

13B.1 INTRODUCTION**13B.1.1 CONTEXT**

Before September 11, 2001, the World Trade Center (WTC) was a major transit hub and generator of pedestrian activity. Numerous transit lines including PATH, Metropolitan Transportation Authority/New York City Transit (MTA/NYCT) subways, and local and express buses served the WTC Site directly. More than 362,000 PATH and MTA/NYCT subway trips were made within and around the WTC Site on an average weekday. Ferry service was also provided within walking distance of the site. Pedestrians traveled through and across the site and underground pedestrian connections were provided from the site to other generators of activity in the area. The WTC previously housed the PATH Terminal and the No. 1/9 Cortlandt Street Station and underground connections to other transit lines were also available from the WTC Site. Both the PATH Terminal and the No. 1/9 Cortlandt Street Station were destroyed on September 11. Pedestrian facilities such as the North Bridge, the WTC Plaza, and all of the underground concourses were destroyed and the South Bridge (Liberty Street) was severely damaged on September 11, as described previously in Chapter 1, "Project Description."

During the recovery effort, sidewalks around the perimeter of the WTC Site and the Southern Site along Liberty Street were removed. Since pedestrian access was restricted in the area, local residents and employees had to find new ways around, rather than through, the WTC Site. Battery Park City residents and World Financial Center employees were effectively cut off from the rest of Lower Manhattan. The overall level of street activity in the area of the WTC Site declined significantly. This had a detrimental effect on local businesses dependent on pedestrian traffic. Some east-west mobility was restored to the area after the South Bridge was reconstructed and a temporary bridge crossing Route 9A was constructed in the vicinity of Rector Street.

By the spring of 2003, pedestrian access to the WTC Site was limited to the perimeter on the north side of Liberty Street, west side of Church Street, and north side of Vesey Street. No pedestrian movements were permitted on the east side of Route 9A or at the crosswalks of the Route 9A and Liberty Street intersection. Viewing areas were provided for visitors on Liberty Street and Church Street. Liberty Street and Vesey Street provided a direct connection from points east to the World Financial Center, Battery Park City, and ferry service. The pedestrian crossings of Route 9A included the South Bridge in the vicinity of Liberty Street, the Rector Street Bridge, and the at-grade crosswalk (north side only) at the Route 9A and Vesey Street intersection.

Conditions in Lower Manhattan have already begun to improve with the opening of the temporary WTC PATH station. In conjunction with the reopening of the temporary WTC PATH station in November 2003, a temporary bridge has been opened across Route 9A near Vesey Street. Since September 11, all of the subway stations near the Project Site (N/R Cortlandt Street

and the E World Trade Center Stations) have been reopened with the exception of the No. 1/9 Cortlandt Street Station. New subway stairs have been constructed on the west side of Church Street to access the southbound N/R Cortlandt Street Station platform. This access was formerly provided within the Project Site. The subway tunnel through the Project Site has been reconstructed, allowing the No. 1/9 trains to serve the South Ferry and Rector Street Stations.

Redevelopment of the Project Site would revitalize the area in terms of transit services and would reestablish businesses that would generate pedestrian activity. The proposed street grid on the WTC Site (Greenwich Street, Fulton Street, etc.) would also create at-grade pedestrian crossings that did not exist prior to September 11. This would improve the ability of Battery Park City residents and visitors to traverse the Project Site, in contrast to the relatively inaccessible elevated plaza that was in place before September 11. The new street network would also provide direct access to the proposed street level retail establishments on the WTC Site. This would create a sense of neighborhood within the Site that did not exist at street level before September 11.

The construction of the permanent WTC PATH Terminal includes underground pedestrian connections below the WTC Site to provide ingress and egress. Eight access points would be provided to connect the permanent WTC PATH Terminal to street-level locations within the WTC Site. In addition, an underground pedestrian connection would be constructed below Route 9A between the PATH Terminal and the World Financial Center. Another underground pedestrian connection may be constructed below Church Street that would connect Liberty Plaza on the east side of Church Street to the permanent WTC PATH Terminal. As part of the permanent WTC PATH Terminal project, escalators could be constructed to provide access between the underground pedestrian connection and Liberty Plaza.

Pending future approvals, construction of the Fulton Street Transit Center and the permanent WTC PATH Terminal are scheduled for completion by the end of 2008. The eventual reconstruction of the No. 1/9 Cortlandt Street Station would accommodate subway riders traveling to and from the Project Site. MTA/NYCT's proposed construction of the Fulton Street Transit Center would provide a direct underground pedestrian connection (Dey Street Passageway) to the No. 4/5 Fulton Street Station and to locations east of Broadway.

This chapter describes transit and pedestrian conditions that are built on two different "existing conditions" baseline scenarios—transit and pedestrian conditions that existed prior to the events of September 11, 2001 (Pre-September 11 Scenario), and transit and pedestrian conditions that existed in 2003 (Current Conditions Scenario). The Pre-September 11 Scenario reflects "existing" transit and pedestrian conditions at their peak level Pre-September 11, while the Current Conditions Scenario reflects the post-September 11 diminished level of transit and pedestrian activity characterizing the area in 2003.

Under both scenarios, the analyses then proceeds to projected future conditions in two analysis years, 2009 and 2015, when new development and transportation initiatives are expected to be in place, but without redevelopment of the Project Site (Future Without the Proposed Action). Two different sets of analyses of anticipated future conditions without the Proposed Action are presented. Under the Pre-September 11 Scenario, No Action conditions reflect estimated conditions in 2009 and 2015 had the events of September 11 not occurred. They account for development and activity that were present at the Project Site prior to September 11 and then adjust that baseline to account for projects that had been initiated at that time and likely would have been completed by the 2009 and 2015 analysis years. The No Action conditions under the

Current Conditions Scenario reflect conditions in 2009 and 2015 including expected development activity and public transportation initiatives being planned.

The analyses then proceed to project future conditions in 2009 and 2015 with the Proposed Action. Significant impacts created by the Proposed Action are identified and pedestrian crosswalk analyses for mitigation of those impacts are presented in Chapter 22, ‘Mitigation Measures.’ These mitigation measures are defined with the objective of returning conditions to levels that would have existed in 2009 and 2015 had the events of September 11 not occurred. The analyses of transit and pedestrian conditions are built on two different “existing conditions” baseline scenarios— transit and pedestrian conditions that existed prior to the events of September 11, 2001 (Pre-September 11 Scenario), and transit and pedestrian conditions that existed in 2003 (Current Conditions Scenario). The Pre-September 11 Scenario reflects “existing” transit and pedestrian conditions at their peak level pre-September 11, while the Current Conditions Scenario reflects the post-September 11 diminished level of vehicular transit and pedestrian activity characterizing the area in 2003.

13B.1.2 CONCLUSIONS

PRE-SEPTEMBER 11 SCENARIO

Transit

The subway trips projected to be generated by the Proposed Action in 2009 and 2015 would increase the demand on the subway lines serving the Project Site. Each subway element within these stations was evaluated to determine their projected level of service during the AM and PM peak periods. Based on a comparison between the Future With the Proposed Action and the Future Without the Proposed Action under the Pre-September 11 Scenario, none of these elements would be significantly impacted by the Proposed Action in either 2009 or 2015. In terms of subway line-haul capacity, none of the subway lines serving the Project Site would be significantly impacted by the Proposed Action in either 2009 or 2015.

The number of bus trips projected to be generated by the Proposed Action in 2009 and 2015 would increase the demand for local and express buses serving the Project Site. It is anticipated that most of the demand would be accommodated by unused capacity on such bus routes and that the Proposed Action would not have any significant adverse effect on bus service. MTA/NYCT routinely evaluates bus operations and would be expected to determine whether routing or frequencies need to be adjusted in 2009 and 2015 to accommodate any isolated excesses in demand on specific local or express routes.

The number of ferry trips projected to be generated by the Proposed Action in 2009 and 2015 would be less than the ferry trips generated as a result of the WTC PATH Terminal closure from 2001 to 2003. The capacity of the World Financial Center ferry terminal is expected to be increased prior to 2015, and that terminal could accommodate an increase in ferry demand. The private ferry operators serving the World Financial Center ferry terminal could adjust service in 2009 and 2015 to accommodate increased demand.

Pedestrians

Pedestrian analyses were performed for subway stairways, ramps, escalators, and turnstiles. The analysis of 2009 and 2015 assumed that the construction of the Fulton Street Transit Center and the permanent WTC PATH Terminal would be completed and operational. Based upon a comparison between the future with the Proposed Action and the future without the Proposed

Action under the Pre-September 11 Scenario, none of the station elements would have significant adverse impacts as a result of the Proposed Action in either 2009 or 2015. Pedestrian analyses were also performed for street-level crosswalks and sidewalk locations in the vicinity of the Project Site. Separate analyses were performed at the Church Street and Liberty Street intersection both with and without the underground connection between the WTC Site and Liberty Plaza.

The Proposed Action would locate building entrances on the northern part of the WTC Site in closer proximity to Vesey Street than was the case pre-September 11. As a result, more pedestrian traffic is anticipated within the Vesey Street corridor. All pedestrian access to Tower 5 south of Liberty Street would be at-grade. Consequently, a significant number of pedestrians would be assigned to the Greenwich Street and Liberty Street intersection. The sidewalks along Vesey Street, Greenwich Street, and Liberty Street can adequately accommodate these anticipated increases in pedestrian traffic.

However, based upon a comparison between the future with the Proposed Action and the future without the Proposed Action under the Pre-September 11 Scenario, *eight* crosswalks would experience significant impacts in 2009 as a result of the Proposed Action. As discussed in Chapter 22, "Mitigation Measures," *five* of these impacts could be mitigated by widening the crosswalks. The other *three* crosswalks could not be fully mitigated but could be widened to a maximum of 20 feet to minimize the effect of the Proposed Action.

In 2015, the Proposed Action would result in significant impacts at 13 crosswalks, of which *seven* could be mitigated by widening the crosswalks. The other *six* crosswalks that could not be fully mitigated could be widened to a maximum of 20 feet to minimize the effect of the Proposed Action. Although the Proposed Action would cause some unmitigatable crosswalk impacts in 2009 and 2015, pedestrians would be able to cross streets at these crosswalk locations with slightly more peak hour congestion but with little or no appreciable change in crossing time.

CURRENT CONDITIONS SCENARIO

As a result of the events of September 11, current transit and pedestrian volumes in the vicinity of the WTC Site are significantly lower than before the disaster. The transit and pedestrian volumes that will be generated by development projects currently in the planning or construction process are even more extensive than those that were under consideration before the events of September 11. Based on a comparison between the future with the Proposed Action and the future without the Proposed Action under the Current Conditions Scenario, more substantial increases in transit and pedestrian volumes will occur than were projected under the Pre-September 11 Scenario.

Transit

Pedestrian analyses were also performed for subway stairways, ramps, escalators, and turnstiles for the Current Conditions Scenario in 2009 and 2015. Based on a comparison between the future with the Proposed Action and the future without the Proposed Action under the Current Conditions Scenario, none of these elements would be significantly impacted by the Proposed Action in 2009. However, one of these elements would be impacted by the Proposed Action in 2015. In terms of subway line-haul capacity, none of the subway lines serving the Project Site would be significantly impacted by the Proposed Action in either 2009 or 2015. MTA/NYCT routinely evaluates bus operations and would be expected to determine whether routing or frequencies need to be adjusted in 2009 and 2015 to accommodate any isolated excesses in

demand on specific local or express routes. The private ferry operators serving the World Financial Center ferry terminal could adjust service in 2009 and 2015 to accommodate increased demand.

Pedestrians

Pedestrian analyses were also performed for street-level crosswalks and sidewalk locations in the vicinity of the Project Site under the Current Conditions Scenario. The sidewalks along Vesey, Greenwich, and Liberty Streets can adequately accommodate these anticipated increases in pedestrian traffic. However, based upon a comparison between the future with the Proposed Action and the future without the Proposed Action under the Current Conditions Scenario, 17 crosswalks would experience significant impacts in 2009 as a result of the Proposed Action. In 2015, the Proposed Action would result in significant impacts at 24 crosswalks during the peak periods analyzed.

13B.2 METHODOLOGY

The transit and pedestrian section of this chapter describes the travel characteristics and volumes of persons moving into, out from, or through the project study area either by mass transportation or on foot. The results of field data surveys for pedestrian volumes, subway volumes, bus operations, physical inventories, infrastructure, and travel characteristics have been documented in this chapter. The analysis considers line haul capacity for subway lines. A qualitative assessment of service capacity for bus routes and ferry service is also provided. In terms of pedestrians, analyses were performed for subway elements including stairways, ramps, and turnstiles. For street-level pedestrians, analyses were performed for crosswalks and sidewalk locations. Individual study areas have been defined for each analysis category later in this chapter.

All transit and pedestrian analyses were prepared for the Pre-September 11 Scenario reflecting conditions if the attacks of September 11 had not occurred, and Current Conditions Scenario reflecting existing conditions. Future 2009 and 2015 conditions both with and without the Proposed Action, for the AM, midday, and PM peak periods, were evaluated for each scenario. Where the potential for significant impacts is identified, appropriate mitigation measures are described in Chapter 22, "Mitigation Measures."

13B.2.1 CAPACITY ANALYSIS METHODOLOGY

This section describes the methodologies used to analyze locations within the study area. It also includes a discussion of the criteria used to determine significant impacts under the Pre-September 11 Scenario based upon a comparison between the future with the Proposed Action in 2009 and 2015 and the future without the Proposed Action in 2009 and 2015.

The existing and future transit and pedestrian analyses were conducted using the methodologies presented in the *City Environmental Quality Review (CEQR) Technical Manual* (2002). Quantitative analyses were performed for bus service and subway line haul capacity based upon the MTA/NYCT guidelines for capacity. Subway pedestrian analyses were based upon MTA/NYCT's *Station Planning and Design Guidelines*. The analyses conducted for surface pedestrians were performed using the analytical procedures described in the *Highway Capacity Manual (HCM)*; *Special Report 209*, 3rd Edition, 1994 (the procedures outlined in the 2000 HCM have not been incorporated into the *CEQR Technical Manual*). The analysis provided for

ferry operations was performed on a qualitative basis. The detailed quantitative methodologies for transit and pedestrian analyses are presented in the following section.

TRANSIT

MTA/NYCT Bus Service Analysis Methodology

The analysis of bus routes in the study area considers the number of persons per bus in the peak hour at the peak-load locations. The busload levels at a route's maximum load point are compared with the route's capacity. Route capacity is calculated by multiplying the number of scheduled buses on the route in the peak hour by the capacity of the buses used on that route. Standard MTA/NYCT buses have a seating capacity of 40 passengers. Under normal conditions, these MTA/NYCT buses can accommodate a total of 25 standees. As a result, MTA/NYCT has established the capacity of its buses at 65 passengers. Once more than 65 passengers are on a bus, boarding and alighting becomes difficult as movement throughout the bus is severely limited. This would represent overcrowded conditions. Some routes operated by MTA/NYCT use articulated buses that can accommodate significantly more passengers (approximately 93). *The capacity of a 45-foot express coach bus is estimated at 57 passengers.*

MTA/NYCT Subway Line Haul Analysis Methodology

The analysis of subway line haul in the study area considers the number of persons traveling past a fixed point on a subway line in a given direction during the peak hour. The line haul ridership levels at the fixed point are compared with the subway line's hourly capacity. The line haul capacity of a subway line is calculated by multiplying the number of scheduled peak hour trains by MTA/NYCT's per-car practical capacity for trains used on that line. MTA/NYCT subway car equipment varies by subway line. Generally, there are three different sizes of subway cars used throughout the MTA/NYCT subway system. The practical capacity of the equipment established by MTA/NYCT is 120, 180, or 220 persons per subway car. This includes all seated passengers and standees. Once the practical capacity is reached, boarding and alighting becomes difficult and movement through the train is severely limited.

Subway line haul analysis is conducted only for the AM period since travel during the AM peak period is more condensed than the PM peak period. According to MTA/NYCT, PM peak hour subway ridership is generally 85 percent that of the AM peak hour ridership.

SUBWAY ELEMENTS

Detailed subway pedestrian analyses were conducted at the critical subway locations in the study area using the analytical procedures consistent with MTA/NYCT capacity guidelines, which are based on the peak 15-minute period volumes. The results are organized into level-of-service (LOS) measures, which define the flow of pedestrians and the level of congestion. Pedestrian LOS looks at the relative ease with which pedestrian movements are made and how much space is available to make them. Pedestrian LOS ranges from A (lowest level of congestion) to F (highest level of congestion). For subway stairways, LOS A is characterized by unrestricted flow while pedestrian flow is slightly restricted for LOS B. At LOS C, pedestrian movement is somewhat restricted but with a fluid rate of speed. Walking speeds are reduced and reverse flows and cross flows are severely restricted at LOS D. For LOS E, walking speed is restricted, there is insufficient room to pass, and counter-flow movements are difficult. LOS F is characterized by severe congestion with limited to-no pedestrian flow, starting and stopping, and the formation of queues.

Subway Stairway, Corridor, and Ramp Analysis Methodology

The level of service (LOS) for stairways, corridors, and ramps was evaluated based on the Volume/SVCD (service volume between LOS C and D) capacity ratio. The breakpoint between LOS C and LOS D at a volume to capacity (v/c) ratio of 1.00 has been established by MTA/NYCT as the minimum acceptable standard for pedestrian conditions. Therefore, LOS C/D is used to determine the design capacity of the critical stairways, corridors, and ramps locations in a station during each peak 15-minute period. The processing of pedestrians at LOS C/D for facilities such as stairways, corridors, and ramps is reduced by between 0 and 20 percent based upon opposing flow volumes. This accounts for the “friction” of pedestrians traveling in both directions. In accordance with MTA/NYCT guidance, the capacity of the stairways, corridors, and ramps was further reduced by 25 percent to account for peaking or surging within the 15-minute period. *This method is more conservative than what is presented in the CEQR Technical Manual, but was used to maintain consistency in the methodology used among Lower Manhattan Recovery Projects, specifically the Fulton Street Transit Center.* The LOS criteria for pedestrian stairways, corridors, and ramps are defined in Table 13B-1.

**Table 13B-1
LOS Criteria for Stairways, Corridors, and Ramps**

LOS	Volume/SVCD Ratio
A	≤ 0.45
B	> 0.45 to ≥ 0.70
C	> 0.70 to ≥ 1.00
D	> 1.00 to ≥ 1.33
E	> 1.33 to ≥ 1.67
F	> 1.67

Source: CEQR Technical Manual (2002)

Escalator and Turnstile Analysis Methodology

The capacity of an escalator is based upon the incline speed and the size of the steps. According to *Pedestrian Planning and Design*, an escalator with a width at the hips of 32 inches, width at the treads of 24 inches, and an incline speed of 90 feet per minute (68 steps per minute) has a maximum theoretical capacity of approximately 83 persons per minute (5,000 persons per hour). However, the nominal capacity of an escalator is actually less when unused space on each step, arrival patterns, and boarding characteristics are factored in. As a result, the nominal capacity of the same escalator, based upon a rate of one person for every other step, is approximately 34 persons per minute (2,040 persons per hour) or approximately 510 persons per 15 minutes. MTA/NYCT guidance requires that this capacity be further reduced by 25 percent to account for a peak surge of pedestrians within the 15-minute period. According to the criteria developed by MTA/NYCT, the LOS criteria have been developed based upon the 15-minute volume-to-capacity ratios and summarized in Table 13B-2.

According to the MTA/NYCT design guidelines, the theoretical capacity of a regular turnstile is 30 persons per minute for entries, 40 persons per minute for exits, and 32 persons per minute for combined entries and exits. A high entrance/exit turnstile (HEET) is a revolving gate that permits entrance flows with a Metrocard and does not restrict exit flows. The theoretical capacity of a HEET is 20 persons per minute. These LOS thresholds for turnstiles and HEETs are the same as for escalators and can be found in Table 13B-2.

**Table 13B-2
LOS Criteria for Escalators and Turnstiles**

LOS	Volume/Capacity Ratio
A	< 0.20
B	≥ 0.20 to < 0.40
C	≥ 0.40 to < 0.60
D	≥ 0.60 to < 0.80
E	≥ 0.80 to < 1.00
F	> 1.00
Source: CEQR Technical Manual (2002)	

SURFACE PEDESTRIANS

Crosswalk Analysis Methodology

The capacity of a crosswalk is evaluated in terms of speed, density, space, and flow. LOS is evaluated on the basis of square feet per pedestrian. The calculation of pedestrian flow 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 begins. The number of opposing left-turn and right-turn vehicles are incorporated into the crosswalk analysis.

An LOS between A and D is considered to 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, as defined in the HCM, are presented in Table 13B-3.

**Table 13B-3
LOS Criteria for Crosswalks**

LOS	Square Feet/Pedestrian
A	≥ 130
B	< 130 to ≥ 40
C	< 40 to ≥ 24
D	< 24 to ≥ 15
E	< 15 to ≥ 6
F	< 6
Source: Highway Capacity Manual (HCM); Special Report 209, 3rd Edition, 1994	

Sidewalk/Walkway Analysis Methodology

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 (groups of pedestrians) 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 13B-4.

**Table 13B-4
LOS Criteria for Side walks/Walkways**

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

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

13B.2.2 IMPACT CRITERIA

The criteria presented in the *CEQR Technical Manual* were used to determine significant transit and pedestrian impacts in the study area in 2009 and 2015. Future conditions under the Pre-September 11 Scenario for the future with the Proposed Action in 2009 and 2015 were compared with the future without the Proposed Action in 2009 and 2015. The criteria used to determine significant impacts for each type of analysis are presented in the following section.

TRANSIT

MTA/NYCT Bus Service Impact Criteria

For MTA/NYCT buses, a comparison of passenger volumes is made between the maximum load point on a route for the AM and PM peak conditions and the capacity to accommodate these passengers. According to the *CEQR Technical Manual*, any increase in bus load levels to above a route's maximum capacity is considered a significant impact that would require an increase in MTA/NYCT bus service to accommodate additional passengers.

MTA/NYCT Subway Line Haul Impact Criteria

The projected increase in AM peak hour ridership on a per-car basis is compared to passenger volumes at a fixed point for analysis of a subway line. A separate PM peak hour analysis is not performed for the PM peak hour because ridership demands are lower. According to the *CEQR Technical Manual*, a significant impact may be determined if a subway line is forecast to change from being below its practical capacity in the projected future condition without the Proposed Action to exceeding its practical capacity as a result of the Proposed Action. For the scenarios under consideration, increases of less than five transit riders per car are generally not considered to be significant.

SUBWAY ELEMENTS

Subway Stairway Impact Criteria

For stairways, impacts are determined to be significant in terms of the width increment threshold (stairway widening) needed to restore the future conditions with the Proposed Action condition

LOS to the projected future without the Proposed Action condition LOS. Significant impacts are considered for locations with a projected future without the Proposed Action LOS D condition if a stairway widening of six inches or more is needed for the stairway LOS in the future conditions with the Proposed Action condition to return to the projected future without the Proposed Action condition. At a stairway location forecast to operate at LOS E or F without the Proposed Action condition, a stairway widening of three or one inches or more, respectively, needed to return the LOS to the projected future without the Proposed Action condition would be considered significant.

Subway Corridor and Ramp Impact Criteria

For corridors and passageways, impacts are deemed significant if a location operates at LOS D, E, or F in the projected future without the Proposed Action condition and requires a widening of 12, 6, or 3 inches or more, respectively, to return the future conditions with the Proposed Action condition LOS to the projected future without the Proposed Action condition LOS.

Escalator and Turnstile Impact Criteria

Proposed actions that cause the volume-to-capacity (V/C) ratio to increase from below 1.00 in the projected future condition without the Proposed Action to a V/C ratio of 1.00 or greater in the projected future condition with the Proposed Action would be considered significant. When a facility operates above a v/c of 1.00, an increase of 0.01 would be considered significant.

SURFACE PEDESTRIANS

Crosswalk Impact Criteria

The threshold for determining impacts to crosswalks in Lower Manhattan is associated with a minimum average occupancy of 15 square feet per pedestrian (the breakpoint between LOS D and E). Crosswalks that have a projected future without the Proposed Action with an average occupancy above 15 square feet per pedestrian (LOS A through D) may be impacted if the pedestrian area occupancy falls to 14 square feet per pedestrian or lower as a result of the Proposed Action. Crosswalks that have a projected future without the Proposed Action average occupancy below 15 square feet per pedestrian (LOS E or F) may be impacted if the pedestrian area occupancy falls by 1 square feet per pedestrian or more as a result of the Proposed Action. The maximum surge conditions were used in the analysis of crosswalks.

Sidewalk/Walkway Impact Criteria

For sidewalk and walkway locations within Lower Manhattan, a significant impact may take place if an increase in the pedestrian flow rate of 2 pedestrians per foot per minute or more in the future conditions with the Proposed Action occurs at a location that has a projected future condition without the Proposed Action flow rate over 15 pedestrians per foot per minute (the breakpoint between LOS D and E). Platoon (groups of pedestrians) conditions were used in the analysis of sidewalks/walkways.

