIAN VOLUMES



Legend :

22/40/31 AM/MD/PM Peak 15 Minute Volume (No Build - 2010)

TABLE 6B-4: LOS FOR SIDEWALKS AND CROSSWALKS (NO ACTION CONDITIONS)

SIDEWALK ANALYSIS

Blockface	Between Points	Effective Sidewalk Width ¹ (Feet)	Peak 15 Minute Volume			Persons per Foot per Minute (PFM)			Average Level of Service			Platoon Conditions Level of Service		
			AM	MD	PM	AM	MD	PM	AM	MD	PM	AM	MD	PM
Greenwich Avenue (between 7th Ave and Perry St)	C/I	4	100	96	214	2	2	4	A	A	B	B	B	C
	B/G	4	60	93	96	1	2	2	A	A	A	B	B	B
7th Avenue (between Greenwich Ave/W 11th St and Perry St)	B/E	4	79	100	119	1	2	2	A	A	A	B	B	B
	A/D	7	80	105	123	1	1	1	A	A	A	B	B	B
Perry Steet (between 7th Ave and Greenwich St)	E/G	7	2	15	13	0	0	0	A	A	A	B	B	B
	F/H	3	23	34	34	1	1	1	A	A	A	B	B	B

Note:

1. Total sidewalk width minus the sum of widths and clear distances from obstructions.

CROSSWALK ANALYSIS

Intersection	Between Points	Length (ft)	Width (ft)	Maximum Surge Pedestrian Space (SF/ped)			Maximum Surge Level of Service		
				AM	MD	PM	AM	MD	PM
7th Avenue @ Greenwich Avenue	B/C	42	23	54	73	79	B	B	B
	A/B	50	18	113	179	168	B	A	A
7th Avenue @ Perry St	E/F	35	10	63	68	68	B	B	B

BUILD ALTERNATIVES

Chapter 4 of this document details the construction program and maintenance and protection of traffic (MPT) plans developed for each construction stage of the Preferred Alternative and Alternatives SB1 and SB5 (see Figure 4-5(A) through (L)). These plans include provision for the maintenance of pedestrian as well as vehicular traffic and the components of each plan as related to sidewalks and crosswalks, pedestrian control, and transit service are summarized below.

The Preferred Alternative

During all construction stages of the Preferred Alternative, sidewalks on the southeast side of Seventh Avenue between Greenwich Avenue and Perry Street and the west side of Greenwich Avenue between Seventh Avenue and Perry Street may be subject to reductions in width (between corners B and E and corners B and G, respectively). Additionally, during Stage 1 the sidewalk on the east side of Greenwich Avenue from Seventh Avenue to Perry Street would be subject to a reduction in width (between corner C and point I). During Stages 1 and 2, the southbound Greenwich Avenue traffic detour would be in effect which would increase traffic turning through the southwest crosswalk across Seventh Avenue at Greenwich Avenue (crosswalk between corners A and B), through the east crosswalk at the intersection of Seventh Avenue and Perry Street (crosswalk between corners E and F) and through the Perry Street crossing at its intersection with Greenwich Avenue (between corners G and H). As indicated in Sub-Chapter 6A, it is recommended that trucks be prohibited from turning left at Perry Street and left turns be prohibited from Perry Street to Greenwich Avenue. During Stage 3, existing vehicular traffic paths would be restored, the sidewalk on the southwest side of Seventh Avenue (between corners A and D) would be closed, and pedestrians routed into the Seventh Avenue roadbed within a barrier protected temporary walkway. A minimum 5 feet sidewalk width would be maintained at all times. No changes to M20 bus stops or service are anticipated.

Alternative SB1

During all construction stages of Alternative SB1, sidewalks on the southeast side of Seventh Avenue between Greenwich Avenue and Perry Street and the west side of Greenwich Avenue between Seventh Avenue and Perry Street may be subject to reductions in width (between corners B and E and corners B and G, respectively). Additionally, during Stage 2 the east side of Greenwich Avenue from Seventh Avenue to a point approximately 150 feet south of Perry Street may be subject to a reduction in width (between corner C and point I). Also, during Stages 1 and 2 the traffic detour and turn prohibitions described above for the Preferred Alternative would be in effect. During Stage 2, the width of the north sidewalk of Perry Street (between corners E and G) would be reduced and during Stage 3, a barrier-protected temporary walkway within Seventh Avenue, similar to that of the Preferred Alternative, would be in place. During Stages 3 and 4, segments of the sidewalk at the south corner of the intersection of Seventh Avenue with Greenwich Avenue would be closed (corner B) and pedestrian paths would be diverted to a short temporary sidewalk. No changes to M20 bus stops or service are anticipated.