13B.3 CURRENT CONDITIONS SCENARIO

The Current Conditions Scenario includes all transit and pedestrian activities that existed in the vicinity of the Project Site during the spring of 2003. This includes all MTA/NYCT subway service that was restored to Lower Manhattan. The lone exception to this is the continued closure of the No. 1/9 Cortlandt Street Station that was destroyed on September 11. All connections between the existing transit facilities and the Project Site remain closed. New subway stairs were constructed on the west side of Church Street to replace the access to the southbound N/R

platform formerly provided within the WTC Site. Because the data compiled for the analysis preceded the opening of the temporary WTC PATH station, the Current Conditions Scenario assumes that the PATH service between New Jersey and Lower Manhattan has not yet been restored (the reopening of PATH service has been accounted for in the future without the Proposed Action Condition in 2009 and 2015). Increased ferry service was provided by private operators between Lower Manhattan and New Jersey to account for the loss of PATH service into the WTC Site. MTA/NYCT bus service is similar to the conditions prior to September 11.

The following are assumptions about the Current Conditions Scenario with respect to pedestrian facilities. Pedestrian facilities such as the North Bridge, the WTC Plaza, and all of the underground pedestrian connections that were destroyed were not included. Access is limited to the perimeter of the WTC Site within the road bed of Liberty Street, west side of Church Street, and north side of Vesey Street. Both Liberty Street south of the WTC Site and Vesey Street north of the WTC Site between Route 9A and Church Street remain closed to private vehicle traffic. Liberty Street and Vesey Street provide a direct pedestrian connection from points east to the World Financial Center, Battery Park City, and ferry service. No pedestrian movements are permitted on the east side of Route 9A or at the crosswalks of the Route 9A and Liberty Street intersection. Viewing areas are provided on Liberty Street and Church Street as well as in the new temporary WTC PATH station. The existing crossings of Route 9A include the South Bridge in the vicinity of Liberty Street and the at-grade crosswalk (north side only) at the Route 9A and Vesey Street intersection.

13B.3.1 DATA COLLECTION

TRANSIT

MTA/NYCT Operations Planning provided bus data for the routes serving the study area for the peak load points and bus frequency in the spring of 2003. Counts of all station elements in the Fulton Street Center, WTC Complex, and the N/R Cortlandt Street Station were conducted during the AM and PM peak periods in the spring of 2003 on a mid-week day (i.e. Tuesday, Wednesday, or Thursday) during the AM (7:30 to 9:00) and PM (4:30 to 6:00) peak periods. These counts were summarized into 15-minute intervals during each peak period. Measurements were taken of all of these elements and the effective widths were calculated based upon the reduction of six inches on either side of any obstructions (walls, handrails, etc.). Subway boarding, alighting, on board passenger data, and service frequencies were provided by MTA/NYCT Operations Planning for the subway lines serving Lower Manhattan during the AM peak hour in the spring of 2003.

PEDESTRIANS

Pedestrian counts were conducted in the spring of 2003 at all major crosswalk locations and bridges in the vicinity of the WTC Site on a mid-week day (Tuesday, Wednesday, or Thursday) during the AM (7:00 to 10:00), midday (11:00 to 2:00) and PM (3:00 to 6:00) peak periods. These counts were summarized into 15-minute intervals during each peak period.

13B.3.2 EXISTING CONDITIONS 2003

TRANSIT

Bus Routes

The Current Condition bus network includes the routes serving Route 9A, Church Street, Broadway, and the City Hall area in close proximity to the Project Site. These routes in the study area are comprised of local and express bus service provided by MTA/NYCT, express routes provided by private carriers subsidized by New York City Department of Transportation (NYCDOT), and express routes provided by independent private carriers. A summary of these routes in terms of description and frequency of service is provided on Tables 13B-5 to 13B-6.

Local Bus Routes

The role of local buses is to serve the immediate Lower Manhattan area and to connect it with various parts of Manhattan to the north and Downtown Brooklyn. Local bus routes are designed to collect and distribute passengers throughout the service area. All local bus routes operate during the weekdays and most provide weekend service. All public local bus routes are operated by MTA/NYCT and provide extensive service throughout Lower Manhattan. MTA/NYCT operates 12 local bus routes in Lower Manhattan including the following: M1, M1 Limited, M6, M9, M15 (South Ferry), M15 Limited (South Ferry), M15 (City Hall/Park Row), M15 Limited (City Hall/Park Row), M20, M22, M103, and B51.

Since local buses operate with relatively short headways (less than ten minutes) and make many stops, service is frequent throughout the Lower Manhattan service area, particularly during the weekday morning and evening peak periods. All local bus routes in the study area start/terminate in Lower Manhattan and connect with destinations in Midtown and Upper Manhattan with the exception of the B51, which operates between Lower Manhattan and Downtown Brooklyn via the Manhattan Bridge. The busiest local bus route in Lower Manhattan (and New York City) is the M15 (including limited), which averages over 65,000 riders on a weekday. The M15 is also the only bus route with two different terminal points in Lower Manhattan (South Ferry and Park Row/City Hall). The M15 and the M1 routes operate “limited stop” local service that skips selected bus stops to provide a faster service.

The closest local bus service to the WTC Site is provided by the M1 from Harlem and M6 from Central Park South. These two bus routes travel southbound along Broadway to South Ferry and northbound on Trinity Place/Church Street for their return trips uptown. Other nearby bus routes east of the WTC Site include the M15 (Harlem), M103 (Harlem), and B51 (Downtown Brooklyn) routes, all terminating at City Hall/Park Row (a 5-10 minute walk from the WTC Site). West of the WTC, three local bus routes provide local service. The M22 travels between Grand Street/FDR in Lower East Side via westbound Chambers Street and North End Avenue to the World Financial Center at Vesey Street. On its eastbound trip, the M22 also passes along City Hall/Park Row. The M20 from Lincoln Center terminates at Battery Park City from the north while the M9 from Union Square terminates there from the south. Both bus routes pass by the WTC Site along West Street and South End Avenue. A map of the local bus routes serving Lower Manhattan (Current Conditions) is provided on Figure 13B-1.

**Table 13B-5
Local Bus Routes Serving Lower Manhattan**

DESCRIPTION OF BUS SERVICE				Current Conditions Scenario								PRE-September 11 Scenario							
Bus Route	Start Point	End Point	Comments	FREQUENCY OF BUS SERVICE (MINUTES)								FREQUENCY OF BUS SERVICE (MINUTES)							
				Weekday Service Period				Weekend Service		AM Peak Hour (8-9AM)	PM Peak Hour (5-6PM)	Weekday Service Period				Weekend Service		AM Peak Hour (8-9AM)	PM Peak Hour (5-6PM)
				AM Peak	Mid-day	PM Peak	Evening	Sat.	Sun.			AM Peak	Mid-day	PM Peak	Evening	Sat.	Sun.		
M1	S. Ferry or E. Village	Harlem	Via 5th and Madison Avenues; Limited stops available	18	18	13	-	-	-	3	5	12	18	18	-	-	-	3	5
M1 Limited	S. Ferry or E. Village	Harlem	Via 5th and Madison Avenues; Limited-stop service available	11	-	12	-	-	-	4	3	20	-	20	-	-	-	4	3
M6	South Ferry	Central Park South	Via 6th Avenue and Broadway	16	9	9	12	9	10	4	7	15	9	9	15	9	10	4	7
M9	Battery Park City	Union Square	Via Avenue B and East Broadway	13	15	12	30	16	20	6	5	9	15	12	30	20	20	6	5
M15	South Ferry	East Harlem	Via 1st and 2nd Avenues	12	30	20	30	10	10	5	3	12	30	20	30	10	10	5	3
M15 Limited	South Ferry	East Harlem	Via 1st and 2nd Avenues	10	10	12	10	10	10	6	5	10	12	12	10	10	10	6	5
M15	Park Row/ City Hall	East Harlem	Via 1st and 2nd Avenues	12	30	20	-	-	-	3	3	12	30	20	-	-	-	3	3
M15 Limited	Park Row/ City Hall	East Harlem	Via 1st and 2nd Avenues	15	10	15	18	-	-	4	4	15	10	15	18	-	-	4	4
M20	Battery Park City	Lincoln Center	Via 7th and 8th Avenues	15	12	12	12	10	15	4	5	12	2	12	12	15	12	4	5
M22	Battery Park City	Lower East Side	Via Madison & Chambers Streets	5	15	7	15	12	15	17	10	8	15	12	15	12	15	17	10
M103	Park Row/ City Hall	East Harlem	Via 3rd and Lexington Avenues	9	10	10	15	9	12	7	7	10	12	10	15	10	15	7	7
B51	Park Row/ City Hall	Downtown Brooklyn	Via the Manhattan Bridge	20	30	20	-	-	-	3	3	15	30	15	-	-	-	4	4

Source: MTA New York City Transit

**Table 13B-6
Express Bus Routes Serving Lower Manhattan**

DESCRIPTION OF BUS SERVICE				Current Conditions Scenario								PRE-September 11 Scenario								
Bus Route	Start Point	End Point	Comments	FREQUENCY OF BUS SERVICE (MINUTES)								FREQUENCY OF BUS SERVICE (MINUTES)								
				Weekday Service Period				Weekend Service		AM Peak Hour (8-9AM)	PM Peak Hour (5-6PM)	Weekday Service Period				Weekend Service		AM Peak Hour (8-9AM)	PM Peak Hour (5-6PM)	
				AM Peak	Mid-day	PM Peak	Evening	Sat.	Sun.			AM Peak	Mid-day	PM Peak	Evening	Sat.	Sun.			
<i>MTA New York City Transit—Staten Island Express Bus Service</i>																				
X1	Midtown Manhattan	Eltingville	Via Church Street/Broadway in Lower Manhattan	7	18	6	9	20	30	9	10	7	15	6	10	20	30	8	10	
X3	Lower Manhattan	New Dorp	Via Vesey and West Streets	16	-	16	-	-	-	4	6	9	-	9	-	-	-	6	6	
X4	Lower Manhattan	Eltingville	Via Vesey and West Streets	15	-	12	-	-	-	5	9	9	-	6	-	-	-	8	8	
X6	Midtown Manhattan	Eltingville	Via West Street in Lower Manhattan	14	-	18	-	-	-	6	4	7	-	15	-	-	-	8	5	
X7	Midtown Manhattan	Eltingville	Via West Street in Lower Manhattan; Via Great Kills	12	-	20	-	-	-	6	3	7	-	10	-	-	-	7	5	
X8	Lower Manhattan	Eltingville	Via Water Street; Via Great Kills only	9	-	14	-	-	-	8	6	6	-	8	-	-	-	9	8	
X9	Midtown Manhattan	New Dorp	Via West Street in Lower Manhattan	8	-	12	-	-	-	6	4	8	-	12	-	-	-	5	5	
X10	Midtown Manhattan	Port Richmond	Via West Street in Lower Manhattan	11	20	11	13	30	60	6	6	11	30	11	15	30	60	6	5	
X11	Lower Manhattan	Travis	Via Church Street/Broadway	15	-	12	-	-	-	5	7	12	-	8	-	-	-	5	8	
X12A	Via Lower Manhattan	Mariner's Harbor	Via Church Street/Broadway	14	-	13	-	-	-	3	4	8	-	15	-	-	-	9	4	
X12B	Lower Manhattan Only	Mariner's Harbor	Via Church Street/Broadway	21	-	-	-	-	-	5	4	15	-	12	-	-	-	1	5	
X13	Lower Manhattan	Port Richmond	Via Church Street/Broadway; Midtown Route Via Lower Man.	20	-	15	-	-	-	4	5	7	-	10	-	-	-	9	7	
X14	Midtown Manhattan	Port Richmond	Via Water Street	No Longer In Service								13	-	10	-	-	-	-	5	4
X15	Lower Manhattan	Eltingville	Via Park Row; Via Richmond Road	11	-	12	-	-	-	7	8	7	-	8	-	-	-	7	7	
X16	Lower Manhattan	Port Richmond	Via Church Street/Broadway	19	-	18	-	-	-	2	4	12	-	15	-	-	-	2	3	

Table 13B-6 (cont'd)
Express Bus Routes Serving Lower Manhattan

DESCRIPTION OF BUS SERVICE				Current Conditions Scenario								PRE-September 11 Scenario							
Bus Route	Start Point	End Point	Comments	FREQUENCY OF BUS SERVICE (MINUTES)								FREQUENCY OF BUS SERVICE (MINUTES)							
				Weekday Service Period				Weekend Service		AM Peak Hour (8-9AM)	PM Peak Hour (5-6PM)	Weekday Service Period				Weekend Service		AM Peak Hour (8-9AM)	PM Peak Hour (5-6PM)
				AM Peak	Mid-day	PM Peak	Evening	Sat.	Sun.			AM Peak	Mid-day	PM Peak	Evening	Sat.	Sun.		
X17A	Lower Manhattan	Annadale	Via Church Street/Broadway	11	-	9	-	-	-	6	9	10	-	7	-	-	-	7	11
X17C	Midtown Manhattan	Huguenot	Via Church Street/Broadway in Lower Manhattan	-	30	-	13	60	-	N/A	N/A	-	45	-	20	60	-	N/A	N/A
X18	Lower Manhattan	Rosebank	Via Park Row	15	-	21	-	-	-	5	4	12	-	18	-	-	-	5	4
X19	Lower Manhattan	Huguenot	Via Church Street/Broadway	15	-	11	-	-	-	4	8	13	-	10	-	-	-	4	8
X20	Lower Manhattan	Arrochar	Via Park Row	46	-	45	-	-	-	1	2	20	-	30	-	-	-	3	2
MTA New York City Transit – Manhattan Express Bus Service																			
X25	Battery Park City	Grand Central	Via Chambers and Worth Streets	30	-	30	-	-	-	3	1	25	-	20	-	-	-	3	3
X90	World Trade Center	Yorkville	Via Water Street	13	-	18	-	-	-	8	4	15	-	20	-	-	-	8	4
X92	Broad and Water Streets	Yorkville	Via water Street	13	-	19	-	-	-	6	5	10	-	20	-	-	-	6	5
MTA New York City Transit – Brooklyn Express Bus Service																			
X27	Midtown Manhattan	Bay Ridge	Via Church Street/Broadway in Lower Manhattan	9	60	15	21	-	-	10	5	2	45	5	15	-	-	15	8
X28	Midtown Manhattan	Sea Gate or Bensonhurst	Via Church Street/Broadway in Lower Manhattan	8	60	12	19	-	-	10	8	4	60	8	16	-	-	15	8
X29	Midtown Manhattan	Coney Island	Via Church Street/Broadway in Lower Manhattan	11	-	12	-	-	-	7	7	8	-	9	-	-	-	7	7
NYCDOT-Franchised – Brooklyn Express Bus Service: Command Bus Company																			
BM1	Midtown Manhattan	Mill Basin	Via Lower Manhattan; Peak service to Lower Man. or Midtown	13	30	16	30	90	-	7	5	10	30	12	30	90	-	9	7
BM2	Midtown Manhattan	Canarsie	Via Lower Manhattan; Peak service to Lower Manhattan or Midtown	11	40	16	30	90	-	4	4	8	40	12	30	90	-	5	5

**Table 13B-6
Express Bus Routes Serving Lower Manhattan**

DESCRIPTION OF BUS SERVICE				Current Conditions Scenario								PRE-September 11 Scenario							
Bus Route	Start Point	End Point	Comments	FREQUENCY OF BUS SERVICE (MINUTES)								FREQUENCY OF BUS SERVICE (MINUTES)							
				Weekday Service Period				Weekend Service		AM Peak Hour (8-9AM)	PM Peak Hour (5-6PM)	Weekday Service Period				Weekend Service		AM Peak Hour (8-9AM)	PM Peak Hour (5-6PM)
				AM Peak	Mid-day	PM Peak	Evening	Sat.	Sun.			AM Peak	Mid-day	PM Peak	Evening	Sat.	Sun.		
BM2S	Midtown Manhattan	Starrett City	Via Lower Manhattan; PM peak from Lower Manhattan only	31	-	60	-	-	-	3	1	31	-	60	-	-	-	3	1
BM3	Midtown Manhattan	Kingsbay	Via Lower Manhattan; Peak service to Lower Manhattan or Midtown	13	35	16	33	90	-	6	5	10	35	12	33	90	-	8	7
BM4	Midtown Manhattan	Gerritsen Beach	Via Lower Manhattan; Peak service to Lower Manhattan or Midtown	19	60	19	120	180	-	4	5	14	60	14	120	180	-	5	7
NYCDOT-Franchised – Queens Express Bus Service Queens Surface Corp. & Triborough Coach Lines																			
QM1	Lower or Midtown Manhattan	Fresh Meadows	Operated by Queens Surface Corp.	8	45	19	-	-	-	13	4	8	45	19	-	-	-	13	4
QM1A	Lower or Midtown Manhattan	Glen Oaks or North Shore	Operated by Queens Surface; PM peak Glen Oaks Super Express	15	-	16	-	-	-	4	7	15	-	16	-	-	-	4	7
QM11	Lower Manhattan	Lefrak City	Operated by Triborough Coach Lines	13	-	19	-	-	-	7	5	3	-	27	-	-	-	7	4
QM24W	Lower Manhattan	Glendale	Operated by Triborough Coach Lines	11	-	20	-	-	-	6	4	10	-	13	-	-	-	8	8
NYCDOT-Franchised – Bronx Express Bus Service: Liberty Lines Express																			
BxM18	Lower Manhattan	Riverdale	Via Midtown Manhattan	20	-	38	-	-	-	3	2	20	-	38	-	-	-	3	2

Source: MTA New York City Transit

Express Bus Routes

The role of MTA/NYCT express buses is to serve commuters living in various New York City communities and to transport them to and from Lower Manhattan. Over 35 express bus routes operate between Lower Manhattan and various parts of New York City (mostly the outer boroughs). Classified as “regional commuter express buses”, these express bus routes operate on a limited schedule (usually during the morning and evening peak periods) and are designed to bring commuters from distant locations into Lower Manhattan in a quick and efficient manner. New York express bus routes utilize one of three travel corridors within Lower Manhattan—Broadway/Church Street, West Street, or Water Street.

MTA/NYCT operates the majority of New York City express bus routes to and from Lower Manhattan, including 20 routes from Staten Island and three routes each from Manhattan and Brooklyn. Over half of all Lower Manhattan express bus routes originate from Staten Island. To many Staten Island commuters, these routes provide the only direct transit service to Manhattan other than the Staten Island Ferry. Staten Island express bus routes are operated entirely by MTA/NYCT. The X3 and X4 buses terminate on Murray Street in Battery Park City; the X8 terminates on Frankfort Street; the X11, X12A, X16, X17A, and X19 buses terminate on Worth Street and Broadway; the X13, X15, X18, and X20 buses terminate on Water Street and Broad Street; while the X1, X6, X7, X9, X10, X12B, X14, and X17C buses do not terminate, but stop in Lower Manhattan. MTA/NYCT also operates three express buses to Lower Manhattan from Manhattan’s East Side (X25, X90, and X92) and three express bus routes from Brooklyn (X27, X28, and X29).

Private bus companies that are subsidized by the NYCDOT operate all other New York City express bus routes. Command Bus Company operates five bus routes from Brooklyn (BM1, BM2, BM2S, BM3 and BM4). Queens Surface Corp. and Triborough Coach Lines each operate two bus routes from Queens (QM1, QM1A, QM11 and QM24W). Liberty Lines Express operates one bus route from the Bronx (BxM18). A map of the express bus routes serving Lower Manhattan, which are the same under current conditions as pre-September 11, is provided on Figure 13B-2.

Other bus carriers provide commuter service from New Jersey and Eastern Pennsylvania to Lower Manhattan. New Jersey Transit is the largest bus operator in New Jersey with nearly all of their Manhattan bound buses terminating at the Port Authority Bus Terminal in Midtown Manhattan. However, New Jersey Transit provides two bus routes that serve Lower Manhattan from Bayonne and Old Bridge. Academy Bus Lines, the largest private carrier in New Jersey, operates seven express bus routes from various points in New Jersey to Lower Manhattan. Coach USA/Suburban Bus operates routes from Town of Westfield, Monroe Township, and North Brunswick, New Jersey to Lower Manhattan. The Lakeland Bus Lines operate one route from Rockaway, New Jersey to Lower Manhattan. Trans-Bridge Lines operates one route between Wall Street and Bethlehem, Pennsylvania and Martz Trailways operates bus service between Lower Manhattan and the Pocono Mountains Region, Pennsylvania.

Bus Analysis

Based upon data provided by MTA/NYCT Bus Operations, current bus ridership is generally below pre-September 11 levels on the local and express routes serving the area in the vicinity of the WTC Site.

Changes in Local Bus Ridership (Pre-September 11 Scenario vs. Current Conditions Scenario)

Daily weekday ridership on the eight major MTA/NYCT local bus routes that serve Lower Manhattan declined 0.5 percent from the Pre-September 11 Scenario to the Current Conditions Scenario. The M9, which serves Battery Park City and Union Square, showed the largest decline in actual riders (901) and percentage decline (-18.0 percent). The M22, which serves Battery Park City and the Lower East Side, experienced the second largest decline in actual riders (248) and percentage decline (-6.3 percent). The decline in riders on five of the eight routes (M1, M6, M9, M22 and B51) was balanced by ridership growth on the other three routes (M15, M20 and M103). The M20 showed particularly strong ridership growth, with the actual number of riders increasing by just over 1,000, from 5,150 to 6,172, an increase of nearly 20 percent. Table 13B-7 compares the Pre-September 11 Scenario with the Current Conditions Scenario for the individual MTA/NYCT local bus routes.

**Table 13B-7
Daily Weekday Ridership for Local Bus Routes Serving Lower Manhattan
(Pre-September 11 Scenario vs. Current Conditions Scenario)**

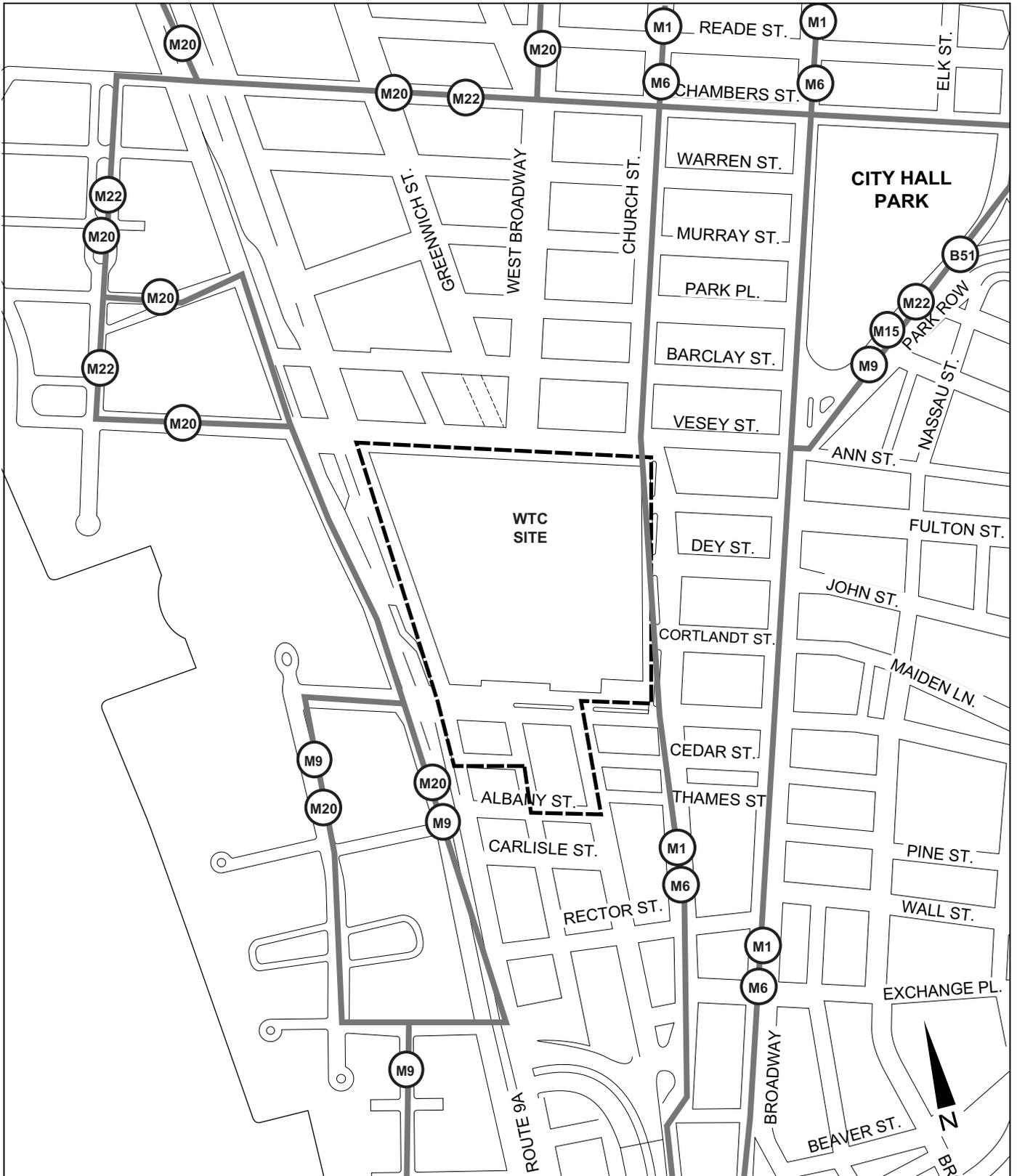
Bus Route	Pre-September 11 Scenario	Current Conditions Scenario	Percentage Change	Notes
MTA New York City Transit				
M1	19,080	18,920	IC3 Is Not In Table	Includes entire bus route
M6	7,198	7,089	-0.8%	Includes entire bus route
M9	5,015	4,114	-1.5%	Includes entire bus route
M15	65,385	65,422	-18.0%	Includes entire bus route
M20	5,150	6,172	0.1%	Includes entire bus route
M22	3,927	3,679	19.8%	Includes entire bus route
M103	15,402	15,733	-6.3%	Includes entire bus route
B51	927	898	2.1%	Includes entire bus route
TOTAL LOCAL BUS	IB15 Is Not In Table	121,129	-3.13%	
Source: MTA/NYCT				

Changes in Express Bus Ridership Changes (Pre-September 11 Scenario vs. Current Conditions Scenario)

Daily weekday ridership on express bus routes serving Lower Manhattan declined two percent (51,177 to 50,145) from the Pre-September 11 Scenario to the Current Conditions Scenario. With the exception of MTA/NYCT Brooklyn Express Bus service, which increased 7.1 percent (8,761 to 9,385), all other express bus services experienced declines in ridership. MTA/NYCT Manhattan Express Bus Service had the largest percentage decline (-20.6 percent) while MTA/NYCT Staten Island Express Bus Service had the largest decline in actual riders (680). Even with an overall ridership decline of 2.3 percent, MTA/NYCT Staten Island Express Bus Service still accounts for nearly 60 percent of Lower Manhattan express bus ridership. Table 13B-8 compares the Pre-September 11 Scenario with the Current Conditions Scenario for the individual MTA/NYCT express bus routes.

Subway Service

This section describes the MTA/NYCT subway stations that currently serve Lower Manhattan. A total of six stations are in close proximity to the Project Site. The No. 1/9 Cortlandt Street Station, located below the WTC Site, was heavily damaged on September 11 and remains closed. The existing stations serving the study area include: No. 2/3 Park Place, A/C Chambers



 Project Site

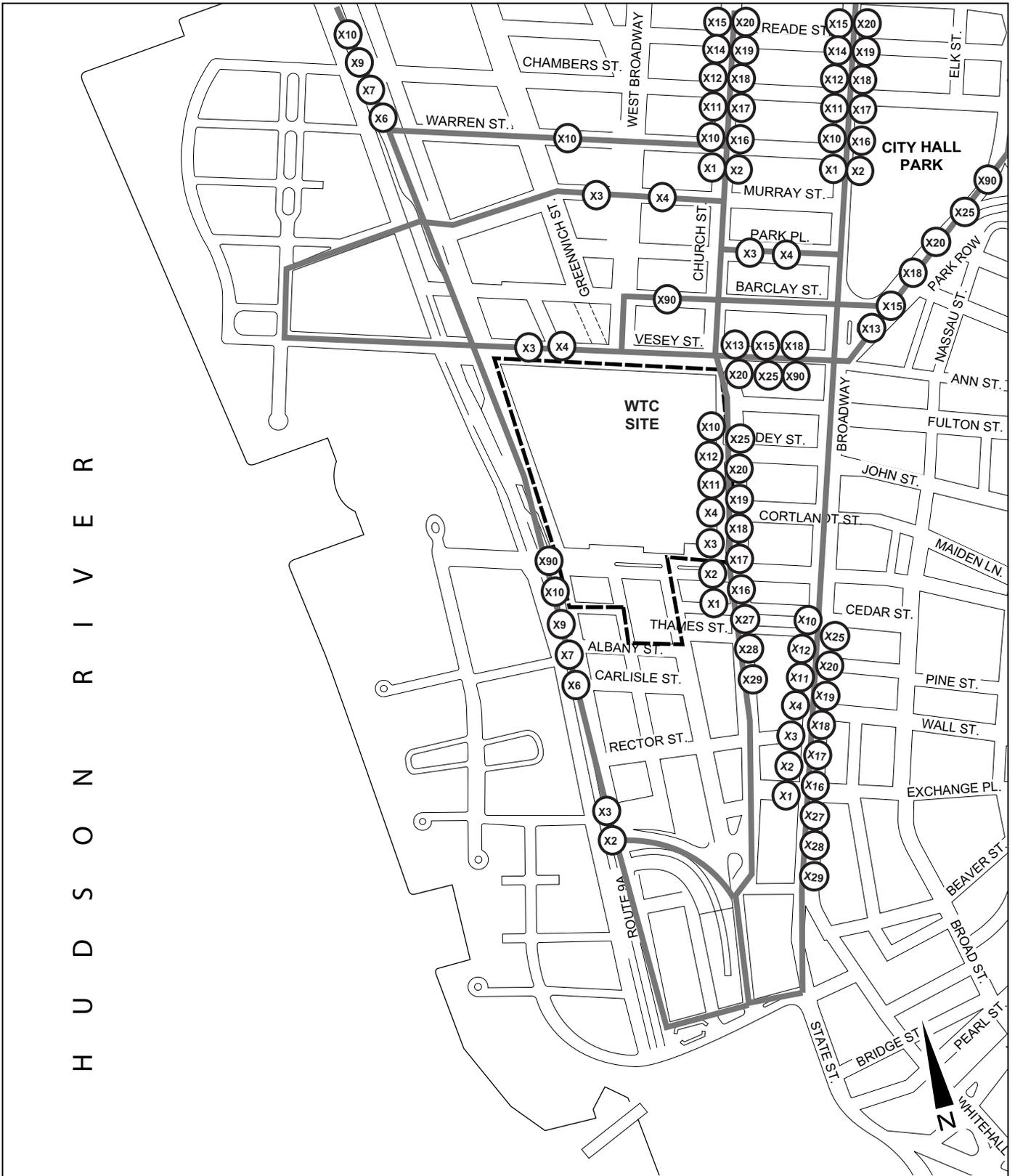
 Bus Number

0 1000 FEET
SCALE

Current Conditions Scenario

Local Bus Routes

Figure 13B-1



 Project Site
 Bus Number

0 1000 FEET
 SCALE

Current Conditions Senario
 Express Bus Routes
 Figure 13B-2

Table 13B-8
Daily Weekday Ridership For Express Bus Routes Serving Lower Manhattan
(Pre-September 11 Scenario vs. Current Conditions Scenario)

Bus Route	Pre-September 11 Scenario	Current Conditions Scenario	Percentage Change	Notes
<i>MTA New York City Transit – Staten Island Express Bus Service</i>				
X1	6,352	6,003	-5.5%	Includes Midtown ridership
X3	972	769	-20.9%	
X4	1,301	1,263	-2.9%	
X6	1,124	1,023	-9.0%	Includes Midtown ridership
X7	1,218	990	-18.7%	Includes Midtown ridership
X8	1,587	1,577	-0.6%	
X9	874	842	-3.7%	Includes Midtown ridership
X10	3,362	3,289	-2.2%	Includes Midtown ridership
X11	966	944	-2.3%	
X12	2,212	2,159	-2.4%	Includes Midtown ridership; includes all X42 riders
X13 & X14	1,402	1,458	4.0%	"pre-September 11" includes X42 & X42 Midtown ridership
X15	2,005	1,653	-17.6%	
X16	468	510	9.0%	
X17A & X17C	3,807	4,752	24.4%	Includes X17C midtown riders & all X17J riders
X18	605	574	-5.1%	
X19	1,356	1,215	-10.4%	
X20	201	111	-44.8%	
Total	29,611	29,021	-44.8%	
<i>MTA New York City Transit – Manhattan Express Bus Service</i>				
X25	147	25	-83.0%	
X26	No Service	189	100.0%	
X90	714	594	-16.8%	
X92	765	483	-36.9%	
Total	1,626	1,291	-20.6%	
<i>MTA New York City Transit – Brooklyn Express Bus Service</i>				
X27	3,963	4,242	7.0%	Includes Midtown ridership
X28	4,141	4,426	6.9%	Includes Midtown ridership
X29	657	717	9.1%	Includes Midtown ridership
Total	13,559	14,528	IC33 Is Not In Table	
<i>NYCDOT-Franchised – Brooklyn Express Bus Service: Command Bus</i>				
BM1	2,459	2,448	-0.5%	Includes Midtown ridership
BM2 and BM2S	2,166	1,981	8.5%	Includes Midtown ridership
BM3	1,872	1,852	-1.1%	Includes Midtown ridership
BM4	1,057	1,013	-4.2%	Includes Midtown ridership
Total	10,483	10,159	-4.1%	
<i>NYCDOT-Franchised – Queens Express Bus Service</i>				
QM1/1A	1,888	1,811	-4.1%	Queens Surface Corp.
QM11	739	605	-18.1%	Triborough Coach Lines
QM24W	462	294	-36.4%	Triborough Coach Lines
Total	3,424	3,043	-0.6%	
<i>NYCDOT-Franchised – Bronx Express Bus Service: Liberty Lines Express</i>				
BxM18	335	333	-0.6%	Includes Midtown ridership
Total	0	0	IC50 Is Not In Table	
TOTAL EXPRESS BUS	IB33 Is Not In Table	IC33 Is Not In Table	IC52 Is Not In Table	

Source: MTA/NYCT

Street, E World Trade Center, and N/R Cortlandt Street, No. 4/5 Fulton Street, and A/C Broadway-Nassau Stations. Figure 13B-3 illustrates the location of the Current Conditions subway stations.

No. 2/3 Park Place Station

The Park Place Station is a fairly deep station with a narrow island platform. It is located just north of the WTC Site and its platform is aligned east to west under Park Place between Church Street and Broadway. The Chambers Street Station and WTC Station are located perpendicular (north to south) above the west end of the Park Place Station. Free transfers are permitted between these three stations. Stairs at the west end of the Park Place Station platform connect to the A/C Chambers Street mezzanine. At the east end of the Park Place Station platform is a pair of long escalators (one up and one down) that connect to the station mezzanine located under the intersection of Park Place and Broadway.

In 2003, AM peak hour alighting at the No. 2/3 Park Place Station were one-third lower than before September 11. Northbound alighting declined from just over 4,000 to 2,700 passengers and southbound alighting declined from 4,500 to 3,099 passengers. Trends for passenger boarding at this station were mixed since September 11. There was a small decline in the number of passengers boarding northbound No. 2/3 trains from nearly 1,500 to about 1,400 passengers. The number of passengers boarding southbound increased slightly from approximately 1,000 to 1,183.

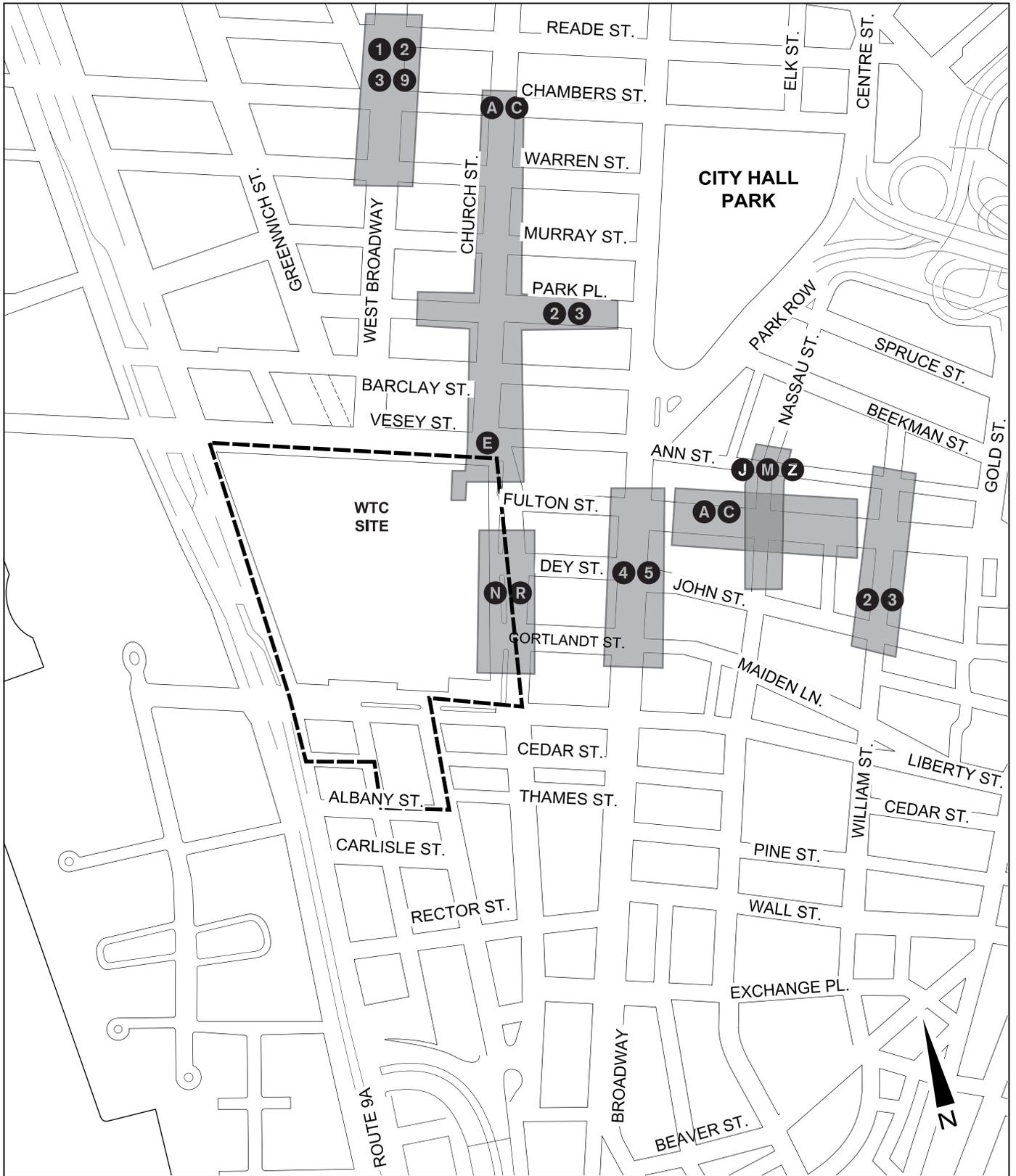
A/C Chambers Street Station

The A/C Chambers Street Station opened in 1932 and is part of a larger station complex that served the WTC Site. This station occupies the northern portion of this station complex and has two tracks with a single island platform. The platform is below Church Street between Chambers Street and Park Place. The mezzanine level above the station has a continuous unpaid zone extending from Chambers Street to the WTC Site. This mezzanine parallels the E WTC Station from Park Place to the WTC Site. Access to the street is provided along the entire length of the mezzanine. Free transfers can be made from the A/C Chambers Street Station to the No. 2/3 Park Place Station and the E WTC Station.

In 2003, overall AM peak hour alighting and boarding at the A/C Chambers Street Station have declined slightly since September 11. Northbound A train alighting declined from nearly 3,500 to just over 2,800 passengers while the C train alighting declined from 685 to 544 passengers. Southbound alighting on the A train increased slightly from 2,256 to 2,393 passengers (an increase of nearly six percent). Southbound C train alighting declined 33 percent from 471 to 316 passengers. The combined northbound A/C train boarding declined 15 percent from 1,879 to 1,596 passengers, while southbound A/C train boarding declined by 25 percent from 410 to 311 passengers during the AM peak hour.

E World Trade Center Station

The E WTC Station occupies the southern portion of the subway complex and is the southern terminus for E service in Manhattan. The terminal station has two tracks with an island platform. The E WTC Station platform extends from Park Place to the WTC Site. This station is located just to the south of the A/C Chambers Street Station. At the south end of this station, a platform level exit ramp connected to the WTC concourse prior to September 11. In 2003, overall AM peak hour alighting and boarding at the E WTC Station are significantly lower. Alighting declined 29 percent from 6,784 to 4,774 passengers (over 2,000 fewer passengers) while boarding declined from 714 to 83 passengers since PATH service was suspended.



 Project Site
 Subway Station

0 1000 FEET
SCALE

Current Conditions Scenario
 Subway Station Locations
 Figure 13B-3

N/R Cortlandt Street Station

The N/R Cortlandt Street Station is located adjacent to the WTC Site below Church Street and between Fulton and Liberty Streets. This station features split platforms with fare turnstiles located at the platform level at four locations (two on each side). The station platforms and the underpass at the north end of the station, which were completely renovated in 1998-99, allowed access between the two platforms and the WTC shopping concourse (via escalators). The underpass remains open and connects to the temporary WTC PATH station. The south end of the station also has an underpass that provided access to the street, Church Street Passageway, and an office building (1 Liberty Plaza).

In 2003, AM peak hour alighting and boarding at the N/R Cortlandt Street Station have declined significantly. Northbound and southbound N train alighting declined 69 percent (from nearly 2,600 to 819 passengers) and R train alighting declined 53 percent (from approximately 1,750 to 825 passengers). Boarding at this station during this period consisted of only 60 passengers on northbound and southbound N trains and only 72 passengers boarding R trains.

No. 4/5 Fulton Street Station

The No. 4/5 Fulton Street Station is part of the larger Fulton Street Transit Center, which also features seven other subway lines. It is located below Broadway between Fulton and Cortlandt Streets and has separate northbound and southbound platforms. There are multiple street entrances from either side of Broadway. Connections to the other subway lines can be made via a pedestrian walkway below Fulton Street. The No. 4/5 Fulton Street Station is located one block east of the WTC Site. Many commuters who worked at the WTC Site used these subway lines.

In 2003, AM peak hour alighting at the No. 4/5 Fulton Street Station declined dramatically. Northbound alighting declined nearly 50 percent from approximately 4,000 to about 2,100 passengers. Southbound alighting declined from nearly 9,500 to just over 5,800, a reduction of nearly 40 percent. AM peak hour boarding at this station declined at a lower rate than alighting. Northbound boarding declined from approximately 4,000 to 3,643 passengers while southbound boarding declined from approximately 1,500 to 932 passengers.

A/C Broadway-Nassau Station

The A/C Broadway Nassau Street Station is the only station in the Fulton Street Transit Center that is oriented east to west. It is located below Fulton Street between Broadway and William Street. Two separate mezzanines are provided to facilitate pedestrian movements and transfers to other subway lines. The west mezzanine connects Broadway (No. 4/5 lines) to Nassau Street (J/M/Z lines northbound) and the east mezzanine connects Nassau Street (J/M/Z lines southbound) to William Street (No. 2/3 lines). This station consists of two tracks and one center island platform.

In 2003, the overall AM peak hour alighting and boarding at this station have declined slightly. Northbound A train alighting declined from 8,484 to just over 6,786 passengers while the C train alighting declined from 1,571 to 1,299 passengers. Southbound alighting on the A train increased slightly from 1,601 to 1,672 passengers, while southbound C train alighting declined from 208 to 182 passengers. In sum, the northbound A and C train boarding increased nearly 60 percent from 840, to 1,321 passengers while southbound A and C train boarding increased 4 percent from 1,104 to 1,150 passengers.

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Subway Analysis

Subway line haul analyses were performed using ridership and subway data provided by MTA/NYCT, *CEQR Technical Manual* prescribed guidelines for subway capacity, and station entering and station exiting volumes. Using these data, v/c ratios were calculated for each subway line during the morning peak hour (8:00–9:00 AM). The results are summarized in Table 13B-9.

**Table 13B-9
Current Conditions Scenario
2003 Subway Line Haul Analysis**

Route	Station	Direction	Cars Per Train	Car* Cap.	Trains Per Hour	Total Peak Hour Capacity	Trains Entering Station		Trains Leaving Station	
							Volumes	V/C Ratio	Volumes	V/C Ratio
1/9	Cortlandt Street	Northbound	Station Remains Closed Since September 11.							
1/9	Cortlandt Street	Southbound	Station Remains Closed Since September 11							
2	Park Place	Northbound	10	120	9	10,800	6,149	0.57	5,614	0.52
2	Park Place	Southbound	10	120	11	13,200	8,077	0.61	7,188	0.54
3	Park Place	Northbound	9	120	9	9,720	3,897	0.40	3,121	0.32
3	Park Place	Southbound	9	120	10	10,800	4,883	0.45	3,856	0.36
4	Fulton Street	Northbound	10	120	13	15,600	9,574	0.61	10,603	0.68
4	Fulton Street	Southbound	10	120	13	15,600	9,092	0.58	6,939	0.44
5	Fulton Street	Northbound	10	120	11	13,200	7,165	0.54	7,681	0.58
5	Fulton Street	Southbound	10	120	12	14,400	8,963	0.62	6,320	0.44
A	Chambers Street	Northbound	10	180	18	32,400	11,338	0.35	9,795	0.30
A	Chambers Street	Southbound	10	180	9	16,200	6,946	0.43	4,844	0.30
C	Chambers Street	Northbound	8	180	8	11,520	2,326	0.20	2,097	0.18
C	Chambers Street	Southbound	8	180	6	8,640	753	0.09	457	0.05
A	Broadway Nassau	Northbound	10	180	18	32,400	16,979	0.52	11,338	0.35
A	Broadway Nassau	Southbound	10	180	9	16,200	4,844	0.30	4,279	0.26
C	Broadway Nassau	Northbound	8	180	8	11,520	3,446	0.30	2,325	0.20
C	Broadway Nassau	Southbound	8	180	6	8,640	457	0.05	319	0.04
E	World Trade Center	Northbound	10	180	12	21,600	0	0.00	83	0.00
E	World Trade Center	Southbound	10	180	12	21,600	4,774	0.22	0	0.00
N	Cortlandt Street	Northbound	8	220	7	12,320	2,442	0.20	1,726	0.14
N	Cortlandt Street	Southbound	8	220	6	10,560	72	0.01	29	0.00
R	Cortlandt Street	Northbound	8	220	7	12,320	1,794	0.15	1,421	0.12
R	Cortlandt Street	Southbound	8	220	9	15,840	835	0.05	445	0.03

Note: * Subway car capacity based on CEQR manual prescribed guidelines.

Sources: MTA/NYCT, *CEQR Technical Manual*.

Current Conditions (2003) AM peak period passenger volumes for the nine subway lines (5 stations) that serve the WTC area range from less than 100 to over 11,000 passengers. The five busiest subway lines were the northbound A train at Broadway Nassau Street (16,979 passengers), the northbound A train at Chambers Street (11,338 passengers), the northbound and southbound No. 4 trains at Fulton Street (9,574 and 9,092 passengers, respectively), and the southbound No. 5 train at Fulton Street (8,963 passengers). Passenger volumes were low on the southbound C train at Chambers Street (753), the southbound C train at Broadway Nassau Street (457) and the southbound N train at Cortlandt Street (72 passengers).

With all 9 subway lines running an average of 10 trains per hour, subway capacity is currently not an issue. The southbound No. 5 train at the Fulton Street Station had an entering station v/c ratio of 0.62, the highest among all subway lines. This was followed by the southbound No. 2 train at the Park Place Station and the northbound No. 4 train at the Fulton Street Station, each

with an entering station v/c ratio of 0.61. The N and R trains at the Cortlandt Street Station and the C trains at Chambers Street and Broadway-Nassau Street Stations have entering station v/c ratios below 0.30.

Ferry Conditions

The events of September 11 led to a significant shift to ferry service for access to and from Lower Manhattan. Subway service was disrupted, PATH access to Lower Manhattan was lost, and vehicular access was restricted (i.e. only high-occupancy vehicles are allowed to use the Holland Tunnel during peak-periods). New York City Government and the Port Authority, with funding from Federal Emergency Management Agency (FEMA), quickly established and implemented eight new ferry routes to Lower Manhattan to accommodate displaced commuters. By spring 2002, these eight new routes had an average weekday ridership of nearly 107,000 passengers according to a survey of private ferry operators performed by Parsons, Brinkerhoff, Quade and Douglas, Inc. for LMDC (a 42 percent increase over their pre-September 11 levels). Ferries have proven invaluable in accommodating the needs of commuters from New Jersey and have played an important role in Lower Manhattan's recovery. A map of current ferry routes is provided on Figure 13B-4.

Increased ferry ridership was observed on both sides of the Hudson River. Pier 11, located near the foot of Wall Street on Lower Manhattan's East Side, experienced the largest increase in ridership (nearly 300 percent). The greatest share of this increase was provided by the New Jersey Transit Hoboken Terminal. Longer haul ferries from places such as Monmouth County also showed marked ridership increases. Table 13B-10 provides a summary of the current ferry routes serving Lower Manhattan.