Alternative SB5

During all construction stages of Alternative SB5, sidewalks on the southeast side of Seventh Avenue between Greenwich Avenue and Perry Street and west side of Greenwich Avenue between Seventh Avenue and Perry Street may be subject to reductions in width (between corners B and E and corners B and G, respectively). Additionally, during Stage 2 the sidewalk on the east side of Greenwich Avenue from Seventh Avenue to Perry Street would be subject to a reduction in width (between corner C and point I). Also, during Stages 1 and 2 the sidewalk on the north side of Perry Street between Seventh Avenue and Perry Street (between corners E and G) would be reduced in width and the traffic detour and

turn prohibitions described above for the Preferred Alternative and Alternative SB1 would be in effect. During Stages 3 and 4, Perry Street between Seventh Avenue and Greenwich Avenue would be closed to through pedestrians. In addition, during Stage 3 the sidewalks on the southwest side of Seventh Avenue north of Perry Street (between corners A and D), the southeast side of Seventh Avenue south of Perry Street (between corners B and E) and the west side of Greenwich Avenue south of Perry Street would be closed and pedestrians routed into the Seventh Avenue and Greenwich Avenue roadbeds within barrier protected temporary walkways. During Stage 4, the temporary walkways would be limited to the southeast side of Seventh Avenue. No changes to M20 bus stops or service are anticipated.

Figure 6B-4 illustrates 2010 weekday AM, Midday and PM period peak 15 minute pedestrian volumes during Construction Stages 3 and 4 of Alternative SB5, the worst case condition when Perry Street is closed to through pedestrians between Seventh Avenue and Greenwich Avenue. During these two stages, through pedestrians using Perry Street would be detoured “around the triangle” formed by Seventh Avenue, Greenwich Avenue and Perry Street (using the sidewalks between corners E and B and corners B and G). Table 6B-5 provides the average and platoon conditions levels of service for sidewalks and the surge levels of service for crosswalks under this worst-case pedestrian condition that would be anticipated for any of the three alternatives, with the exception of the analysis of sidewalks on Perry Street, which assumes the condition of Perry Street open with reduced width sidewalks. For sidewalk analysis, the analysis reflects an effective sidewalk width of three feet for all sidewalks analyzed, i.e., the effective width of the minimum width of sidewalk (five feet) that would be in effect on any sidewalk during the construction of each alternative. As shown, minimal changes in levels of service relative to the No Action condition, limited in several cases to a change from LOS A to LOS B, are indicated. Therefore, no significant impacts during construction to pedestrians using sidewalks and crosswalks have been identified with respect to level of service as related to flow and pedestrian space conditions.