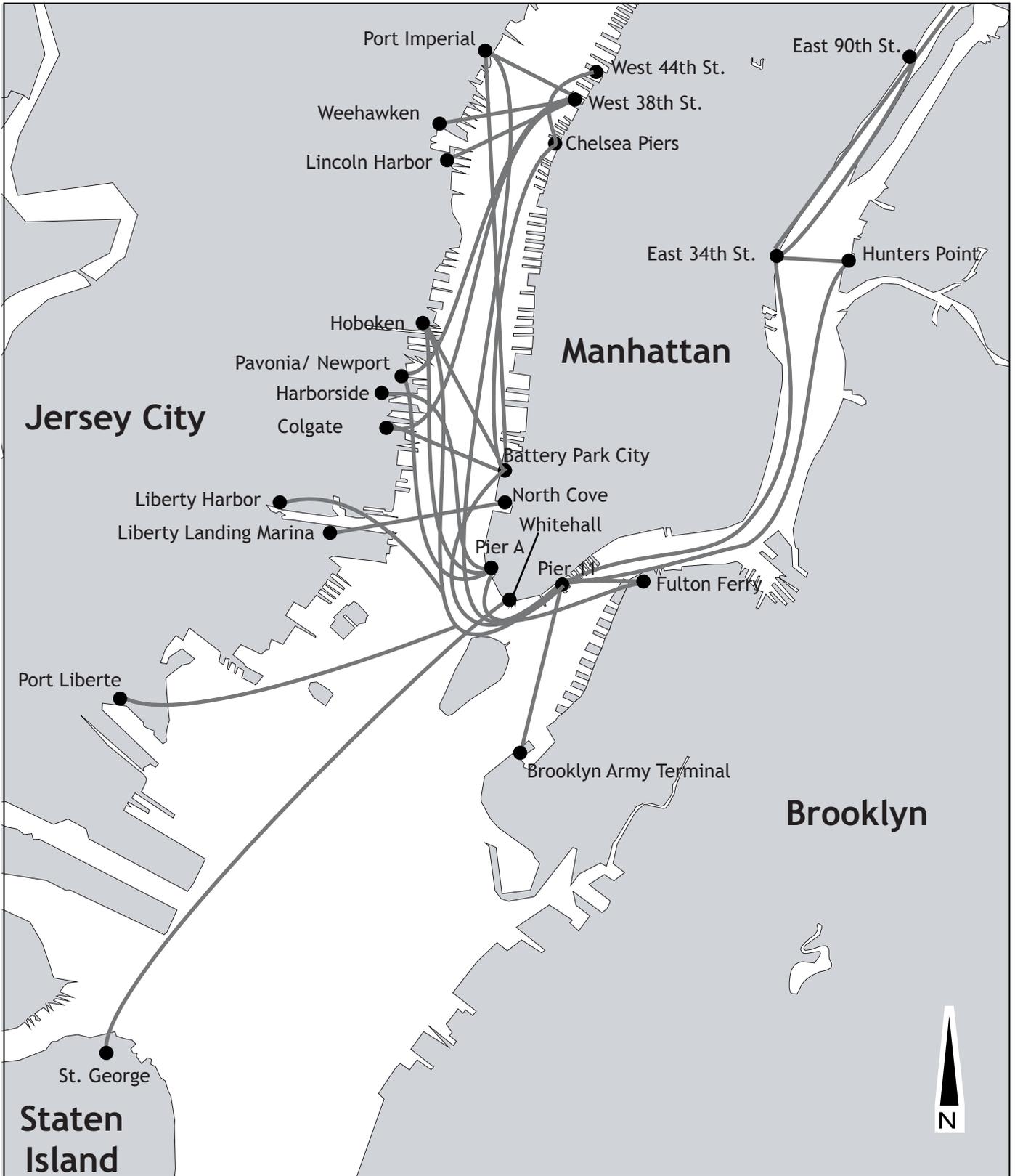
Many diverse markets and contractors have developed to serve Lower Manhattan since September 11. Liberty Park Water Taxi provides daily and weekend scheduled service between Liberty State Park, NJ (the piers of Liberty Landing Marina) and Lower Manhattan (North Cove of Battery Park City). New York Water Taxi began service in September 2002. Unlike most of the other ferry companies that provide service between New Jersey and Manhattan, New York Water Taxi serves the eastern part of New York Harbor, providing service between two piers in Brooklyn (Fulton Ferry Landing and Brooklyn Army Terminal) and Manhattan. SeaStreak America, Inc. currently operates a fleet of 5 ferry vessels from the Atlantic Highlands and Highlands in Monmouth County and South Amboy in Middlesex County New Jersey to Pier 11 (Wall Street) in Lower Manhattan and East 34th Street in Midtown Manhattan.

NY Waterway operates 13 ferry routes, providing access to three Lower Manhattan ports including: Pier 11 (Wall Street), Pier A, and Battery Park City. These Lower Manhattan ports are served from ports in New Jersey including: Port Imperial (Weehawken), Hoboken (North & South), and five ports in Jersey City. All routes have weekday service from 6:00AM until the evening (7:00 PM-12:00 AM, depending on the route). About half the Lower Manhattan routes are operated on the weekend. New York Waterway also offers free shuttle buses along major streets to and from its ferry facilities for its customers. These buses travel along major streets in Manhattan including 57th Street, 49th Street, 42nd Street, 34th Street and uptown from the World Trade Center. It should be noted that the opening of the temporary WTC PATH station has led to declines in passenger demand and reductions in ferry service.

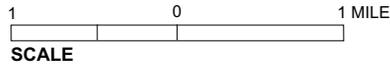
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**Table 13B-10
Current Conditions Scenario
2003 Ferry Routes Serving Lower Manhattan**

Route	Origin	Destination	Hours of Operation	Other Stops Along Route/Other Piers Used
Liberty Park Water Taxi (Liberty Landing Marina)				
Liberty Park Water Taxi	Liberty Landing, Liberty State Park, NJ	Battery Park City (North Cove), Downtown Manhattan	Mon-Thu: 6:00AM - 7:45PM Fri: 6:00AM - 8:45PM Sat: 9:00AM - 8:45PM Sun: 9:00AM - 7:45PM	
New York Fast Ferry				
Highlands-Lower Manhattan	Highlands, NJ	Pier 11 (Wall Street)	Now operated by New York Waterways.	
New York Water Taxi				
Downtown Brooklyn Commuter Service	Fulton Ferry Landing (Brooklyn)	Pier 11 (Wall Street)	Mon-Fri: 6:40AM – 9:40AM & 4:00PM – 7:00PM	
Brooklyn Army Terminal Commuter Service	Brooklyn Army Terminal	Pier 11 (Wall Street)	Mon-Fri: 6:40AM – 9:40AM & 4:00PM – 7:00PM	
East Side Commuter Service	East 90th Street	Pier 11 (Wall Street)	Mon-Fri: 6:00AM – 10:00AM & 3:30PM – 8:00PM	Hunters Point, E. 34th St. & Fulton Ferry Landing.
Midday Commuter Service	East 90th Street	Pier 84 (West 44th Street)	Mon-Fri: 9:15AM – 4:30AM & 11:00AM – 7:00PM	Hunters Point, E. 34th St, Fulton Ferry Landing, Pier 11, Pier A, N. Cove (Battery Park City) & Pier 63.
New York Waterway				
Belford - Pier 11 Wall Street and West 38th Street Ferry	Belford, NJ	West 38th Street, Midtown Manhattan	Weekdays: 6:00AM – 11:10PM Weekends: 9:15AM – 12:10AM	Pier 11 (Wall Street)
Colgate - Pier 11, Wall Street Ferry	Colgate Center, Jersey City, NJ	Pier 11 (Wall Street), Downtown Manhattan	Weekdays 6:00AM – 11:30PM	Hoboken
Colgate – World Financial Center Ferry	Colgate Center, Jersey City, NJ	World Financial Center , Downtown Manhattan	Weekdays: 6:00AM – 11:30PM	Hoboken
Harborside - Pier A, Battery Park Ferry	Harborside, Jersey City, NJ	Battery Park, Downtown Manhattan	Weekdays: 6:00AM – 9:50PM	Hoboken, Newport, Pier A
Hoboken North -World Financial Center Ferry	13th Street, Hoboken, NJ	World Financial Center , Downtown Manhattan	Weekdays: 6:00AM – 7:53PM Weekends: 10:00AM – 9:20PM	Hoboken South, Newport, West 38th Street
Hoboken South - Pier A, Battery Park Ferry	Hoboken Train Terminal, Hoboken, NJ	Battery Park, Downtown Manhattan	Weekdays: 6:00AM – 9:50PM	Harborside
Hoboken South - Pier 11, Wall Street Ferry	Hoboken Train Terminal, Hoboken, NJ	Pier 11 (Wall Street), Downtown Manhattan	Weekdays: 6:00AM – 11:30PM	Colgate Center
Hoboken - World Financial Center Ferry	Hoboken Train Terminal, Hoboken, NJ	World Financial Center , Downtown Manhattan	Weekdays: 6:00AM – 11:30PM Weekends: 10:00AM – 9:50PM	Colgate Center
Liberty Harbor - Pier 11, Wall Street Ferry	Liberty Harbor, Jersey City, NJ	Pier 11 (Wall Street), Downtown Manhattan	Weekdays: 6:00AM – 9:50PM	Port Liberty
Newport - Pier, A Battery Park Ferry	Newport, Jersey City, NJ	Battery Park, Downtown Manhattan	Weekdays: 6:00AM – 9:50PM Weekends: 10:00AM – 9:50PM	Hoboken, Harborside
Weehawken - Pier 11, Wall Street Ferry	Port Imperial, Weehawken, NJ	Pier 11 (Wall Street), Downtown Manhattan	Weekdays: 6:00AM – 8:00PM	World Financial Center
Weehawken - World Financial Center Ferry	Port Imperial, Weehawken, NJ	World Financial Center , Downtown Manhattan	Weekdays: 6:00AM – 7:53PM	Hoboken North
Port Liberte - Pier 11, Wall Street Ferry	Port Liberte, Jersey City, NJ	Pier 11 (Wall Street), Downtown Manhattan	Weekdays: 6:00AM – 10:00PM Weekends: 9:30AM – 10:30PM	Newport, Liberty Harbor
SeaStreak				
Highlands-Manhattan	Highlands, NJ	East 34th Street, Midtown Manhattan	Weekday: 6:00AM – 12:00AM Weekends: 9:30AM – 8:45PM	Pier 11 (Wall Street), Downtown Manhattan
Atlantic Highlands-Manhattan	Atlantic Highlands, NJ	East 34th Street, Midtown Manhattan	Weekday: 6:15AM – 12:10AM	Pier 11 (Wall Street), Downtown Manhattan
South Amboy -Manhattan	South Amboy, NJ	Pier 11 (Wall Street), Downtown Manhattan	Weekday: 6:00AM – 8:45PM	
Staten Island Ferry (New York City DOT)				
Staten Island-Manhattan	St. George Terminal, Staten Island	White Hall Terminal, Downtown Manhattan	24 Hours A Day, 7 Days A Week	
Sources: City of New York DOT, Port Authority of New York & New Jersey , Ferry Operators.				



- Active Docks
- Ferry Routes



Current Conditions Scenario
 Ferry Routes
 Figure 13B-4

The Staten Island Ferry, operated by NYCDOT, provides ferry service for 20 million people annually (70,000 passengers per day) between the St. George Terminal in Staten Island and the Whitehall Terminal in Lower Manhattan. Service is provided 24 hours a day, 365 days a year. A typical weekday schedule requires the use of five boats to transport approximately 70,000 passengers daily (104 daily trips). During rush hours, a four-boat (15 minute headway) schedule is used. On weekend days, three boats are used with 20-minute headways (64 trips each weekend day). In sum, over 33,000 trips are made annually.

NYCDOT operates and maintains an eight vessel fleet as well as the various facilities including the St. George Ferry Terminal in Staten Island, Whitehall Ferry Terminal in Manhattan, the City Island and Hart Island Facilities, and the Battery Maritime Building.

PEDESTRIANS

Crosswalks

Ten intersections around the Project Site were analyzed using 2003 pedestrian data (Figure 13B-5). Of these 10 intersections, *five* (50 percent) were found to have at least one crosswalk approach with LOS E during the AM, midday, or PM periods. There were no intersections with a crosswalk operating at LOS F. Broadway and John Street was the worst intersection location with a total of two out of four crosswalks operating at LOS E during the midday peak period. The results are summarized in Table 13B-11.

**Table 13B-11
Current Conditions Scenario
2003 Crosswalk Analysis (LOS E or F)**

Intersection	AM Period LOS Crosswalk				Midday Period LOS Crosswalk				PM Period LOS Crosswalk			
	North	East	South	West	North	East	South	West	North	East	South	West
Church St. @ Fulton St.	A	D	A	-	A	D	A	-	A	E	A	-
Church St. @ Vesey St.	B	C	B	D	B	D	B	D	B	C	B	E
Broadway @ John St.	C	D	D	D	D	E	E	D	C	D	B	D
<i>Broadway @ Fulton St.</i>	<i>B</i>	<i>D</i>	<i>C</i>	<i>C</i>	<i>C</i>	<i>E</i>	<i>D</i>	<i>D</i>	<i>C</i>	<i>C</i>	<i>C</i>	<i>D</i>
Broadway @ Liberty St.	C	B	B	C	D	E	B	D	C	D	C	B

Source: Louis Berger Group, Inc., 2003.

Corridors and Sidewalks

The South (Liberty Street) Bridge crossing Route 9A currently operates at a satisfactory LOS C or better during the peak periods analyzed. The sidewalk on the west side of Church Street between Dey and Fulton Streets operates at a satisfactory LOS C or better during the peak periods analyzed. The complete analysis results are provided in Appendix F.

Subway Elements

The analysis locations at the No. 4/5 Fulton Street, N/R Cortlandt Street, No. 2/3 Park Place, E World Trade Center, and A/C Chamber Street Stations generally operate at LOS C or better during the peak periods. However, there are capacity constraints at a few locations during the AM and PM peak periods. These locations are shown in Table 13B-12. The complete analysis results are provided in Appendix F.

**Table 13B-12
Current Conditions Scenario—2003 Subway Pedestrian Analysis (LOS D, E, or F)**

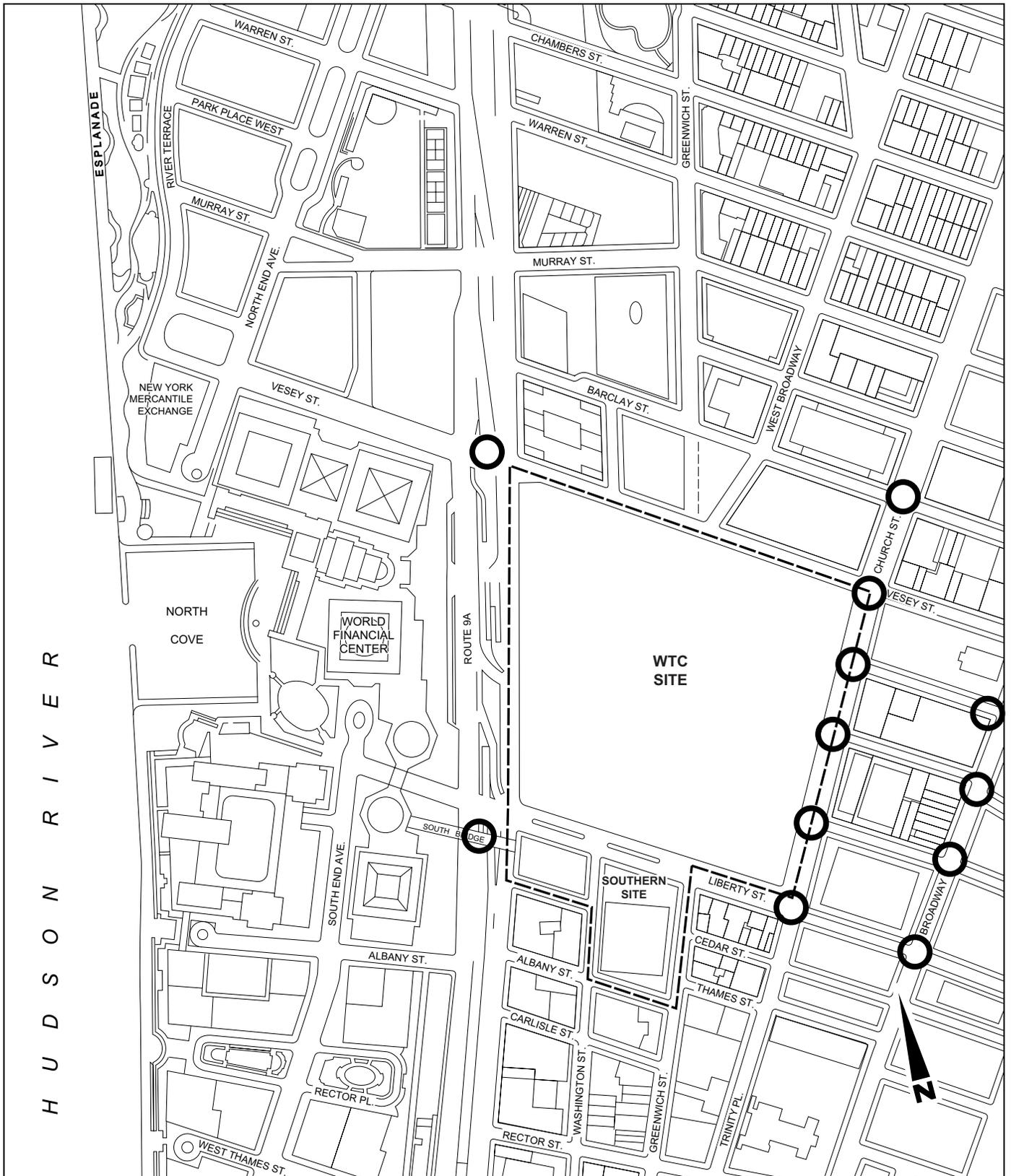
Element		AM Peak		PM Peak	
		v/c	LOS	v/c	LOS
A and C Chambers Street Station					
N92.X2	HXT	0.61	D	0.09	A
P17	Stairway to Platform	0.72	C	1.06	D
4 and 5 Fulton Street Station					
Ramp R8 (West)	To 4/5 Northbound Platform	1.48	E	0.69	B
M2/O2	Stairway to Street	0.70	C	2.11	F
ML5	Stairway to Platform	2.01	F	1.39	E
ML6 A/B	Transfer Stairway (To A/C)	0.16	A	1.39	E
S3/M3	Stairway to Street	1.32	D	0.78	C
Church Street Passageway					
N94.X2	HEET (east)	0.68	D	0.79	D
N92.X2	HXT (south)	0.61	D	0.09	A
S20 M14A/B	Stairway to Street	1.13	D	0.83	C
E World Trade Center Station					
N94.X2	HEET (east)	0.68	D	0.79	D
Notes: v/c = volume/capacity ratio; LOS = Level of Service; HEET = High Entrance/Exit Turnstile; HXT = High Revolving Exit Gate. Based upon spring 2003 survey Source: Louis Berger Group, Inc., 2003.					

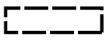
13B.3.3 FUTURE WITHOUT THE PROPOSED ACTION 2009—CURRENT CONDITIONS SCENARIO

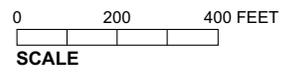
By 2009, several important improvements to the transportation system are expected to be completed and operational under this scenario including the Fulton Street Transit Center and the permanent WTC PATH Terminal. The Fulton Street Transit Center would provide a direct underground pedestrian connection (Dey Street Passageway) to the No. 4/5 Fulton Street Station and to locations east of Broadway. As a result of the permanent WTC PATH Terminal construction, the Pedestrian Connector would be built with eight connections between the concourse level of the WTC Site and street-level locations. In addition, an underground pedestrian connector would be constructed under Route 9A to connect the Pedestrian Connector to the World Financial Center. Another underground walkway may be constructed under Church Street that would connect the Pedestrian Connector on the east side of Church Street to Liberty Plaza.

The permanent WTC PATH Terminal would have direct below grade connections to the adjacent subway stations, including the E World Trade Center and the N/R Cortlandt Street Stations. It was assumed that a reconstructed No. 1/9 Cortlandt Street Station would be operational by 2009. The NYSDOT is considering two build alternatives for the reconstruction of Route 9A between Albany Street and Murray Street including a four-lane tunnel “short” bypass for express traffic and at-grade lanes for local traffic. A generic crosswalk analysis was performed for the Route 9A intersections at Liberty Street and Vesey Street in this draft GEIS since it was conservatively assumed that pedestrians crossing Route 9A would do so at-grade and no pedestrian overpasses would be constructed in any of the Route 9A alternatives. Pedestrian crossings of Route 9A would not be part of the Proposed Action, and would be considered independently by the Route 9A Reconstruction project. A new ferry terminal will be constructed at the World Financial Center on the Hudson River at the foot of Vesey Street.

Growth rates were applied to the Current Condition (2003) transit passenger volumes and pedestrian volumes to establish the future without the Proposed Action 2009 Current Conditions



-  Project Site
-  Analysis Locations



Scenario transit passenger and pedestrian volumes. This rate is based on the annual growth that includes all planned and committed developments through 2009 as part of the background growth for Lower Manhattan, *in the vicinity of the WTC Site*. In addition, the transit passengers and pedestrians generated by the reopening of 7 WTC were added separately to these volumes.

TRANSIT

Bus Analysis

It is estimated that bus ridership in 2009 will continue to be below pre-September 11 levels on the local and express routes serving the area in the vicinity of the WTC Site.

Subway Analysis

Table 13B-13 summarizes the line haul results for the stations serving the Project Site area in 2009. It is projected that all subway lines would operate at a v/c ratio of 0.72 or less in 2009.

**Table 13B-13
Future Without the Proposed Action—Current Conditions Scenario
2009 Subway Line Haul Analysis**

Route	Station	Direction	Cars Per Train	Car* Cap.	Trains Per Hour	Total Peak Hour Capacity	Trains Entering Station		Trains Leaving Station	
							Volumes	V/C Ratio	Volumes	V/C Ratio
1/9	Cortlandt Street	Northbound	No Forecast Available.							
1/9	Cortlandt Street	Southbound	No Forecast Available.							
2	Park Place	Northbound	10	120	9	10,800	6,487	0.60	5,923	0.55
2	Park Place	Southbound	10	120	11	13,200	8,521	0.65	7,583	0.57
3	Park Place	Northbound	9	120	9	9,720	4,111	0.42	3,293	0.34
3	Park Place	Southbound	9	120	10	10,800	5,152	0.48	4,068	0.38
4	Fulton Street	Northbound	10	120	13	15,600	10,101	0.65	11,186	0.72
4	Fulton Street	Southbound	10	120	13	15,600	9,592	0.61	7,321	0.47
5	Fulton Street	Northbound	10	120	11	13,200	7,559	0.57	8,103	0.61
5	Fulton Street	Southbound	10	120	12	14,400	9,456	0.66	6,668	0.46
A	Chambers Street	Northbound	10	180	18	32,400	11,962	0.37	10,334	0.32
A	Chambers Street	Southbound	10	180	9	16,200	7,328	0.45	5,110	0.32
C	Chambers Street	Northbound	8	180	8	11,520	2,454	0.21	2,212	0.19
C	Chambers Street	Southbound	8	180	6	8,640	794	0.09	482	0.06
A	Broadway Nassau	Northbound	10	180	18	32,400	17,913	0.55	11,961	0.37
A	Broadway Nassau	Southbound	10	180	9	16,200	5,110	0.32	4,514	0.28
C	Broadway Nassau	Northbound	8	180	8	11,520	3,636	0.32	2,453	0.21
C	Broadway Nassau	Southbound	8	180	6	8,640	482	0.06	337	0.04
E	World Trade Center	Northbound	10	180	12	21,600	0	0.00	88	0.00
E	World Trade Center	Southbound	10	180	12	21,600	5,037	0.23	0	0.00
N	Cortlandt Street	Northbound	8	220	7	12,320	2,576	0.21	1,821	0.15
N	Cortlandt Street	Southbound	8	220	6	10,560	76	0.01	31	0.00
R	Cortlandt Street	Northbound	8	220	7	12,320	1,893	0.15	1,499	0.12
R	Cortlandt Street	Southbound	8	220	9	15,840	881	0.06	469	0.03

Note:* Subway car capacity based on CEQR manual prescribed guidelines.
Sources:MTA/NYCT, CEQR Technical Manual

PEDESTRIANS

Crosswalks

Of the 14 intersections analyzed for 2009 without the Proposed Action—Current Conditions, seven intersections (50 percent) are projected to have at least one crosswalk operating at LOS E during the AM, midday or PM periods. Separate analyses were performed at the Church Street

World Trade Center Memorial and Redevelopment Plan GEIS

and Liberty Street intersection both with and without the underground connection between the WTC Site and Liberty Plaza. This intersection has crosswalks that are projected to operate at LOS E for both of these conditions. There were no crosswalks projected to operate at LOS F. Church Street and Liberty Street (without the underground connection) was the intersection with the most crosswalks, a total of five daily intersection approaches out of 12, projected to operate at LOS E. *The pedestrian analysis for the FGEIS was updated to reflect more specific midday pedestrian flow data for 7 WTC, made available by the Port Authority since the issuance of the DGEIS.* The locations with LOS E are shown in Table 13B-14.

**Table 13B-14
Future Without the Proposed Action—Current Conditions Scenario
2009 Crosswalk Analysis (LOS E or F)**

Intersection	AM Period LOS Crosswalk				Midday Period LOS Crosswalk				PM Period LOS Crosswalk			
	North	East	South	West	North	East	South	West	North	East	South	West
Church St. @ Dey St.	A	E	B	-	A	E	B	-	A	E	B	-
Church St. @ Fulton St.	A	D	A	-	B	D	B	-	A	E	B	-
Church St. @ Vesey St.	B	C	C	E	C	D	B	D	B	D	D	E
Broadway @ John St.	C	D	D	D	D	E	E	D	C	E	B	D
Church St. @ Liberty St. (with underground connection)	D	B	C	E	B	B	B	C	D	C	B	D
Church St. @ Liberty St. (without underground connection)	E	B	E	E	C	B	B	C	E	C	C	E
Broadway @ Liberty St.	C	B	C	C	D	E	B	D	C	D	C	C
W. Broadway @ Vesey St.	E	B	-	A	E	B	-	C	D	A	-	A

Source: Louis Berger Group, Inc., 2003.

Corridors and Sidewalks

The pedestrian connection from the WTC to the World Financial Center under Route 9A is projected to operate at a satisfactory LOS C or better during the peak periods analyzed. The sidewalks on the west side of Church Street between Dey and Fulton Streets, on the north and sides of Vesey Street between Greenwich and Church Streets, and on the north and south sides of Liberty Street between Washington and Greenwich Streets are projected to operate at a satisfactory LOS C or better during the peak periods analyzed. The complete analysis results are provided in Appendix F.

Subway Elements

The analysis locations at the No. 4/5 Fulton Street, No. 1/9 Cortlandt Street, N/R Cortlandt Street, No. 2/3 Park Place, E World Trade Center, and A/C Chamber Street Stations generally operate at LOS C or better during the peak periods. However, there are capacity constraints at a few locations during the AM and PM peak periods. These locations are shown in Table 13B-15. The complete analysis results are provided in Appendix F.

FERRY

With the opening of the temporary WTC PATH station in November 2003, the number of ferry riders has declined significantly. Many ferry routes have been eliminated or have had their headways reduced by the ferry operators. Pier A, which was built in response to the suspension of PATH service, has been closed. Once the ridership base of PATH becomes reestablished in 2004, the decline in the number of ferry riders will level off. Some growth in the ferry market would be expected by 2009 as Lower Manhattan recovers and vacancies are filled by employers.

Table 13B-15
Future Without the Proposed Action—Current Conditions Scenario
2009 Subway Pedestrian Analysis (LOS D, E, or F)

Element		AM Peak		PM Peak	
		v/c	LOS	v/c	LOS
A and C Chambers Street Station					
N92.X2	HXT	0.85	E	0.15	A
P11	Stairway to Platform	0.58	B	1.67	F
P17	Stairway to Platform	0.80	C	1.16	D
Church Street Passageway					
N92.X2	HXT (south)	0.85	E	0.15	A
S3	Stairway to Street	0.89	C	1.27	D
S20 M14A/B	Stairway to Street	1.24	D	0.92	C
Notes: v/c = volume/capacity ratio; LOS = Level of Service; HEET = High Entrance/Exit Turnstile; HXT = High Revolving Exit Gate Source: Louis Berger Group, Inc., 2003.					

The Port Authority is constructing a new ferry terminal at the World Financial Center on the Hudson River at the foot of Vesey Street. The new terminal is being constructed to accommodate a maximum of four end loading vessels and one side loading vessel. The public space provided at the terminal is designed to handle two full boat loads of 400 arriving passengers (800 total) and one-half of a boat loaded with departing passengers (200 total) at a given time. The construction of the terminal is expected to be completed by the end of 2005.

13B.3.4 FUTURE WITHOUT THE PROPOSED ACTION 2015—CURRENT CONDITIONS SCENARIO

The future without the Proposed Action in 2015 would also include the completed Fulton Street Transit Center and the permanent WTC PATH Terminal, a reconstructed Route 9A between Albany Street and Murray Street, and a reconstructed No. 1/9 Cortlandt Street Station. Growth rates were applied to the Current Condition (2003) transit passenger volumes and pedestrian volumes to establish the future 2015 transit passenger and pedestrian volumes Without the Proposed Action. This rate includes all planned and committed developments through 2015 as part of the background growth for Lower Manhattan, *in the vicinity of the WTC Site*. In addition, the transit passengers and pedestrians generated by the reopening of 7 WTC were added separately to the future 2015 passenger volumes without the Proposed Action.

TRANSIT

Bus Analysis

It is estimated that bus ridership in 2015 will increase significantly above current conditions as Lower Manhattan recovers and employment levels increase. However, ridership will generally still be below pre-September 11 levels on the local and express routes serving the area in the vicinity of the WTC Site.

Subway Analysis

Table 13B-16 summarizes the line haul results for the stations serving the Project Site in 2015. It is projected that all subway lines would operate at a v/c ratio of 0.75 or less in 2015.

**Table 13B-16
Future Without the Proposed Action—Current Conditions Scenario
2015 Subway Line Haul Analysis**

Route	Station	Direction	Cars Per Train	Car* Cap.	Trains Per Hour	Total Peak Hour Capacity	Trains Entering Station		Trains Leaving Station	
							Volumes	V/C Ratio	Volumes	V/C Ratio
1/9	Cortlandt Street	Northbound	No Forecast Available.							
1/9	Cortlandt Street	Southbound	No Forecast Available.							
2	Park Place	Northbound	10	120	9	10,800	6,745	0.62	6,159	0.57
2	Park Place	Southbound	10	120	11	13,200	8,860	0.67	7,885	0.60
3	Park Place	Northbound	9	120	9	9,720	4,275	0.44	3,424	0.35
3	Park Place	Southbound	9	120	10	10,800	5,357	0.50	4,230	0.39
4	Fulton Street	Northbound	10	120	13	15,600	10,503	0.67	11,631	0.75
4	Fulton Street	Southbound	10	120	13	15,600	9,974	0.64	7,612	0.49
5	Fulton Street	Northbound	10	120	11	13,200	7,860	0.60	8,426	0.64
5	Fulton Street	Southbound	10	120	12	14,400	9,832	0.68	6,933	0.48
A	Chambers Street	Northbound	10	180	18	32,400	12,438	0.38	10,745	0.33
A	Chambers Street	Southbound	10	180	9	16,200	7,620	0.47	5,314	0.33
C	Chambers Street	Northbound	8	180	8	11,520	2,552	0.22	2,300	0.20
C	Chambers Street	Southbound	8	180	6	8,640	826	0.10	501	0.06
A	Broadway Nassau	Northbound	10	180	18	32,400	18,626	0.57	12,437	0.38
A	Broadway Nassau	Southbound	10	180	9	16,200	5,314	0.33	4,694	0.29
C	Broadway Nassau	Northbound	8	180	8	11,520	3,781	0.33	2,550	0.22
C	Broadway Nassau	Southbound	8	180	6	8,640	501	0.06	350	0.04
E	World Trade Center	Northbound	10	180	12	21,600	0	0.00	91	0.00
E	World Trade Center	Southbound	10	180	12	21,600	5,237	0.24	0	0.00
N	Cortlandt Street	Northbound	8	220	7	12,320	2,679	0.22	1,893	0.15
N	Cortlandt Street	Southbound	8	220	6	10,560	79	0.01	32	0.00
R	Cortlandt Street	Northbound	8	220	7	12,320	1,968	0.16	1,559	0.13
R	Cortlandt Street	Southbound	8	220	9	15,840	916	0.06	488	0.03

Note: * Subway car capacity based on CEQR manual prescribed guidelines.
Sources: MTA/NYCT, CEQR Technical Manual

PEDESTRIANS

Crosswalks

Of the 15 intersections analyzed for 2015 without the Proposed Action—Current Conditions, seven intersections (50 percent) are projected to have at least one crosswalk operating at LOS E during the AM, midday or PM periods. Separate analyses were performed at the Church Street and Liberty Street intersection both with and without the pedestrian connection between the WTC Site and Liberty Plaza. This intersection has crosswalks that are projected to operate at LOS E for both of these conditions. There were no crosswalks projected to operate at LOS F. Church Street and Liberty Street (without the underground connection) was the intersection with the most crosswalks, a total of five daily intersection approaches out of 12, projected to operate at LOS E. *The pedestrian analysis for the FGEIS was updated to reflect more specific midday pedestrian flow data for 7WTC, made available by the Port Authority since the issuance of the DGEIS.* The locations with LOS E are shown in Table 13B-17.

Corridors and Sidewalks

The pedestrian connection from the WTC to the World Financial Center under Route 9A is projected to operate at a satisfactory LOS C or better during the peak periods analyzed. The sidewalks on the west side of Church Street between Dey and Fulton Streets, on the north and

Table 13B-17
Future Without the Proposed Action—Current Conditions Scenario
2015 Crosswalk Analysis (LOS E or F)

Intersection	AM Period LOS Crosswalk				Midday Period LOS Crosswalk				PM Period LOS Crosswalk			
	North	East	South	West	North	East	South	West	North	East	South	West
Church St. @ Dey St.	A	E	B	-	A	E	B	-	A	E	B	-
Church St. @ Fulton St.	A	D	A	-	B	D	B	-	A	E	B	-
Church St. @ Vesey St.	B	C	C	E	C	D	B	E	B	D	D	E
Broadway @ John St.	C	D	D	D	D	E	E	D	C	E	B	D
Church St. @ Liberty St. (with underground connection)	D	B	C	E	C	B	B	C	D	C	B	D
Church St. @ Liberty St. (without underground connection)	E	B	E	E	C	B	B	C	E	C	C	E
Broadway @ Cortlandt St.	D	B	E	B	D	C	C	C	C	D	C	C
Broadway @ Liberty St.	D	B	C	C	D	E	C	D	C	D	C	C
W. Broadway @ Vesey St.	E	B	-	A	E	B	-	C	D	A	-	A

Source: Louis Berger Group, Inc., 2003.

south sides of Vesey Street between Greenwich and Church Streets, and on the north and south sides of Liberty Street between Washington and Greenwich Streets are projected to operate at a satisfactory LOS C or better during the peak periods analyzed. The complete analysis results are provided in Appendix F.

Subway Elements

The analysis locations at the No. 4/5 Fulton Street, No. 1/9 Cortlandt Street, N/R Cortlandt Street, No. 2/3 Park Place, E World Trade Center, and A/C Chambers Street Stations generally operate at LOS C or better during the peak periods. However, there are capacity constraints at a few locations during the AM and PM peak periods. These locations are shown in Table 13B-18. The complete analysis results are provided in Appendix F.

FERRY

Some additional growth in the ferry market would be expected by 2015 as Lower Manhattan continues to recover. The new ferry terminal at the World Financial Center would be fully operational in 2015.

13B.3.5 PROBABLE IMPACTS OF THE PROPOSED ACTION 2009— CURRENT CONDITIONS SCENARIO

TRANSIT

The overall trip generation procedures are outlined in Chapter 13A, "Traffic and Parking." These pedestrians were assigned to individual subway stations based upon Port Authority origin/destination data and input from NYCT.

**Table 13B-18
Future Without the Proposed Action—Current Conditions Scenario
2015 Subway Pedestrian Analysis (LOS D, E, or F)**

Element		AM Peak		PM Peak	
		v/c	LOS	v/c	LOS
A and C Chambers Street Station					
N92.X2	<i>HXT</i>	0.88	E	0.15	A
P11	Stairway to Platform	0.60	B	1.73	F
P17	Stairway to Platform	0.82	C	1.20	D
Church Street Passageway					
N92.X2	<i>HXT (south)</i>	0.88	E	0.15	A
S3	Stairway to Street	0.92	C	1.32	D
S20 M14A/B	Stairway to Street	1.28	D	0.95	C
4 and 5 Fulton Street Station					
<i>Concourse Level</i>					
C3	A/C Platform Stairs	1.05	D	0.81	C
C4	A/C Platform Stairs	1.05	D	0.81	C
C5	A/C Platform Stairs	1.07	D	0.83	C
C23	Escalator down from platform to street	0.61	D	0.34	B
C24	Escalator down from platform to underpass	0.12	A	0.60	D
<i>Platform Level</i>					
P8	HEETs SB Lex platform (NW corner)	0.62	D	0.14	A
C23	Escalator down from platform to street	0.61	D	0.34	B
C24	Escalator down from platform to underpass	0.12	A	0.60	D
Notes: v/c = volume/capacity ratio; LOS = Level of Service; HEET = High Entrance/Exit Turnstile; <i>HXT</i> = High Revolving Exit Gate					
Source: Louis Berger Group, Inc., 2003.					

The subway trips projected to be generated by the Proposed Action in 2009 would increase the demand on the subway lines serving the WTC Site. Each subway element within these stations was evaluated to determine their projected level of service during the AM and PM peak periods. When based upon a comparison between the future with the Proposed Action in 2009 and the future without the Proposed Action in 2009 under the Current Conditions Scenario, none of these elements would be impacted by the Proposed Action. In terms of subway line-haul capacity, none of the subway lines serving the WTC Site would be impacted by the Proposed Action.

The number of bus trips projected to be generated by the Proposed Action in 2009 would increase the demand for local and express buses. It is anticipated that most or all of the demand would be accommodated by unused capacity on the bus routes. MTA/NYCT should evaluate bus operations in 2009 to determine whether routing or frequencies need to be adjusted to accommodate any isolated increases in demand on specific local or express routes.

PEDESTRIANS

The overall trip generation procedures are outlined in Chapter 13A. At-grade pedestrian trips were assigned to the street network using origin/destination data provided by the Port Authority based on historical survey data. The redevelopment of the WTC Site includes development (Tower 1 and street-level retail) that would increase pedestrian traffic within the Vesey Street corridor.

Crosswalks

Of the 16 intersections analyzed for 2009 with the Proposed Action—Current Conditions, 10 intersections (63 percent) are projected to have at least one crosswalk operating at LOS E or F

during the AM, midday, or PM periods. Separate analyses were performed at the Church Street and Liberty Street intersection both with and without the underground connection between the WTC Site and Liberty Plaza. This intersection has crosswalks that are projected to operate at LOS E for both of these conditions. *One* intersection (Church and Vesey Street) is projected to have a crosswalk operate at LOS F. The Church Street and Vesey Street intersection is projected to have the most crosswalks operating at LOS E (a total of six daily intersection approaches out of 12). The locations *with LOS E* are shown in Table 13B-19.

The AM, midday, and PM peak period 2009 crosswalk analysis results for the future with the Proposed Action—Current Conditions were compared with the future without the Proposed Action—Current Conditions. The results of these comparisons are provided in Tables 13B-20 through 22 for the AM, midday, and PM peak periods, respectively. Based upon the comparison of these scenarios using the CEQR criteria, three crosswalks were determined to have impacts during the AM peak period, *four* crosswalks were determined to have impacts during the midday peak period, and four crosswalks were determined to have impacts during the PM peak period.

**Table 13B-19
Future with the Proposed Action—Current Conditions Scenario
2009 Crosswalk Analysis (LOS E or F)**

Intersection	AM Period LOS Crosswalk				Midday Period LOS Crosswalk				PM Period LOS Crosswalk			
	North	East	South	West	North	East	South	West	North	East	South	West
Church St. @ Dey St.	B	E	B	-	B	E	C	-	B	E	C	-
Church St. @ Fulton St.	B	D	B	C	C	D	C	D	B	E	C	E
Church St. @ Vesey St.	D	E	D	E	C	E	C	E	D	E	D	F
Broadway @ John St.	C	D	D	D	D	E	E	D	C	E	B	D
Broadway @ Fulton St.	B	E	D	C	C	E	D	D	C	E	D	D
Church St. @ Liberty St. (with underground connection)	D	B	C	E	C	B	B	C	D	C	C	D
Church St. @ Liberty St. (without underground connection)	E	B	E	E	C	B	B	C	E	C	D	E
Broadway @ Liberty St.	C	B	C	C	D	E	B	D	C	D	C	C
Greenwich St. @ Liberty St.	A	B	D	D	A	B	C	E	B	B	D	D
W. Broadway @ Vesey St.	E	C	C	D	E	C	D	D	E	C	D	D
Greenwich St. @ Fulton St.	C	B	C	D	D	C	C	E	D	B	D	E

Source: Louis Berger Group, Inc., 2003.

Corridors and Sidewalks

None of these locations would be impacted in 2009 by the Proposed Action. The complete results of the analysis are provided in Appendix F.

Subway Elements

The analysis locations at the No. 4/5 Fulton Street, No. 1/9 Cortlandt Street, N/R Cortlandt Street, No. 2/3 Park Place, E World Trade Center, and A/C Chambers Street Stations generally operate at LOS C or better during the peak periods. However, there are capacity constraints at a few locations during the AM and PM peak periods. These locations are shown in Table 13B-23.

**Table 13B-20
2009 Crosswalk Impact Assessment—AM Peak Period**

Intersection	2009 Future Without the Proposed Action Current Conditions Scenario								2009 Future With the Proposed Action Current Conditions Scenario ^{1,2}								Significant Impacts of the Proposed Action			
	Crosswalk								Crosswalk											
	North		East		South		West		North		East		South		West		Crosswalk			
	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	North	East	South	West
Church St. @ Dey St.	193	A	14	E	129	B	-	-	90	B	12	E	59	B	-	-	NO	YES	NO	NO
Church St. @ Fulton St.	248	A	15	D	160	A	-	-	59	B	16	D	50	B	25	C	NO	NO	NO	NO
Church St. @ Vesey St.	51	B	25	C	28	C	9	E	16	D	10	E	21	D	8	E	NO	YES	NO	YES
Church St. @ Barclay St.	147	A	55	B	158	A	38	C	147	A	35	C	63	B	30	C	NO	NO	NO	NO
Broadway @ John St.	27	C	16	D	17	D	20	D	27	C	16	D	17	D	19	D	NO	NO	NO	NO
Broadway @ Fulton St.	43	B	11	E	22	D	35	C	43	B	11	E	22	D	35	C	NO	NO	NO	NO
Church St. @ Liberty St. (with underground connection)	16	D	58	B	31	C	12	E	15	D	57	B	30	C	12	E	NO	NO	NO	NO
Church St. @ Liberty St. (without underground connection)	6	E	58	B	14	E	9	E	6	E	57	B	14	E	9	E	NO	NO	NO	NO
Church St. @ Cortlandt St.	66	B	68	B	57	B	-	-	29	C	66	B	43	B	-	-	NO	NO	NO	NO
Broadway @ Cortlandt St.	17	D	54	B	15	D	47	B	17	D	54	B	15	D	43	B	NO	NO	NO	NO
Broadway @ Liberty St.	24	C	44	B	39	C	32	C	24	C	44	B	39	C	32	C	NO	NO	NO	NO
Greenwich St. @ Liberty St.	-	-	938	A	17	D	243	A	149	A	50	B	16	D	18	D	NO	NO	NO	NO
Route 9A @ Liberty St.	-	-	-	-	23	D	-	-	1089	A	716	A	24	C	-	-	NO	NO	NO	NO
Route 9A @ Vesey St.	27	C	-	-	-	-	-	-	36	C	66	B	358	A	-	-	NO	NO	NO	NO
W. Broadway @ Vesey St.	14	E	121	B	-	-	391	A	7	E	28	C	26	C	20	D	NO	NO	NO	NO
Route 9A @ Fulton St.	173	A	1398	A	291	A	-	-	88	B	78	B	218	A	-	-	NO	NO	NO	NO
Greenwich St. @ Fulton St.	-	-	-	-	-	-	-	-	31	C	55	B	32	C	15	D	NO	NO	NO	NO

Notes: ¹ The Predicted results reflect an additional crosswalk at the proposed Route 9A and Fulton Street intersection.
² Because data were not available for the west crosswalks at the Route 9A intersections at Liberty Street and Vesey Street for the Pre September 11 Scenario, these crosswalks could not be analyzed.

Source: Louis Berger Group, Inc., 2003.

**Table 13B-21
2009 Crosswalk Impact Assessment—Midday Peak Period**

Intersection	2009 Future Without the Proposed Action Current Conditions Scenario ³								2009 Future With the Proposed Action Current Conditions Scenario ¹²								Significant Impacts of the Proposed Action			
	Crosswalk								Crosswalk											
	North		East		South		West		North		East		South		West		Crosswalk			
	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	North	East	South	West
Church St. @ Dey St.	222	A	12	E	62	B	-	-	97	B	10	E	37	C	-	-	NO	YES	NO	NO
Church St. @ Fulton St.	117	B	16	D	79	B	-	-	39	C	16	D	38	C	16	D	NO	NO	NO	NO
Church St. @ Vesey St.	29	C	16	D	46	B	15	D	23	C	12	E	30	C	11	E	NO	YES	NO	YES
Church St. @ Barclay St.	174	A	56	B	43	B	34	C	174	A	38	C	43	B	25	C	NO	NO	NO	NO
Broadway @ John St.	18	D	6	E	10	E	17	D	18	D	6	E	10	E	17	D	NO	NO	NO	NO
Broadway @ Fulton St.	25	C	10	E	23	D	17	D	25	C	10	E	23	D	17	D	NO	NO	NO	NO
Church St. @ Liberty St. (with underground connection)	40	B	91	B	43	B	30	C	34	C	89	B	42	B	30	C	NO	NO	NO	NO
Church St. @ Liberty St. (without underground connection)	37	C	91	B	42	B	30	C	32	C	89	B	41	B	30	C	NO	NO	NO	NO
Church St. @ Cortlandt St.	59	B	23	D	33	C	-	-	23	D	23	D	26	C	-	-	NO	NO	NO	NO
Broadway @ Cortlandt St.	18	D	25	C	30	C	25	C	18	D	25	C	30	C	25	C	NO	NO	NO	NO
Broadway @ Liberty St.	16	D	11	E	41	B	20	D	16	D	11	E	41	B	20	D	NO	NO	NO	NO
Greenwich St. @ Liberty St.	-	-	168	A	27	C	51	B	233	A	43	B	25	C	13	E	NO	NO	NO	YES
Route 9A @ Liberty St.	-	-	-	-	36	C	-	-	778	A	95	B	36	C	-	-	NO	NO	NO	NO
Route 9A @ Vesey St.	45	B	-	-	-	-	-	-	49	B	22	D	107	B	-	-	NO	NO	NO	NO
W. Broadway @ Vesey St.	21	D	77	B	-	-	253	A	10	E	30	C	17	D	15	D	NO	NO	NO	NO
Route 9A @ Fulton St.	205	A	1598	A	283	A	-	-	34	C	26	C	242	A	-	-	NO	NO	NO	NO
Greenwich St. @ Fulton St.	-	-	-	-	-	-	-	-	23	D	50	B	25	C	11	E	NO	NO	NO	NO

Notes: ¹ The Predicted results reflect updated information since the DGEIS, including more specific midday internal trip assumptions provided by PANYNJ and an additional crosswalk at the proposed Route 9A and Fulton Street intersection.
² Because data were not available for the west crosswalks at the Route 9A intersections at Liberty Street and Vesey Street for the Pre September 11 Scenario, these crosswalks could not be analyzed.
³ The results reflect more specific midday pedestrian flow data for 7WTC provided by the Port Authority since the issuance of the DGEIS.

Source: Louis Berger Group, Inc., 2003.

**Table 13B-22
2009 Crosswalk Impact Assessment—PM Peak Period**

Intersection	2009 Future Without the Proposed Action Current Conditions Scenario								2009 Future With the Proposed Action Current Conditions Scenario ^{1,2}								Significant Impacts of the Proposed Action			
	Crosswalk								Crosswalk											
	North		East		South		West		North		East		South		West		Crosswalk			
	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	North	East	South	West
Church St. @ Dey St.	151	A	12	E	72	B	-	-	69	B	9	E	34	C	-	-	NO	YES	NO	NO
Church St. @ Fulton St.	242	A	11	E	95	B	-	-	48	B	11	E	30	C	14	E	NO	NO	NO	NO
Church St. @ Vesey St.	59	B	22	D	21	D	6	E	19	D	10	E	16	D	5	F	NO	YES	NO	YES
Church St. @ Barclay St.	266	A	54	B	115	B	22	D	266	A	33	C	55	B	18	D	NO	NO	NO	NO
Broadway @ John St.	35	C	14	E	42	B	17	D	35	C	14	E	42	B	16	D	NO	NO	NO	NO
Broadway @ Fulton St.	35	C	13	E	22	D	21	D	35	C	13	E	22	D	21	D	NO	NO	NO	NO
Church St. @ Liberty St. (with underground connection)	19	D	35	C	41	B	17	D	16	D	35	C	37	C	17	D	NO	NO	NO	NO
Church St. @ Liberty St. (without underground connection)	10	E	35	C	25	C	14	E	9	E	35	C	23	D	14	E	YES	NO	NO	NO
Church St. @ Cortlandt St.	44	B	25	C	36	C	-	-	17	D	25	C	27	C	-	-	NO	NO	NO	NO
Broadway @ Cortlandt St.	29	C	24	C	31	C	39	C	28	C	23	D	30	C	38	C	NO	NO	NO	NO
Broadway @ Liberty St.	26	C	17	D	32	C	38	C	26	C	17	D	32	C	36	C	NO	NO	NO	NO
Greenwich St. @ Liberty St.	-	-	1642	A	17	D	469	A	82	B	57	B	16	D	16	D	NO	NO	NO	NO
Route 9A @ Liberty St.	-	-	-	-	23	D	-	-	628	A	394	A	23	D	-	-	NO	NO	NO	NO
Route 9A @ Vesey St.	32	C	-	-	-	-	-	-	43	B	61	B	376	A	-	-	NO	NO	NO	NO
W. Broadway @ Vesey St.	17	D	142	A	-	-	458	A	7	E	30	C	23	D	16	D	NO	NO	NO	NO
Route 9A @ Fulton St.	205	A	1598	A	283	A	-	-	96	B	77	B	180	A	-	-	NO	NO	NO	NO
Greenwich St. @ Fulton St.	-	-	-	-	-	-	-	-	19	D	51	B	20	D	9	E	NO	NO	NO	NO

Notes: ¹ The Predicted results reflect an additional crosswalk at the proposed Route 9A and Fulton Street intersection.

² Because data were not available for the west crosswalks at the Route 9A intersections at Liberty Street and Vesey Street for the Pre September 11 Scenario, these crosswalks could not be analyzed.

Source: Louis Berger Group, Inc., 2003.