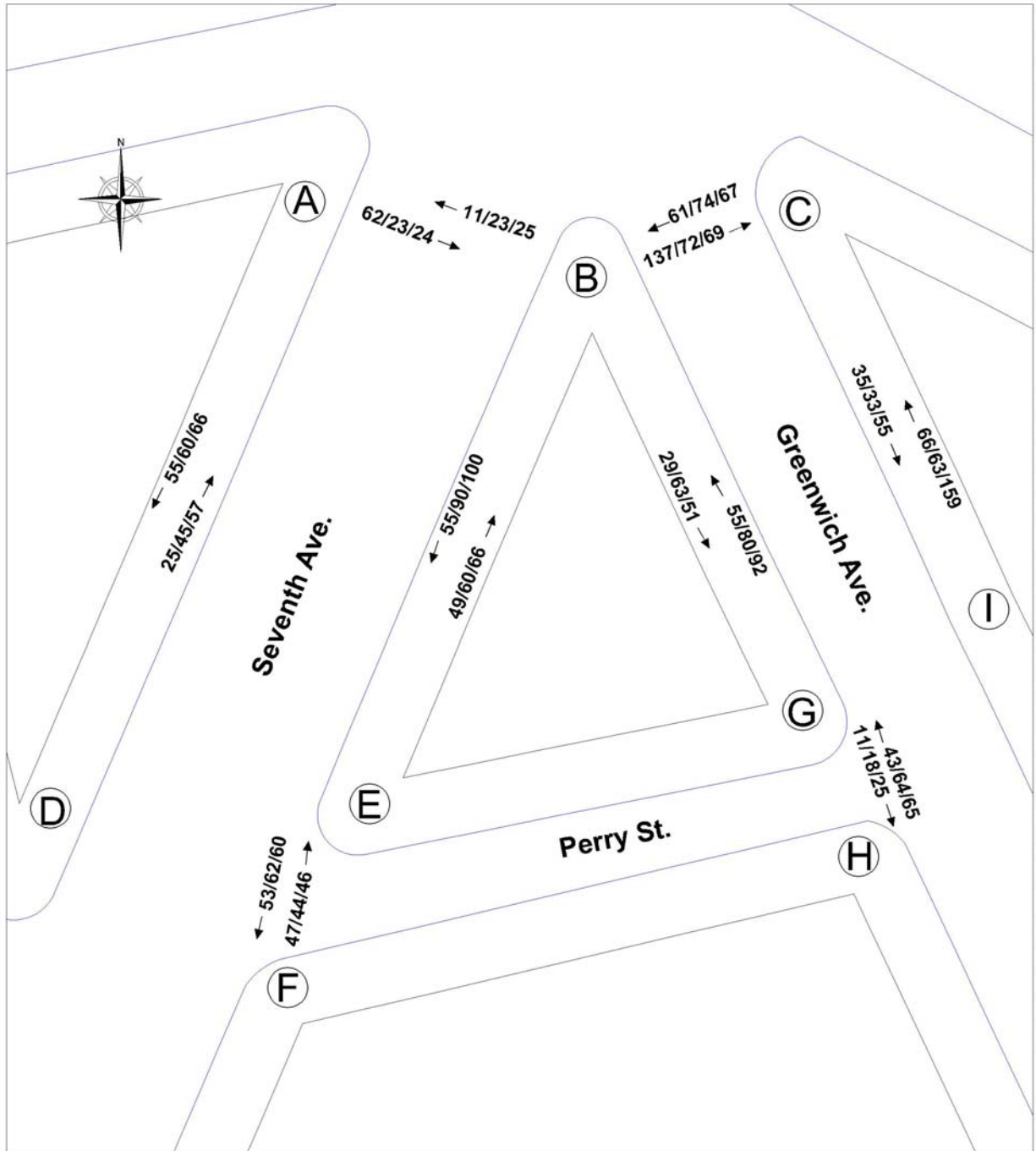
M20 bus transit service, which runs southwest on Seventh Avenue, would not be affected by any alternative nor would the bus stops on the southwest side of Seventh Avenue northeast of West 12th Street and southwest of Perry Street.

As noted above and in Sub-Chapter 6A, a traffic detour plan would be in effect during Stages 1 and 2 of each alternative, the duration of which would be the least for the Preferred Alternative and the longest for Alternative SB1. During this detour plan, vehicle/pedestrian conflicts would increase at two street crossings, the east crosswalk of Seventh Avenue at Perry Street (crosswalk between corners E and F), and the crossing of Perry Street at Greenwich Avenue (between corners G and H). Possible measures that could be implemented to reduce the level of pedestrian/vehicle conflicts on these crosswalks are presented in Section 6B.6 below. Although the detour would increase the number of vehicles from the Greenwich Avenue southbound approach turning right through the southwest crosswalk across Seventh Avenue at its intersection with Greenwich Avenue (between corners A and B), the WALK phase for this crosswalk coincides with the West 11th Street GREEN phase. Therefore, no increases in pedestrian/vehicle conflicts during the WALK phase of this crosswalk would be anticipated.

6B.5.3. ANALYSIS YEAR 2013/2014 (OPERATION)

The first year of operation of the emergency ventilation plant will be 2013 for the Preferred Alternative and 2014 for Alternatives SB1 and SB5. However, no changes to existing sidewalks or crosswalks are proposed as part of the Preferred Alternative and Alternatives SB1 and SB5, and thus, pedestrian conditions would revert to existing conditions once the emergency ventilation plant construction is completed. Trips generated by emergency ventilation plant operations would be minimal and limited to occasional trips related to plant maintenance and operational testing. Therefore, no pedestrian or transit analysis is required of the operational phase of the emergency ventilation plant.