Table 13B-23
Future with the Proposed Action—Current Conditions Scenario
2009 Subway Pedestrian Analysis (LOS D, E, or F)

Element		AM Peak		PM Peak	
		v/c	LOS	v/c	LOS
A and C Chambers Street Station					
N92.X2	HXT	0.85	E	0.15	A
P11	Stairway to Platform	0.69	B	1.95	F
P17	Stairway to Platform	0.80	C	1.16	D
Church Street Passageway					
N92.X2	HXT (south)	0.85	E	0.15	A
S3	Stairway to Street	0.95	C	1.35	E
S20 M14A/B	Stairway to Street	1.24	D	0.92	C
4 and 5 Fulton Street Station					
<i>Concourse Level</i>					
C3	A/C Platform Stairs	1.05	D	0.81	C
C4	A/C Platform Stairs	1.05	D	0.81	C
C5	A/C Platform Stairs	1.07	D	0.83	C
C23	Escalator down from platform to street	0.61	D	0.34	B
C24	Escalator down from platform to underpass	0.12	A	0.60	D
<i>Platform Level</i>					
P8	HEETs SB Lex platform (NW corner)	0.62	D	0.14	A
C23	Escalator down from platform to street	0.61	D	0.34	B
C24	Escalator down from platform to underpass	0.12	A	0.60	D
Notes: v/c = volume/capacity ratio; LOS = Level of Service; HEET = High Entrance/Exit Turnstile; HXT = High Revolving Exit Gate					
Source: Louis Berger Group, Inc., 2003.					

None of these facilities would be impacted in 2009 by the Proposed Action. The complete results of the analysis are provided in Appendix F.

FERRY

The number of ferry trips projected to be generated by the Proposed Action in 2009 would be less than the ferry trips generated as a result of the PATH closure from 2001 to 2003. Most of these new ferry customers would be served at the ferry terminal located at the World Financial Center. The capacity of this terminal would be increased significantly prior to 2009 and could accommodate an increase in ferry demand. Since private ferry operators serve the World Financial Center ferry terminal, service could be adjusted to accommodate an increase in demand.

13B.3.6 PROBABLE IMPACTS OF THE PROPOSED ACTION 2015— CURRENT CONDITIONS SCENARIO

TRANSIT

The overall trip generation procedures are outlined in Chapter 13A, "Traffic and Parking." These pedestrians were assigned to individual subway stations based on Port Authority origin/destination data and input from NYCT.

The subway trips projected to be generated by the Proposed Action in 2015 would also increase the demand on the subway lines serving the WTC Site. Each subway element within these stations was evaluated to determine their projected level of service during the AM and PM peak periods. Based upon a comparison between the future with the Proposed Action in 2015 and the future without the Proposed Action in 2015 under the Current Conditions Scenario, one of these

elements would be impacted by the Proposed Action. In terms of subway line-haul capacity, none of the subway lines serving the WTC Site would be impacted by the Proposed Action.

The number of bus trips projected to be generated by the Proposed Action in 2015 would increase the demand for local and express buses. It is anticipated that most or all of the demand would be accommodated by unused capacity on the bus routes. MTA/NYCT should evaluate bus operations in 2015 to determine whether routing or frequencies need to be adjusted to accommodate any isolated increases in demand on specific local or express routes.

PEDESTRIANS

The overall trip generation procedures are outlined in Chapter 13A. At-grade pedestrian trips were assigned to the street network using origin/destination data provided by the Port Authority based on historical survey data. The redevelopment of the WTC Site includes development that would increase pedestrian traffic within the Vesey Street corridor. As a result, more pedestrian traffic is anticipated within the Vesey Street corridor. All pedestrian access to Tower 5 south of Liberty Street would be at-grade. Consequently, a significant number of pedestrians would be assigned to the Greenwich Street and Liberty Street intersection.

Crosswalks

Of the 16 intersections analyzed for 2015 with the Proposed Action—Current Conditions, 12 intersections are projected to have at least one crosswalk operating at LOS E or F during the AM, midday, or PM periods. Separate analyses were performed at the Church Street and Liberty Street intersection both with and without the underground connection between the WTC Site and Liberty Plaza. This intersection has crosswalks that are projected to operate at LOS E for both of these conditions. Two intersections (Church Street and Liberty Street intersection without the underground connection, and Church Street and Vesey Street) are projected to have a crosswalk operate at LOS F in 2015. The Church Street and Vesey Street intersection is projected to have the most crosswalks operating at LOS E or F (a total of seven daily intersection approaches out of 12). The locations with LOS E or F are shown in Table 13B-24.

The AM, midday, and PM peak period 2015 crosswalk analysis results for the future with the Proposed Action—Current Conditions were compared with the future without the Proposed Action—Current Conditions Scenario. The results of these comparisons are provided in Tables 13B-25 through 27 for the AM, midday, and PM peak periods, respectively. Based on the comparison of these scenarios using the CEQR criteria, nine crosswalks were determined to have impacts during the AM peak period, five crosswalks were determined to have impacts during the midday peak period, and 10 crosswalks were determined to have impacts during the PM peak period.

Corridors and Sidewalks

None of these locations would be impacted in 2015 by the Proposed Action. The complete results of the analysis are provided in Appendix F.

Table 13B-24
Future with the Proposed Action-Current Conditions Scenario
2015 Crosswalk Analysis (LOS E or F)

Intersection	AM Period LOS Crosswalk				Midday Period LOS Crosswalk				PM Period LOS Crosswalk			
	North	East	South	West	North	East	South	West	North	East	South	West
Church St. @ Dey St.	B	E	B	-	<i>B</i>	E	C	-	B	E	C	-
Church St. @ Fulton St.	C	D	B	D	<i>D</i>	D	C	E	C	E	C	E
Church St. @ Vesey St.	D	E	D	E	D	E	C	E	D	E	E	F
Church St. @ Barclay St.	A	D	B	D	A	C	<i>B</i>	<i>D</i>	A	D	B	D
Broadway @ John St.	C	D	D	D	D	E	E	D	C	E	B	E
Broadway @ Fulton St.	B	E	D	C	C	E	D	D	C	E	D	D
Church St. @ Liberty St. (with underground connection)	E	C	D	E	D	B	C	C	E	C	C	E
Church St. @ Liberty St. (without underground connection)	F	C	E	E	D	B	C	D	E	C	D	E
Broadway @ Cortlandt St.	D	B	E	D	D	C	C	D	C	D	C	D
Broadway @ Liberty St.	D	B	C	C	D	E	C	D	C	D	C	C
Greenwich St. @ Liberty St.	D	D	E	E	<i>C</i>	<i>D</i>	<i>D</i>	<i>E</i>	D	D	E	E
W. Broadway @ Vesey St.	E	D	D	D	E	<i>D</i>	E	E	E	D	D	D
Greenwich St. @ Fulton St.	C	E	D	E	<i>D</i>	E	<i>D</i>	E	D	E	D	E

Source: Louis Berger Group, Inc., 2003.

Subway Elements

The analysis locations at the No. 4/5 Fulton Street, No. 1/9 Cortlandt Street, N/R Cortlandt Street, No. 2/3 Park Place, E World Trade Center, and A/C Chambers Street Stations generally operate at LOS C or better during the peak periods. However, there are capacity constraints at a few locations during the AM and PM peak periods. These locations are shown in Table 13B-28. The P11 stairway to the platform in the A and C Chambers Street Station is projected to be impacted in 2015 as a result of the Proposed Action under the Current Conditions Scenario. The complete results of the analysis are provided in Appendix F.

FERRY

The number of ferry trips projected to be generated by the Proposed Action in 2015 would also be less than the ferry trips generated as a result of the WTC PATH Terminal closure from 2001 to 2003. The capacity of the World Financial Center ferry terminal is expected to be increased prior to 2015, and that terminal could accommodate an increase in ferry demand. The private ferry operators serving the World Financial Center ferry terminal could adjust service to accommodate increased demand.

13B.4 PRE-SEPTEMBER 11 SCENARIO

This scenario reflects conditions before September 11, which means that all transit facilities, roads, walkways, and stairways are as before and the buildings and businesses are occupied at pre-September 11 levels.

**Table 13B-25
2015 Crosswalk Impact Assessment—AM Peak Period**

Intersection	2015 Future Without the Proposed Action Current Conditions Scenario								2015 Future With the Proposed Action Current Conditions Scenario ^{1,2}								Significant Impacts of the Proposed Action			
	Crosswalk								Crosswalk											
	North		East		South		West		North		East		South		West		Crosswalk			
	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	North	East	South	West
Church St. @ Dey St.	187	A	14	E	120	B	-	-	63	B	11	E	51	B	-	-	NO	YES	NO	NO
Church St. @ Fulton St.	231	A	15	D	143	A	-	-	30	C	15	D	50	B	15	D	NO	NO	NO	NO
Church St. @ Vesey St.	49	B	24	C	27	C	9	E	15	D	9	E	18	D	7	E	NO	YES	NO	YES
Church St. @ Barclay St.	143	A	53	B	153	A	36	C	143	A	21	D	63	B	22	D	NO	NO	NO	NO
Broadway @ John St.	26	C	15	D	16	D	19	D	26	C	15	D	16	D	15	D	NO	NO	NO	NO
Broadway @ Fulton St.	42	B	11	E	21	D	34	C	42	B	11	E	21	D	34	C	NO	NO	NO	NO
Church St. @ Liberty St. (with underground connection)	15	D	55	B	29	C	11	E	10	E	39	C	19	D	10	E	YES	NO	NO	YES
Church St. @ Liberty St. (without underground connection)	6	E	108	B	14	E	8	E	5	F	39	C	11	E	7	E	YES	NO	YES	YES
Church St. @ Cortlandt St.	63	B	66	B	56	B	-	-	27	C	47	B	32	C	-	-	NO	NO	NO	NO
Broadway @ Cortlandt St.	17	D	52	B	14	E	45	B	17	D	52	B	14	E	19	D	NO	NO	NO	NO
Broadway @ Liberty St.	23	D	43	B	38	C	31	C	23	D	43	B	38	C	26	C	NO	NO	NO	NO
Greenwich St. @ Liberty St.	-	-	938	A	17	D	243	A	16	D	17	D	9	E	6	E	NO	NO	NO	YES
Route 9A @ Liberty St.	-	-	-	-	23	D	-	-	545	A	1,125	A	22	D	-	-	NO	NO	NO	NO
Route 9A @ Vesey St.	26	C	-	-	-	-	-	-	34	C	47	B	280	A	-	-	NO	NO	NO	NO
W. Broadway @ Vesey St.	14	E	121	B	-	-	391	A	6	E	16	D	17	D	16	D	NO	NO	NO	NO
Route 9A @ Fulton St.	175	A	77	B	291	A	-	-	74	B	58	B	193	A	-	-	NO	NO	NO	NO
Greenwich St. @ Fulton St.	-	-	-	-	-	-	-	-	25	C	12	E	22	D	12	E	NO	NO	NO	NO

Notes: ¹ The Predicted results reflect an additional crosswalk at the proposed Route 9A and Fulton Street intersection.

² Because data were not available for the west crosswalks at the Route 9A intersections at Liberty Street and Vesey Street for the Pre September 11 Scenario, these crosswalks could not be analyzed.

Source: Louis Berger Group, Inc., 2003.

**Table 13B-26
2015 Crosswalk Impact Assessment—Midday Peak Period**

Intersection	2015 Future Without the Proposed Action Current Conditions Scenario ³								2015 Future With the Proposed Action Current Conditions Scenario ¹²								Significant Impacts of the Proposed Action			
	Crosswalk								Crosswalk											
	North		East		South		West		North		East		South		West		Crosswalk			
	Sq.ft./ped	LOS	Sq.ft./ped	LOS	Sq.ft./ped	LOS	Sq.ft./ped	LOS	Sq.ft./ped	LOS	Sq.ft./ped	LOS	Sq.ft./ped	LOS	Sq.ft./ped	LOS	North	East	South	West
Church St. @ Dey St.	219	A	12	E	61	B	-	-	62	B	10	E	34	C	-	-	NO	YES	NO	NO
Church St. @ Fulton St.	114	B	16	D	77	B	-	-	22	D	16	D	39	C	11	E	NO	NO	NO	NO
Church St. @ Vesey St.	29	C	16	D	44	B	14	E	23	D	11	E	25	C	9	E	NO	YES	NO	YES
Church St. @ Barclay St.	168	A	50	B	42	B	33	C	168	A	24	C	42	B	19	D	NO	NO	NO	NO
Broadway @ John St.	17	D	6	E	9	E	16	D	17	D	6	E	9	E	15	D	NO	NO	NO	NO
Broadway @ Fulton St.	24	C	9	E	22	D	17	D	24	C	9	E	22	D	17	D	NO	NO	NO	NO
Church St. @ Liberty St. (with underground connection)	38	C	88	B	42	B	29	C	21	D	73	B	30	C	25	C	NO	NO	NO	NO
Church St. @ Liberty St. (without underground connection)	35	C	88	B	41	B	29	C	20	D	73	B	29	C	25	C	NO	NO	NO	NO
Church St. @ Cortlandt St.	56	B	22	D	32	C	-	-	22	D	21	D	21	D	-	-	NO	NO	NO	NO
Broadway @ Cortlandt St.	18	D	25	C	29	C	24	C	18	D	25	C	29	C	21	D	NO	NO	NO	NO
Broadway @ Liberty St.	16	D	11	E	39	C	20	D	16	D	11	E	39	C	19	D	NO	NO	NO	NO
Greenwich St. @ Liberty St.	-	-	168	A	26	C	55	B	25	C	20	D	15	D	6	E	NO	NO	NO	YES
Route 9A @ Liberty St.	-	-	-	-	35	C	-	-	224	A	143	A	27	C	-	-	NO	NO	NO	NO
Route 9A @ Vesey St.	44	B	-	-	-	-	-	-	44	B	18	D	89	B	-	-	NO	NO	NO	NO
W. Broadway @ Vesey St.	12	E	55	B	-	-	35	C	8	E	16	D	11	E	12	E	NO	NO	NO	YES
Route 9A @ Fulton St.	77	B	77	B	448	A	-	-	28	C	21	D	165	A	-	-	NO	NO	NO	NO
Greenwich St. @ Fulton St.	-	-	-	-	-	-	-	-	17	D	11	E	18	D	10	E	NO	NO	NO	NO

Notes: ¹ The Predicted results reflect updated information since the DGEIS, including more specific midday internal trip assumptions provided by PANYNJ and an additional crosswalk at the proposed Route 9A and Fulton Street intersection.
² Because data were not available for the west crosswalks at the Route 9A intersections at Liberty Street and Vesey Street for the Pre September 11 Scenario, these crosswalks could not be analyzed.
³ The results reflect more specific midday pedestrian flow data for 7WTC provided by the Port Authority since the issuance of the DGEIS.

Source: Louis Berger Group, Inc., 2003.

Table 13B-27
2015 Crosswalk Impact Assessment—PM Peak Period

Intersection	2015 Future Without the Proposed Action Current Conditions Scenario								2015 Future With the Proposed Action Current Conditions Scenario ¹²								Significant Impacts of the Proposed Action			
	Crosswalk								Crosswalk											
	North		East		South		West		North		East		South		West		Crosswalk			
	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	North	East	South	West
Church St. @ Dey St.	144	A	12	E	68	B	-	-	55	B	9	E	34	C	-	-	NO	YES	NO	NO
Church St. @ Fulton St.	231	A	11	E	87	B	-	-	30	C	11	E	34	C	10	E	NO	NO	NO	NO
Church St. @ Vesey St.	58	B	21	D	20	D	6	E	18	D	8	E	14	E	5	F	NO	YES	YES	YES
Church St. @ Barclay St.	252	A	53	B	109	B	22	D	252	A	20	D	54	B	15	D	NO	NO	NO	NO
Broadway @ John St.	34	C	14	E	40	B	16	D	34	C	14	E	40	B	14	E	NO	NO	NO	YES
Broadway @ Fulton St.	34	C	13	E	21	D	20	D	34	C	13	E	21	D	20	D	NO	NO	NO	NO
Church St. @ Liberty St. (with underground connection)	18	D	34	C	40	B	17	D	12	E	27	C	25	C	14	E	YES	NO	NO	YES
Church St. @ Liberty St. (without underground connection)	10	E	34	C	24	C	14	E	8	E	27	C	17	D	12	E	YES	NO	NO	YES
Church St. @ Cortlandt St.	43	B	24	C	35	C	-	-	18	D	21	D	23	D	-	-	NO	NO	NO	NO
Broadway @ Cortlandt St.	28	C	23	D	30	C	38	C	28	C	23	D	30	C	20	D	NO	NO	NO	NO
Broadway @ Liberty St.	25	C	16	D	31	C	37	C	25	C	16	D	31	C	31	C	NO	NO	NO	NO
Greenwich St. @ Liberty St.	-	-	1,642	A	17	D	469	A	18	D	19	D	10	E	7	E	NO	NO	NO	YES
Route 9A @ Liberty St.	-	-	-	-	22	D	-	-	467	A	606	A	21	D	-	-	NO	NO	NO	NO
Route 9A @ Vesey St.	32	C	-	-	-	-	-	-	41	B	47	B	299	A	-	-	NO	NO	NO	NO
W. Broadway @ Vesey St.	17	D	142	A	-	-	458	A	7	E	18	D	17	D	15	D	NO	NO	NO	NO
Route 9A @ Fulton St.	207	A	77	B	287	A	-	-	81	B	60	B	174	A	-	-	NO	NO	NO	NO
Greenwich St. @ Fulton St.	-	-	-	-	-	-	-	-	18	D	12	E	17	D	9	E	NO	NO	NO	NO

Notes: ¹ The Predicted results reflect an additional crosswalk at the proposed Route 9A and Fulton Street intersection.

² Because data were not available for the west crosswalks at the Route 9A intersections at Liberty Street and Vesey Street for the Pre September 11 Scenario, these crosswalks could not be analyzed.

Source: Louis Berger Group, Inc., 2003.

Table 13B-28
Future with the Proposed Action—Current Conditions Scenario
2015 Subway Pedestrian Analysis (LOS D, E, or F)

Element		AM Peak		PM Peak	
		v/c	LOS	v/c	LOS
A and C Chambers Street Station					
N92.X2	HXT	0.88	E	0.15	A
N92.X4	HXT	0.73	D	0.07	A
P11	Stairway to Platform	0.82	C	2.31	F
P17	Stairway to Platform	0.82	C	1.20	D
Church Street Passageway					
N94	Turnstile	0.73	D	0.70	D
N92.X2	HXT	0.88	E	0.15	A
N92	Turnstile (north)	0.37	B	0.60	D
N92.X4	HXT	0.73	D	0.07	A
P2 A/B	Stairway to Street	0.75	C	1.08	D
S3	Stairway to Street	1.04	D	1.46	E
S20 M14A/B	Stairway to Street	1.28	D	0.95	C
E World Trade Center Station					
N94	Turnstile	0.73	D	0.70	D
4 and 5 Fulton Street Station					
<i>Street Level</i>					
P9A	Street Stairs	1.09	D	0.24	A
P15	Escalator up from platform to World of Golf	0.60	D	0.01	A
<i>Concourse Level</i>					
C3	A/C Platform Stairs	0.23	D	0.95	C
C4	A/C Platform Stairs	0.23	D	0.95	C
C5	A/C Platform Stairs	1.33	D	1.03	C
C8	Escalator up to platform (north)	0.65	D	0.05	A
C23	Escalator down from platform to street	0.71	D	0.40	C
C24	Escalator down from platform to underpass	0.14	A	0.71	D
<i>Platform Level</i>					
P6 and P13	Turnstile	0.60	D	0.68	D
P8	HEETs SB Lex platform (NW corner)	0.72	D	0.16	A
P9	Street Stairs	1.09	D	0.24	A
P15	Escalator up from platform to World of Golf	0.60	D	0.01	A
C23	Escalator down from platform to street	0.71	D	0.40	C
C24	Escalator down from platform to underpass	0.14	A	0.71	D
Notes: v/c = volume/capacity ratio; LOS = Level of Service; HEET = High Entrance/Exit Turnstile; HXT = High Revolving Exit Gate Source: Louis Berger Group, Inc., 2003.					

13B.4.1 DATA COLLECTION

TRANSIT

Bus data for the routes previously serving the study area in 2001 were provided by MTA/NYCT Operations Planning. This includes data for the peak load points and bus frequencies in the spring of 2001. Counts of all station elements in the Fulton Street complex, WTC complex, and the N/R Cortlandt Street Station were derived for the AM and PM peak periods in the spring of 2001 based upon turnstile registration data provided by MTA/NYCT Operations Planning. It is assumed that the physical measurements taken of all of these elements in 2003 were the same in 2001 except for the new stairs and closed entrances in 2003. The widths of elements that were destroyed or closed were scaled from the as-built plans of the subway stations provided by MTA/NYCT. Historical subway boarding, alighting, on board passenger data, and service

frequencies were provided by MTA/NYCT Operations Planning for the subway lines serving Lower Manhattan during the AM peak hour in the spring of 2001. The local and express bus routes for the Pre-September 11 Scenario are illustrated in Figure 13B-6 and Figure 13B-7, respectively, and subway station locations are shown in Figure 13B-8.

PEDESTRIANS

Weekday pedestrian count data for the major crosswalk locations and bridges in the vicinity of the WTC Site were provided from the Port Authority and from NYSDOT. For locations where pre-September 11 data were not available, the 2003 count data were adjusted to reflect the higher pedestrian activity levels in 2001.

13B.4.2 BASELINE CONDITIONS

TRANSIT

Bus Routes

The Pre-September 11 Scenario bus network included essentially the same routes as the Current Conditions that serve Route 9A, Church Street, Broadway, and the City Hall area in close proximity to the WTC Site. These routes are also comprised of local and express bus service provided by MTA/NYCT, express routes provided by private carriers subsidized by NYCDOT, and express routes provided by independent private carriers. A summary of these routes in terms of description and frequency of service is provided on Tables 13B-5 to 13B-6.

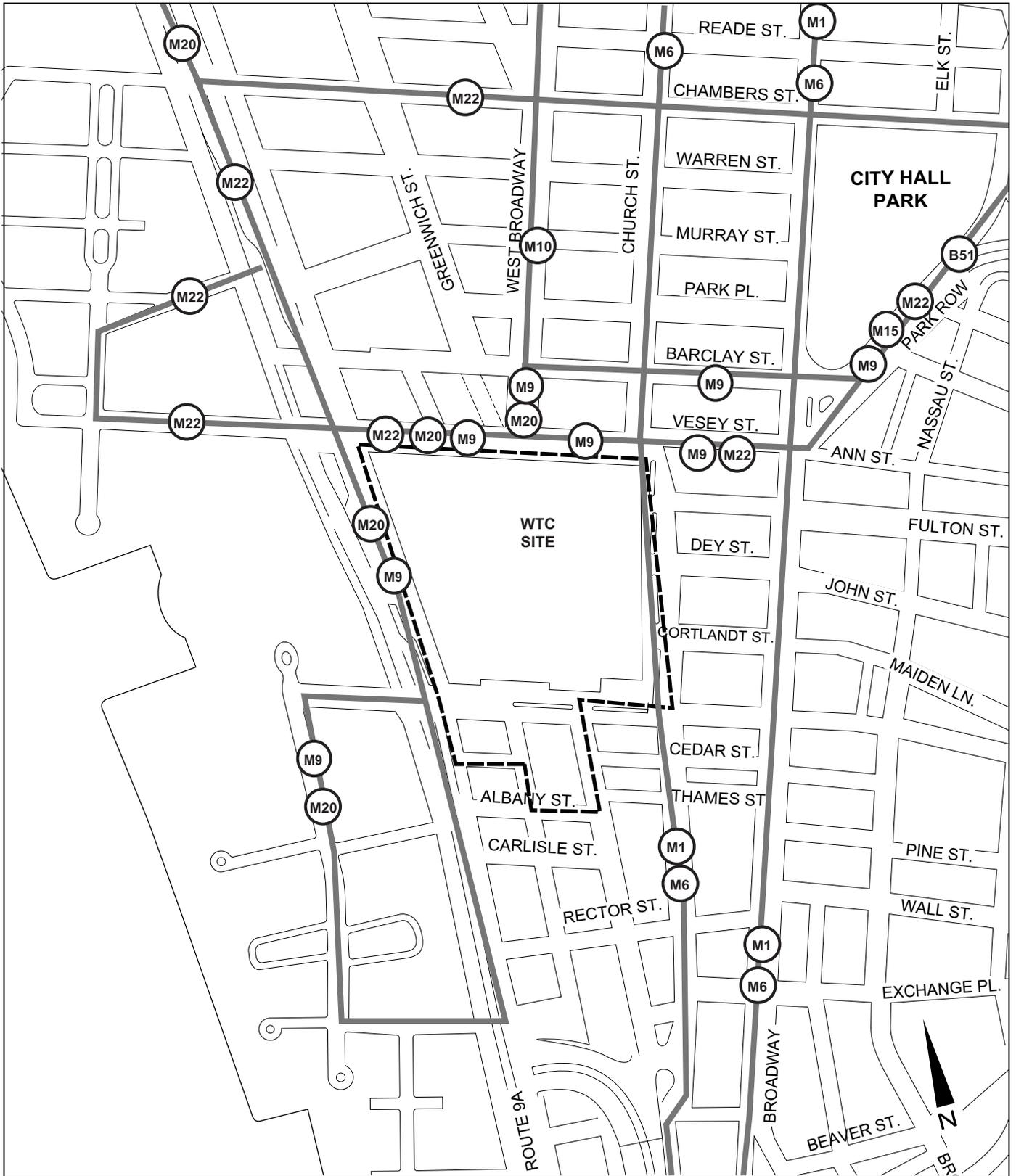
Local Bus Routes

Prior to September 11, major streets in Lower Manhattan were well served by local bus routes, including West Street, Church Street, Broadway, Waters Street and Chambers Street. All of the 12 local bus routes between Lower Manhattan and other parts of Manhattan and Downtown Brooklyn were operated by MTA/NYCT. Three locations (South Ferry, Battery Park City/World Financial Center and the Park Row/City Hall) also served as the terminus for many of these local Lower Manhattan bus routes that serve Manhattan and Brooklyn. The M1 (Harlem), M6 (Central Park South), and M15 (East Harlem) bus routes terminated at South Ferry. The M9 (Union Square), M20 (Lincoln Center), and M22 (Lower East Side) bus routes terminated at Battery Park City/World Financial Center. The M15 (East Harlem), M103 (East Harlem), and B51 (Downtown Brooklyn) bus routes terminated at Park Row/City Hall.

Both Battery Park City/World Financial Center and Park Row/City Hall terminuses were within close proximity to the west and northeast of the WTC Site, respectively. The South Ferry location was approximately one mile to the south. However, two of the three bus routes that terminated at South Ferry, the M1 and M6, served Broadway and Church Street just east of the WTC Site. The third South Ferry bus route, the M15, was a split-service route that also terminated at Park Row/City Hall within close proximity of the WTC Site. Like the subway system, most local bus routes were also oriented north-south along major arterials in Lower Manhattan. The M22 bus was the only east-to-west bus route. It traveled west on Worth Street and Chambers Street and east on Vesey Street and Frankfort Street.

Express Bus Routes

Express bus services to Lower Manhattan were operated by a combination of MTA/NYCT and private bus companies subsidized by NYCDOT. Due to the lack of direct transit into Manhattan (other than the Staten Island Ferry), the largest number of express bus routes (20) originated from Staten Island. All of these routes were operated by MTA/NYCT. All express buses from

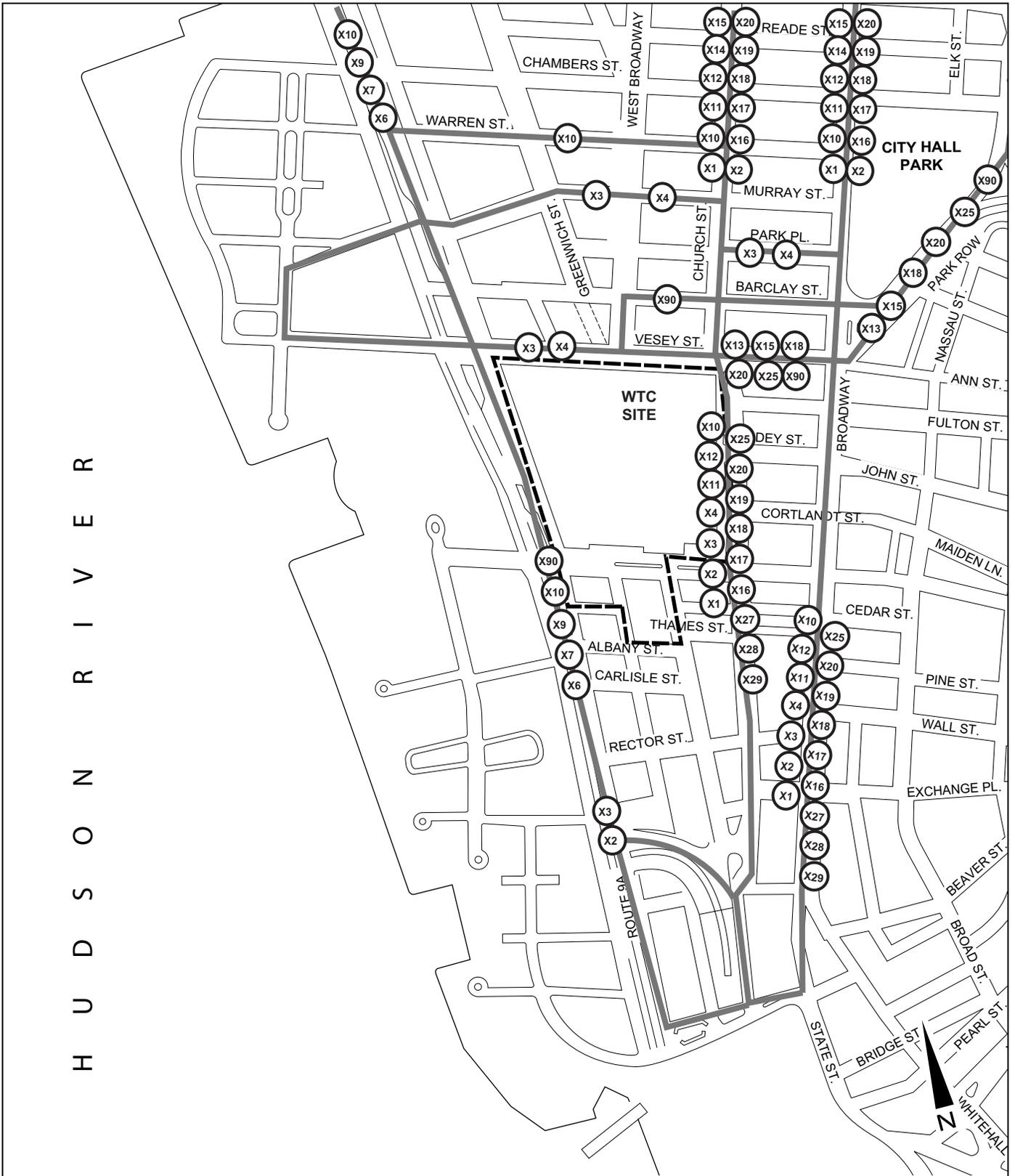


Project Site

Bus Number

0 1000 FEET
SCALE

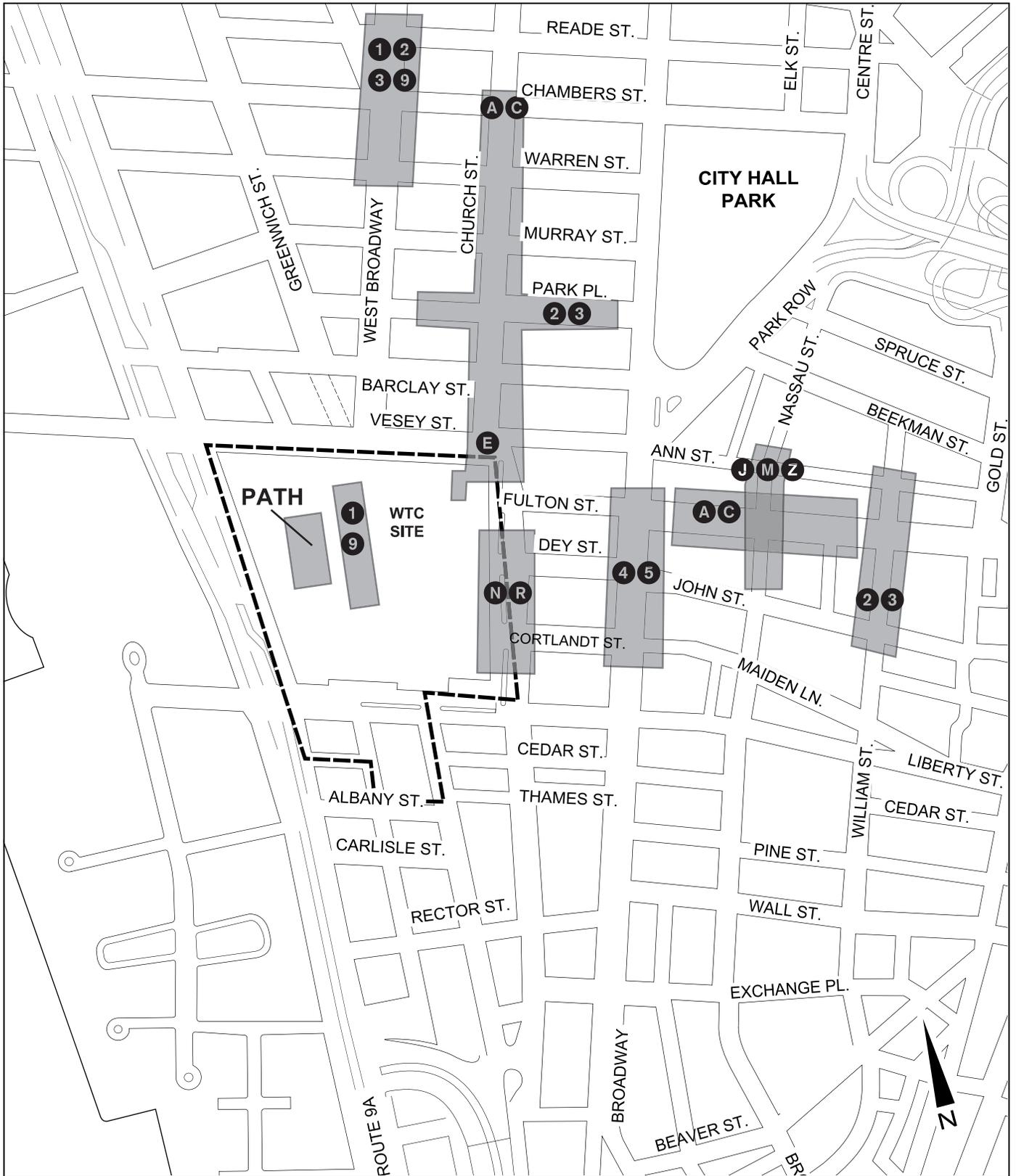
Pre-September 11 Scenario
Local Bus Routes
Figure 13B-6



 Project Site
 Bus Number

0 1000 FEET
 SCALE

Pre-September 11 Scenario
 Express Bus Routes
 Figure 13B-7



 Project Site
 Subway Station

0 1000 FEET
 SCALE

Pre-September 11 Scenario
 Subway Station Locations
 Figure 13B-8

Staten Island traveled through Brooklyn and entered Lower Manhattan through the Brooklyn-Battery Tunnel. MTA/NYCT also operated two express bus routes from the Upper East Side, one from Grand Central Terminal, and three from Brooklyn.

NYCDOT subsidized privately operated bus companies to provide express bus service to Lower Manhattan on several routes. Command Bus Company operated five express bus routes from southeast Brooklyn; Queens Surface Corp. and Triborough Coach Lines each operated two express bus routes from Eastern Queens; and Liberty Lines Express operated one bus route from the Riverdale section of the Bronx. Access to subway service is difficult in many of these locations and express buses provided a convenient transit option into Lower Manhattan.

Bus Analysis

Based upon data provided by MTA/NYCT Bus Operations, bus ridership for the local and express routes serving the area in the vicinity of the WTC Site prior to September 11 was generally higher than current conditions in 2003 (see Tables 13B-7 and 8).

Subway Service

No. 1/9 Cortlandt Street Station

The No. 1/9 Cortlandt Street Station was first opened in 1918 and is served by the No. 1/9 trains (Broadway/Seventh Avenue Local). This station originally had an exit at the intersection of Greenwich and Cortlandt Streets, but these two streets were eliminated in the 1960s during the construction of the WTC complex. The No. 1/9 Cortlandt Street Station was redesigned with exits to the WTC concourse in the center and south ends of its platforms and a street exit to Vesey Street at the north end.

Prior to September 11, the No. 1/9 Cortlandt Street Station served primarily as an alighting point for commuters who worked in and around the WTC area. This is reflected in the volumes for this station where over 1,300 passengers alighted the southbound No. 1/9 trains during the AM peak hour. Many of these passengers traveled south from New York Penn Station and Upper Manhattan. Another 159 passengers alighted from northbound No. 1/9 trains. Most of these commuters traveled from Staten Island and entered the subway system at the South Ferry Station (two stations to the south). Only one person boarded southbound No. 1/9 trains at this station, while 558 people boarded northbound No. 1/9 trains during the AM peak hour. The majority of the northbound AM passengers were commuters from New Jersey who arrived at the WTC via PATH trains or residents of nearby Battery Park City who commuted to jobs in Midtown and Upper Manhattan.

No. 2/3 Park Place Station

Prior to September 11, the Park Place Station served as an alighting point for commuters from the Bronx, Upper West Side, Brooklyn and Penn Station who worked at the WTC, City Hall and nearby government offices. During the AM peak hour, a total of just over 4,000 people alighted from northbound No. 2/3 trains and another nearly 4,500 people alighted from southbound No. 2/3 trains. In addition, a robust flow of nearly 1,500 persons boarded northbound No. 2/3 trains and another 1,000 boarded southbound No. 2/3 trains. This high reverse flow of passengers is comprised of transfers from other subway lines, PATH, and persons living in the area.

A/C Chambers Street Station

Prior to September 11, the A/C Chambers Street Station served as an alighting point for commuters from the Upper Manhattan, Brooklyn, Port Authority Bus Terminal, and Penn Station who worked at or in the vicinity of the WTC. AM peak hour alighting and boarding

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volumes are generally much higher for the express A train than the local C train. Northbound alighting from the A train were nearly 3,500 people compared to only 685 for the C train. Southbound alighting were 2,256 and 471 passengers for the A and C trains, respectively. Northbound boarding volumes were 1,544 people for the A train and 335 for the C train. Southbound boarding volumes were much lower in comparison to the northbound volumes (less than 500 for the A and C trains combined). The unpaid zone from the WTC Site to Chambers Street was used by many PATH riders as a means of egress from the WTC concourse to street level along Church Street.

E World Trade Center Station

Prior to September 11, the E World Trade Center Station served as an alighting point for commuters from Queens, Port Authority Bus Terminal and Penn Station, providing direct access to the World Trade Center Complex without having to exit to the street. Since this station is a terminal station, AM peak hour alighting can only be measured from southbound trains and boarding from northbound trains. Alighting volumes at this station were 6,784 and boarding volumes were 714 passengers during the AM peak hour.

N/R Cortlandt Street Station

Prior to September 11, the N/R Cortlandt Street Station served as an alighting point for commuters from Queens, Brooklyn and Midtown Manhattan working in the WTC. Of the two subway lines that served this station, the N train had slightly more passenger movements than the R train. N train service was more frequent with one additional scheduled train in each direction in the AM peak hour. AM peak hour northbound and southbound alighting volumes were nearly 2,600 for the N train and approximately 1,750 for the R train. Boarding volumes for each line were much lower than the alighting volumes. A total of 631 passengers boarded the northbound and southbound N trains and 344 boarded the northbound and southbound R trains.

No. 4/5 Fulton Street Station

Prior to September 11, the No. 4/5 Fulton Street Station served as an alighting point for commuters from the Bronx, Upper East Side, Brooklyn, and Grand Central Station that worked at the WTC and nearby offices. During the AM peak hour, approximately 4,000 passengers alighted from northbound No. 4/5 trains and nearly 9,500 passengers alighted from southbound No. 4/5 trains. Passenger boarding volumes at this station were 4,000 for all northbound trains (about the same number of people that alighted from northbound trains) and 1,500 for all southbound trains.

A/C Broadway-Nassau Station

Prior to September 11, the A/C Broadway-Nassau Street Station was an alighting point for commuters from Upper Manhattan, Brooklyn, the Port Authority Bus Terminal, and Penn Station that worked at the WTC and office buildings between Broadway and the East River. Due to its close proximity to the A/C Chambers Street Station, alighting passengers destined for the WTC were split between these two stations. The majority of southbound passengers alighted at the A/C Chambers Street Station and majority of northbound passengers alighted at the A/C Broadway-Nassau Street Station. AM peak hour alighting and boarding are generally much higher for the express A train than the local C train. Northbound alighting volumes from the A train were 8,484 people compared with only 1,571 for the C train. Southbound alighting volumes were 1,601 and 208 for the A and C trains, respectively. Northbound boarding volumes were 744 people for the A train and 96 for the C train. Southbound boarding volumes were higher for the A train (1,064) than for the C train (52).

Subway Analysis

Subway line haul analyses were performed using ridership and subway data provided by MTA/NYCT, *CEQR Technical Manual* prescribed guidelines for subway capacity, and station entering and station exiting volumes. V/C ratios were calculated for each subway line during the peak morning hour (8:00–9:00 AM) using these data.

Baseline Condition (2001) AM peak period passenger volumes for the 10 subway lines (6 stations) that served the WTC showed no clear travel pattern and varied by individual subway line and direction. The southbound No. 5 train entering the Fulton Street Station operated over capacity in the AM peak hour in 2001. The other subway lines that served the WTC area, including the No. 1/9 train at Cortlandt Street, the N and R trains at Cortlandt Street and the E train at World Trade Center all operated well below capacity. The northbound No. 1/9 train and the northbound No. 4 train were the two trains that had slightly higher V/C ratios leaving the station compared with the V/C ratios entering station, an indication that there was some transferring from PATH, ferries, and other subway lines. Table 13B-29 summarizes the line haul results for the stations serving the WTC area in 2001.

Ferry Service

Because of its location on Lower Manhattan's west side and its proximity to the World Trade Center, Battery Park City (World Financial Center) was slowly gaining prominence as an important ferry pier and transportation hub in Lower Manhattan in 2001. PATH trains from New Jersey were becoming more crowded and delayed in 2001. Other alternative modes of transportation to Lower Manhattan, including the use of commuter trains and buses that terminated in Midtown Manhattan, forced commuters to transfer to a second mode of travel (i.e. Subway) to reach their jobs in Lower Manhattan. Ferries provided an alternative and offered commuters a fast, comfortable and reliable ride between ports in Northern New Jersey and Lower Manhattan.

Liberty Park Water Taxi and New York Waterway both offered service between New Jersey and Battery Park City in 2001. Liberty Park Water Taxi operated two routes from Jersey City, one from Liberty Landing (Liberty State Park) and one from Newport Mall. Both routes had regular weekday and weekend service with headways of 15 minutes for the Liberty Landing route and 30 minutes for the Newport route. New York Waterway, which was the largest private ferry operator in New York Harbor, operated four routes between Battery Park City and New Jersey including Hoboken, Harborside (Jersey City) Colgate Center (Jersey City), and Liberty Landing (Jersey City). Three of these four routes operated daily, with the Harborside route offering only weekday service. Headways varied from 6 minutes for the Hoboken route up to 30 minutes for the Liberty Landing route. Table 13B-30 provides the ferry routes serving Lower Manhattan prior to September 11.

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Table 13B-29
Pre-September 11 Scenario—2001 Subway Line Haul Analysis

Route	Station	Direction	Cars Per Train	Car* Cap.	Trains Per Hour	Total Peak Hour Capacity	Trains Entering Station		Trains Leaving Station	
							Volumes	V/C Ratio	Volumes	V/C Ratio
1/9	Cortlandt Street	Northbound	10	120	14	16,800	2,439	0.15	2,838	0.17
1/9	Cortlandt Street	Southbound	10	120	17	20,400	4,006	0.20	2,695	0.13
2	Park Place	Northbound	10	120	10	12,000	6,659	0.55	5,671	0.47
2	Park Place	Southbound	10	120	13	15,600	8,099	0.52	6,042	0.39
3	Park Place	Northbound	9	120	9	9,720	5,126	0.53	3,687	0.38
3	Park Place	Southbound	9	120	11	11,880	6,128	0.52	4,692	0.39
4	Fulton Street	Northbound	10	120	15	18,000	12,575	0.70	12,874	0.72
4	Fulton Street	Southbound	10	120	14	16,800	12,292	0.73	8,577	0.51
5	Fulton Street	Northbound	10	120	11	13,200	8,974	0.68	8,768	0.66
5	Fulton Street	Southbound	10	120	7	8,400	11,400	1.36	7,159	0.85
A	Chambers Street	Northbound	10	180	18	32,400	13,161	0.41	11,220	0.35
A	Chambers Street	Southbound	10	180	10	18,000	6,033	0.34	4,150	0.23
C	Chambers Street	Northbound	8	180	8	11,520	2,860	0.25	2,510	0.22
C	Chambers Street	Southbound	8	180	6	8,640	963	0.11	529	0.06
A	Broadway Nassau	Northbound	10	180	18	32,400	20,902	0.65	13,162	0.41
A	Broadway Nassau	Southbound	10	180	10	18,000	4,150	0.23	3,603	0.20
C	Broadway Nassau	Northbound	8	180	8	11,520	4,335	0.38	2,860	0.25
C	Broadway Nassau	Southbound	8	180	6	8,640	529	0.06	373	0.04
E	World Trade Center	Northbound	10	180	12	21,600	0	0.00	714	0.03
E	World Trade Center	Southbound	10	180	12	21,600	6,784	0.31	0	0.00
N	Cortlandt Street	Northbound	8	220	8	14,080	3,197	0.23	1,730	0.12
N	Cortlandt Street	Southbound	8	220	12	21,120	1,372	0.06	885	0.04
R	Cortlandt Street	Northbound	8	220	7	12,320	2,499	0.20	1,521	0.12
R	Cortlandt Street	Southbound	8	220	11	19,360	666	0.03	235	0.01

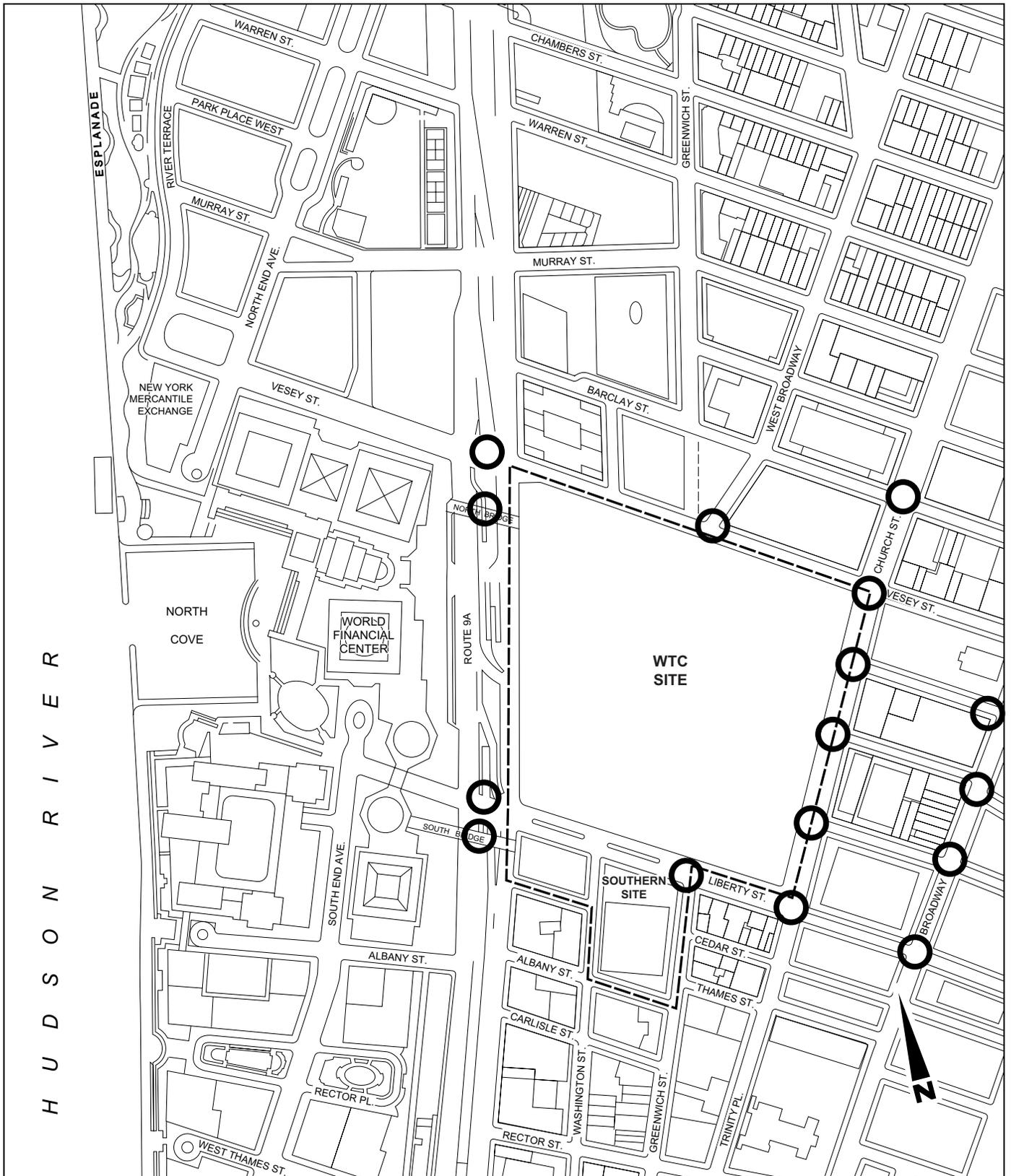
Note: * Subway car capacity based on CEQR manual prescribed guidelines.