**FIGURE 6B-4: 2010 PEDESTRIAN VOLUMES DURING CONSTRUCTION
ALTERNATIVE SB5 – STAGES 3 AND 4**



Legend :

47/44/46 AM/MD/PM Peak 15 Minute Volume (Build - 2010)

TABLE 6B-5: LOS FOR SIDEWALKS AND CROSSWALKS – THE PREFERRED ALTERNATIVE AND ALTERNATIVES SB1 AND SB5 (CONSTRUCTION CONDITIONS)

SIDEWALK ANALYSIS

Blockface	Between Points	Effective Sidewalk Width ¹ (Feet)	Peak 15 Minute Volume			Persons per Foot per Minute (PFM)			Average Level of Service			Platoon Conditions Level of Service		
			AM	MD	PM	AM	MD	PM	AM	MD	PM	AM	MD	PM
Greenwich Avenue (between 7th Ave and Perry St)	C/I	3	100	96	214	2	2	5	A	A	B	B	B	C
	B/G ²	3	84	143	141	2	3	3	A	B	B	B	B	B
7th Avenue (between Greenwich Ave/W 11th St and Perry St)	B/E ²	3	104	150	166	2	3	4	A	B	B	B	B	C
	A/D	3	80	105	123	2	2	3	A	A	B	B	B	B
Perry Street (between 7th Ave and Greenwich St)	E/G	3	2	15	13	0	0	0	A	A	A	B	B	B
	F/H	3	23	34	34	1	1	1	A	A	A	B	B	B

Note:

1. Total sidewalk width minus the sum of widths and clear distances from obstructions.
2. Analysis includes diverted pedestrians due to closure of Perry Street to through pedestrians

CROSSWALK ANALYSIS

Intersection	Between Points	Length (ft)	Width (ft)	Maximum Surge Pedestrian Space (SF/ped)			Maximum Surge Level of Service		
				AM	MD	PM	AM	MD	PM
7th Avenue @ Greenwich Avenue	B/C	42	23	54	73	79	B	B	B
	A/B	40	18	93	147	138	B	A	A
7th Avenue @ Perry St	E/F	35	10	63	68	68	B	B	B

6B.6. SUMMARY OF ADVERSE IMPACTS AND MITIGATION MEASURES

As discussed above, no adverse pedestrian or transit impacts were identified when measured by CEQR pedestrian and transit impact guidelines. However, also as noted above, there would be an increase in pedestrian/vehicle conflicts during the detour plan in effect in Stages 1 and 2 of each alternative on the east crosswalk of Seventh Avenue at Perry Street (crosswalk between corners E and F) and the crossing of Perry Street at Greenwich Avenue (between corners G and H).

With respect to the Seventh Avenue crosswalk (crosswalk between corners E and F), it would be possible to eliminate all pedestrian/vehicle conflicts across this crosswalk using common traffic engineering methods. To realize this condition, all traffic from Perry Street and Waverly Place would be precluded from continuing east on Perry Street between Seventh Avenue and Greenwich Avenue and routed to Seventh Avenue to Waverly Place to West 10th Street. This restriction would work in tandem with the left turn prohibition on the Perry Street approach to Greenwich Avenue discussed in Section 6A.6.2, which would already have encouraged the detour of most of this traffic from Perry Street and Waverly Place over the same detour route (see Figure 6A-6). This detour could be implemented by signage and the placement of temporary construction barriers at the intersection of Perry Street with Waverly Place. The WALK phase crossing of the Seventh Avenue crosswalk (between corners E and F) would then be shifted to coincide with the GREEN traffic signal phases of Perry Street and Waverly Place at their intersection with Seventh Avenue rather coinciding with the Seventh Avenue GREEN phase as it currently does and pedestrian conflicts at the crosswalk would be eliminated. A comparable crossing time would be provided to crossing pedestrians as that of existing conditions.

A measure to mitigate the potential increase in vehicle/pedestrian conflicts at the crossing of Perry Street at Greenwich Avenue (between corners G and H) would be to provide temporary traffic signalization of the intersection of Perry Street with Greenwich Avenue, which would eliminate all pedestrian/vehicle conflicts on this crossing. Analysis indicates that all approaches to a signalized intersection of Greenwich Avenue with Perry Street would operate at level of service C or better. The traffic signal GREEN phase to be provided to the Perry Street approach would coincide with the GREEN phase provided to the Seventh Avenue approach at Perry Street. This would minimize traffic queue backup from the temporary signal.