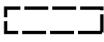
Source: MTA/NYCT, CEQR Technical Manual

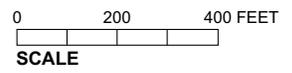
Table 13B-30
Pre-September 11 Scenario—2001 Ferry Routes Serving Lower Manhattan

Route	Origin	Destination	Hours of operation	Frequency
Liberty Park Water Taxi (Liberty Landing Marina)				
Newport Water Taxi	Newport Mall	Battery Park City (North Cove)	Weekday: 6:30AM – 11:15PM Weekend: 9:15AM – 11:00PM	AM: 30 minutes PM: 30 minutes
Liberty Park Water Taxi	Liberty Landing, Liberty State Park, NJ	Battery Park City (North Cove)	Weekday: 6:25AM – 9:36PM Weekend: 9:00AM – 11:15PM	AM: 15 minutes PM: 15 minutes
New York Waterway				
Hoboken - World Financial Center Ferry	Hoboken, NJ	Battery Park City (North Cove)	Weekday: 6:30AM – 11:00PM Weekend: 10:00AM – 9:50PM	AM: 6 minutes PM: 4-8 minutes
Harborside - Pier A, Battery Park Ferry	Harborside, Jersey City, NJ	Battery Park City (North Cove)	Weekday: 6:20AM – 9:58PM Weekend: No Service	AM: 15 minutes PM: 15 minutes
Colgate - World Financial Center Ferry	Colgate Center, Jersey City, NJ	Battery Park City (North Cove)	Weekday: 6:15AM – 9:52PM Weekend: 11:10AM – 9:40PM	AM: 15 minutes PM: 15 minutes
Liberty Landing - World Financial Center Ferry	Liberty Landing, Jersey City, NJ	Battery Park City (North Cove)	Weekday: 6:30AM – 9:45PM Weekend: 8:00AM – 10:00PM	AM: 30 minutes PM: 30 minutes

Source: Battery Park 5th Supplemental EIS (July 2000).



-  Project Site
-  Analysis Locations



PEDESTRIANS

Crosswalks

Thirteen intersections in the vicinity of the WTC Site were analyzed using 2001 pedestrian data (Figure 13B-9). Of these 13 intersections, eight intersections (62 percent) were found to have at least one crosswalk approach operating at LOS E or F during the AM, midday, or PM periods. Broadway and John Street was the worst intersection location with a total of eight out of 12 crosswalks operating at LOS E or F. The results are summarized in Table 13B-31.

**Table 13B-31
Pre-September 11 Scenario—2001 Crosswalk Analysis (LOS E or F)**

Intersection	AM Period LOS				Midday Period LOS				PM Period LOS			
	Crosswalk				Crosswalk				Crosswalk			
	North	East	South	West	North	East	South	West	North	East	South	West
Church St. @ Dey St.	D	E	D	-	C	E	C	-	E	E	E	-
Church St. @ Fulton St.	C	E	E	-	C	E	D	-	B	E	E	-
Church St. @ Vesey St.	B	D	C	E	C	E	C	E	B	D	C	E
Broadway @ John St.	D	E	E	E	E	F	E	E	C	C	C	E
Church St. @ Liberty St.	E	B	F	F	D	B	C	D	E	C	D	E
Church St. @ Cortlandt St.	B	B	C	-	C	E	D	-	B	D	C	-
Broadway @ Cortlandt St.	E	C	E	C	E	D	D	D	C	D	C	C
Broadway @ Liberty St.	C	C	C	C	E	E	C	D	C	E	C	C

Source: Louis Berger Group, Inc., 2003.

Corridors and Sidewalks

The South and North overpasses crossing Route 9A operated at a satisfactory LOS C or better during the peak periods analyzed in 2001. The sidewalks on the west side of Church Street between Dey and Fulton Streets, on the north and south sides of Vesey Street between Greenwich and Church Streets, and on the north and south sides of Liberty Street between Washington and Greenwich Streets operated at a satisfactory LOS C or better during the peak periods analyzed in 2001. The complete analysis results are provided in Appendix F.

Subway Elements

The locations analyzed (95 locations) at the No. 4/5 Fulton Street, No. 1/9 Cortlandt Street, N/R Cortlandt Street, No. 2/3 Park Place, E World Trade Center, and A/C Chamber Street Stations generally operated at LOS C or better during peak periods. However, there were capacity limitations at some locations during the AM and PM peak periods. Table 13B-32 summarizes the v/c ratios and the LOS of the station elements based upon the 15-minute volumes for each time period and the effective width of each stairway. The complete analysis results are provided in Appendix F.

**13B.4.3 FUTURE WITHOUT THE PROPOSED ACTION 2009—
PRE-SEPTEMBER 11 SCENARIO**

Under this scenario, the Fulton Street Transit Center would be integrated into the original WTC Site via a direct underground pedestrian connection (Dey Street Passageway) to the No. 4/5 Fulton Street Station and to locations east of Broadway. The street network surrounding the WTC Site prior to September 11 would remain and no new streets would cross the site.

Table 13B-32
Pre-September 11 Scenario—2001 Subway Pedestrian Analysis (LOS D, E, or F)

Element		AM Peak		PM Peak	
		v/c	LOS	v/c	LOS
A and C Chambers Street Station					
N92.X2	HXT	1.09	F	0.15	A
N92.X4	HXT	0.69	D	0.08	A
P11	Stairway to Platform	0.67	B	1.43	E
P17	Stairway to Platform	0.75	C	1.09	D
4 and 5 Fulton Street Station					
Ramp R8 (West)	To 4/5 Northbound Platform	1.52	E	0.68	B
M2/O2	Stairway to Street	0.98	C	2.94	F
ML7 A/B	Transfer Stairway (To A/C)	1.08	D	0.99	C
ML5	Stairway to Platform	2.24	F	1.54	E
ML6 A/B	Transfer Stairway (To A/C)	0.18	A	1.55	E
S6/M8	Stairway to Street	0.00	A	1.86	F
O6/O5	Stairway to Street	0.64	B	1.14	D
S1/M1	Stairway to Street	1.02	D	0.31	A
S3/M3	Stairway to Street	1.60	E	0.94	C
Church Street Passageway					
N94	Turnstile	0.82	E	0.66	D
N94.X3	1 HXT plus 2 HEET (north)	0.60	C	0.62	D
N92.X2	HXT (South)	1.09	F	0.15	A
N92.X4	HXT (North)	0.69	D	0.08	A
P2 A/B	Stairway to Street	0.77	C	1.08	D
S3	Stairway to Street	1.08	D	1.45	E
S7 ML1A/B	Stairway to Street	0.66	B	1.13	D
S20 M14A/B	Stairway to Street	1.16	D	0.86	C
1 and 9 Cortlandt Street Station					
P1A/B	Stairway to Street	0.42	A	1.23	D
R108	2 Turnstiles plus 2 HXT	0.68	D	0.10	A
P3A/B, M1A/B	Stairway to Street	1.46	E	0.21	A
2 and 3 Park Place Station					
P9 A/B	Stairway to Mezzanine	0.76	C	1.02	D
E World Trade Center Station					
N94	Turnstile	0.82	E	0.66	D
N94.X3	1 HXT plus 2 HEET (north)	0.60	C	0.62	D
Notes: v/c = volume/capacity ratio; LOS = Level of Service; HEET = High Entrance/Exit Turnstile; HXT = High Revolving Exit Gate Source: Louis Berger Group, Inc., 2003.					

The North and South bridges across Route 9A would remain. A background growth rate of 0.5 percent per year was used to account for new development in the vicinity of the WTC Site through 2009.

TRANSIT

Bus Analysis

Some additional growth in the local and express bus markets would be expected by 2009 due to background growth in Lower Manhattan and increasing traffic congestion in the region.

Subway Analysis

Growth rates were applied to the baseline condition (2001) passenger volumes to establish the future 2009 passenger volumes for the future without the Proposed Action. The factor used was based upon the 0.5 percent per year growth rate recommended in the *CEQR Technical Manual* for Lower Manhattan. Table 13B-33 summarizes the line haul results for the stations serving the

Project area in 2009. It is projected that the southbound No. 5 train entering the Fulton Street Station would operate over capacity in the AM peak hour in 2009.

PEDESTRIANS

Crosswalks

Of the 13 intersections analyzed for 2009 (Pre-September 11 Scenario), 9 intersections (64 percent) were found to have at least one crosswalk that would be projected to operate at LOS E or F during the AM, midday, or PM periods. Broadway and John Street was the worst intersection location with a total of nine daily intersection approaches out of 12 with a crosswalk LOS E or F. The results are summarized in Table 13B-34.

Corridors

The South and North overpasses crossing Route 9A were projected to operate at a satisfactory LOS C or better during the peak periods analyzed in 2009. The complete analysis results are provided in Appendix F.

Subway Elements

The locations analyzed at the No. 4/5 Fulton Street, No. 1/9 Cortlandt Street, N/R Cortlandt Street, No. 2/3 Park Place, E World Trade Center, and A/C Chamber Street Stations generally operated at LOS C or better during peak periods. However, there were capacity limitations at some locations during the AM and PM peak periods. Table 13B-35 summarizes the v/c ratios and the LOS of the station elements based upon the 15-minute volumes for each time period and the effective width of each stairway. The complete analysis results are provided in Appendix F.

FERRY

Some small growth in the ferry market would be expected by 2009 as development projects planned before September 11 would open.

13B.4.4 FUTURE WITHOUT THE PROPOSED ACTION 2015— PRE-SEPTEMBER 11 SCENARIO

The same assumptions used for the 2009 scenario without the proposed action were used to analyze the 2015 scenario without the proposed action. A background growth rate of 0.5 percent per year was used to account for new development in the vicinity of the WTC Site through 2015.

TRANSIT

Bus Analysis

Some additional growth in the local and express bus markets would be expected by 2015 due to background growth in Lower Manhattan and increasing traffic congestion in the region.

Subway Analysis

Growth rates were applied to the baseline condition (2001) passenger volumes to establish the future 2015 passenger volumes for the future without the Proposed Action. The factor used was based upon the 0.5 percent per year growth rate recommended in the *CEQR Technical Manual* for Lower Manhattan. Table 13B-36 summarizes the line haul results for the stations serving the Project area in 2015. It is projected that the southbound *No. 5* train entering the Fulton Street Station would continue to operate over capacity in the AM peak hour in 2015.

**Table 13B-33
Future Without the Proposed Action—Pre-September 11 Scenario
2009 Subway Line Haul Analysis**

Route	Station	Direction	Cars Per Train	Car* Cap.	Trains Per Hour	Total Peak Hour Capacity	Trains Entering Station		Trains Leaving Station	
							Volumes	V/C Ratio	Volumes	V/C Ratio
1/9	Cortlandt Street	Northbound	10	120	14	16,800	2,537	0.15	2,952	0.18
1/9	Cortlandt Street	Southbound	10	120	17	20,400	4,166	0.20	2,803	0.14
2	Park Place	Northbound	10	120	10	12,000	6,925	0.58	5,898	0.49
2	Park Place	Southbound	10	120	13	15,600	8,423	0.54	6,284	0.40
3	Park Place	Northbound	9	120	9	9,720	5,331	0.55	3,834	0.39
3	Park Place	Southbound	9	120	11	11,880	6,373	0.54	4,880	0.41
4	Fulton Street	Northbound	10	120	15	18,000	13,078	0.73	13,389	0.74
4	Fulton Street	Southbound	10	120	14	16,800	12,784	0.76	8,920	0.53
5	Fulton Street	Northbound	10	120	11	13,200	9,333	0.71	9,119	0.69
5	Fulton Street	Southbound	10	120	7	8,400	11,856	1.41	7,445	0.89
A	Chambers Street	Northbound	10	180	18	32,400	13,687	0.42	11,669	0.36
A	Chambers Street	Southbound	10	180	10	18,000	6,274	0.35	4,316	0.24
C	Chambers Street	Northbound	8	180	8	11,520	2,974	0.26	2,610	0.23
C	Chambers Street	Southbound	8	180	6	8,640	1,002	0.12	550	0.06
A	Broadway Nassau	Northbound	10	180	18	32,400	21,738	0.67	13,688	0.42
A	Broadway Nassau	Southbound	10	180	10	18,000	4,316	0.24	3,747	0.21
C	Broadway Nassau	Northbound	8	180	8	11,520	4,508	0.39	2,974	0.26
C	Broadway Nassau	Southbound	8	180	6	8,640	550	0.06	388	0.04
E	World Trade Center	Northbound	10	180	12	21,600	0	0.00	743	0.03
E	World Trade Center	Southbound	10	180	12	21,600	7,055	0.33	0	0.00
N	Cortlandt Street	Northbound	8	220	8	14,080	3,325	0.24	1,799	0.13
N	Cortlandt Street	Southbound	8	220	12	21,120	1,427	0.07	920	0.04
R	Cortlandt Street	Northbound	8	220	7	12,320	2,599	0.21	1,582	0.13
R	Cortlandt Street	Southbound	8	220	11	19,360	693	0.04	244	0.01

Note: * Subway car capacity based on CEQR manual prescribed guidelines.

Source: MTA/NYCT, CEQR Technical Manual.

**Table 13B-34
Future Without the Proposed Action—Pre-September 11 Scenario
2009 Crosswalk Analysis (LOS E or F)**

Intersection	AM Period LOS Crosswalk				Midday Period LOS Crosswalk				PM Period LOS Crosswalk			
	North	East	South	West	North	East	South	West	North	East	South	West
Church St. @ Dey St.	E	E	D	-	C	E	C	-	D	E	D	-
Church St. @ Fulton St.	C	E	E	-	C	E	D	-	C	E	E	-
Church St. @ Vesey St.	B	D	C	E	C	E	C	E	B	D	C	E
Broadway @ John St.	D	E	E	E	E	F	E	E	C	E	C	E
Broadway @ Fulton St.	C	D	D	C	D	E	D	E	C	D	D	D
Church St. @ Liberty St.	E	B	F	F	E	B	C	D	E	C	E	E
Church St. @ Cortlandt St.	B	B	C	-	C	E	E	-	C	D	C	-
Broadway @ Cortlandt St.	E	C	E	C	E	D	D	D	C	D	D	C
Broadway @ Liberty St.	C	C	C	C	E	E	C	D	C	E	C	C

Source: Louis Berger Group, Inc., 2003.

Table 13B-35
Future Without the Proposed Action—Pre-September 11 Scenario
2009 Subway Pedestrian Analysis (LOS D, E, or F)

Element		AM Peak		PM Peak	
		v/c	LOS	v/c	LOS
A and C Chambers Street Station					
N92.X2	HXT	1.14	F	0.16	A
N92.X4	HXT	0.71	D	0.09	A
P11	Stairway to Platform	0.81	C	2.45	F
P17	Stairway to Platform	0.78	C	1.13	D
4 and 5 Fulton Street Station					
Ramp R8 (West)	To 4/5 Northbound Platform	1.58	E	0.73	C
M2/O2	Stairway to Street	0.75	C	2.25	F
ML7 A/B	Transfer Stairway (To A/C)	1.02	D	0.93	C
ML5	Stairway to Platform	2.11	F	1.46	E
ML6 A/B	Transfer Stairway (To A/C)	0.17	A	1.46	E
S3/M3	Stairway to Street	1.41	E	0.83	C
Church Street Passageway					
N94	Turnstile	0.85	E	0.69	D
N94.X3	1 HXT plus 2 HEET (north)	0.62	D	0.64	D
N92.X2	HXT (south)	1.14	F	0.16	A
N92.X4	HXT (north)	0.71	D	0.09	A
P2 A/B	Stairway to Street	0.80	C	1.12	D
S3	Stairway to Street	1.13	D	1.51	E
S7 ML1A/B	Stairway to Street	0.69	B	1.18	D
S9/M2	Stairway to Street	0.74	C	1.02	D
S20 M14A/B	Stairway to Street	1.21	D	0.90	C
1 and 9 Cortlandt Street Station					
P1A/B	Stairway to Street	0.43	A	1.28	D
R108	2 Turnstiles plus 2 HXT	0.70	D	0.10	A
P3A/B, M1A/B	Stairway to Street	1.52	E	0.21	A
2 and 3 Park Place Station					
P9 A/B	Stairway to Mezzanine	0.79	C	1.06	D
E World Trade Center Station					
N94	Turnstile	0.85	E	0.69	D
N94.X3	1 HXT plus 2 HEET (north)	0.62	D	0.64	D
Notes: v/c = volume/capacity ratio; LOS = Level of Service; HEET = High Entrance/Exit Turnstile; HXT = High Revolving Exit Gate Source: Louis Berger Group, Inc., 2003.					

PEDESTRIANS

Crosswalks

Of the 13 intersections analyzed for 2015 (pre-September 11), *nine* intersections (64 percent) were projected to have at least one crosswalk operating at LOS E or F during the AM, midday, or PM periods. Broadway and John Street was the worst intersection with a total of nine daily intersection approaches out of 12 with crosswalks operating at LOS E or F. The results are summarized in Table 13B-37.

Corridors

The South and North overpasses crossing Route 9A were projected to operate at a satisfactory LOS C or better during the peak periods analyzed in 2015. The complete analysis results are provided in Appendix F.

**Table 13B-36
Future Without the Proposed Action—Pre-September 11 Scenario
2015 Subway Line Haul Analysis**

Route	Station	Direction	Cars Per Train	Car* Cap.	Trains Per Hour	Total Peak Hour Capacity	Trains Entering Station		Trains Leaving Station	
							Volumes	v/c Ratio	Volumes	v/c Ratio
1/9	Cortlandt Street	Northbound	10	120	14	16,800	2,610	0.16	3,037	0.18
1/9	Cortlandt Street	Southbound	10	120	17	20,400	4,286	0.21	2,884	0.14
2	Park Place	Northbound	10	120	10	12,000	7,125	0.59	6,068	0.51
2	Park Place	Southbound	10	120	13	15,600	8,666	0.56	6,465	0.41
3	Park Place	Northbound	9	120	9	9,720	5,485	0.56	3,945	0.41
3	Park Place	Southbound	9	120	11	11,880	6,557	0.55	5,020	0.42
4	Fulton Street	Northbound	10	120	15	18,000	13,455	0.75	13,775	0.77
4	Fulton Street	Southbound	10	120	14	16,800	13,152	0.78	9,177	0.55
5	Fulton Street	Northbound	10	120	11	13,200	9,602	0.73	9,382	0.71
5	Fulton Street	Southbound	10	120	7	8,400	12,198	1.45	7,660	0.91
A	Chambers Street	Northbound	10	180	18	32,400	14,082	0.43	12,005	0.37
A	Chambers Street	Southbound	10	180	10	18,000	6,455	0.25	4,441	0.21
C	Chambers Street	Northbound	8	180	8	11,520	3,060	0.27	2,686	0.23
C	Chambers Street	Southbound	8	180	6	8,640	1,030	0.12	566	0.07
A	Broadway Nassau	Northbound	10	180	18	32,400	22,365	0.69	14,083	0.43
A	Broadway Nassau	Southbound	10	180	10	18,000	4,441	0.25	3,855	0.21
C	Broadway Nassau	Northbound	8	180	8	11,520	4,638	0.40	3,060	0.27
C	Broadway Nassau	Southbound	8	180	6	8,640	566	0.07	399	0.05
E	World Trade Center	Northbound	10	180	12	21,600	0	0.00	764	0.04
E	World Trade Center	Southbound	10	180	12	21,600	7,259	0.34	0	0.00
N	Cortlandt Street	Northbound	8	220	8	14,080	3,421	0.24	1,851	0.13
N	Cortlandt Street	Southbound	8	220	12	21,120	1,468	0.07	947	0.04
R	Cortlandt Street	Northbound	8	220	7	12,320	2,674	0.22	1,627	0.13
R	Cortlandt Street	Southbound	8	220	11	19,360	713	0.04	251	0.01

Note: * Subway car capacity based on CEQR manual prescribed guidelines.
Sources: MTA/NYCT, CEQR Technical Manual.

**Table 13B-37
Future Without the Proposed Action-Pre-September 11 Scenario
2015 Crosswalk Analysis (LOS E or F)**

Intersection	AM Period LOS Crosswalk				Midday Period LOS Crosswalk				PM Period LOS Crosswalk			
	North	East	South	West	North	East	South	West	North	East	South	West
Church St. @ Dey St.	E	E	D	-	C	E	D	-	D	E	D	-
Church St. @ Fulton St.	C	E	E	-	C	E	D	-	C	E	E	-
Church St. @ Vesey St.	B	D	C	E	C	E	C	E	B	D	C	E
Broadway @ John St.	D	E	E	E	E	F	E	E	C	E	C	E
Church St. @ Liberty St.	E	B	F	F	E	B	C	D	F	C	E	E
Broadway @ Fulton St.	C	D	D	C	D	E	D	E	C	D	D	D
Church St. @ Cortlandt St.	C	C	C	-	C	E	E	-	C	E	C	-
Broadway @ Cortlandt St.	E	C	E	C	E	D	D	D	C	D	D	C
Broadway @ Liberty St.	C	C	C	C	E	E	D	D	D	E	C	C

Source: Louis Berger Group, Inc., 2003.

Subway Elements

The locations analyzed at the No. 4/5 Fulton Street, No. 1/9 Cortlandt Street, N/R Cortlandt Street, No. 2/3 Park Place, E World Trade Center, and A/C Chamber Street Stations are projected to operate at LOS C or better during peak periods. However, there were capacity

limitations at some locations during the AM and PM peak periods. Table 13B-38 summarizes the v/c ratios and the LOS of the station elements based upon the 15-minute volumes for each time period and the effective width of each stairway. The complete analysis results are provided in Appendix F.

FERRY

Some additional growth in the ferry market would be expected by 2015 as in fill development fills available properties in Lower Manhattan.

13B.4.5 PROBABLE IMPACTS OF THE PROPOSED ACTION 2009— PRE-SEPTEMBER 11 SCENARIO

TRANSIT

The subway trips projected to be generated by the Proposed Action in 2009 would increase the demand on the subway lines serving the WTC Site. Each subway element within these stations was evaluated to determine their projected level of service during the AM and PM peak periods. When based upon a comparison between the future with the Proposed Action in 2009 and the future without the Proposed Action in 2009 under the Pre-September 11 Scenario, none of these elements would be impacted by the Proposed Action. In terms of subway line-haul capacity, none of the subway lines serving the WTC Site would be impacted by the Proposed Action.

The number of bus trips projected to be generated by the Proposed Action in 2009 would increase the demand for local and express buses. It is anticipated that most or all of the demand would be accommodated by unused capacity on the bus routes. It is likely that the local and express bus routes serving the area in the vicinity of the WTC Site would still operate below pre-September 11 levels. However, MTA/NYCT should evaluate bus operations in 2009 to determine whether routing or frequencies need to be adjusted to accommodate any isolated increases in demand on specific local or express routes.

PEDESTRIANS

The redevelopment of the WTC Site includes development (Tower 1 and street-level retail) that would be in closer proximity to Vesey Street than was the case pre-September 11. As a result, more pedestrian traffic is anticipated within the Vesey Street corridor.

Crosswalks

Of the 16 intersections analyzed for 2009 with the Proposed Action—Pre-September 11 Conditions, 10 intersections (63 percent) are projected to have at least one crosswalk operating at LOS E or F during the AM, midday, or PM periods. Separate analyses were performed at the Church Street and Liberty Street intersection both with and without the underground connection between the WTC Site and Liberty Plaza. This intersection has crosswalks that are projected to operate at LOS E for both of these conditions. There *is one* intersection (Church and Vesey Street) that *is* projected to have a crosswalk operate at LOS F. The Church Street and Vesey Street *and* Church and Liberty Street intersections *are* projected to have the most crosswalks operating at LOS E (a total of *five* daily intersection approaches out of 12). These locations are shown in Table 13B-39.

**Table 13B-38
Future Without the Proposed Action Pre-September 11 Scenario
2015 Subway Pedestrian Analysis (LOS D, E, or F)**

Element		AM Peak		PM Peak	
		v/c	LOS	v/c	LOS
A and C Chambers Street Station					
N92.X2	HXT	1.17	F	0.16	A
N92.X4	HXT	0.73	D	0.09	A
P11	Stairway to Platform	0.83	C	2.52	F
P17	Stairway to Platform	0.80	C	1.17	D
4 and 5 Fulton Street Station					
Ramp R8 (West)	To 4/5 Northbound Platform	1.71	F	0.79	C
M2/O2	Stairway to Street	1.08	D	3.24	F
R208 North	HEET	0.00	A	2.36	F
R206 South	3 HXT and 2 HEET	0.33	B	0.64	D
ML5	Stairway to Platform	1.92	F	1.32	D
ML6 A/B	Transfer Stairway (To A/C)	0.15	A	1.33	D
S6/M8	Stairway to Street	0.00	A	2.69	F
O6/O5	Stairway to Street	0.70	C	1.26	D
S1/M1	Stairway to Street	1.12	D	0.35	A
S3/M3	Stairway to Street	1.76	F	1.04	D
Church Street Passageway					
N94	Turnstile	0.87	E	0.71	D
N94.X3	1 HXT plus 2 HEET (north)	0.64	D	0.66	D
N92.X2	HXT (south)	1.17	F	0.16	A
N92.X4	HXT (north)	0.73	D	0.09	A
P2 A/B	Stairway to Street	0.82	C	1.15	D
S3	Stairway to Street	1.16	D	1.56	E
S7 ML1A/B	Stairway to Street	0.71	C	1.21	D
S10/M3	Stairway to Street	0.76	C	1.00	D
S9/M2	Stairway to Street	0.76	C	1.05	D
S20 M14A/B	Stairway to Street	1.24	D	0.92	C
1 and 9 Cortlandt Street Station					
P1A/B	Stairway to Street	0.45	A	1.31	D
R108	2 Turnstiles plus 2 HXT	0.72	D	0.10	A
P3A/B, M1A/B	Stairway to Street	1.56	E	0.22	A
2 and 3 Park Place Station					
P9 A/B	Stairway to Mezzanine	0.81	C	1.09	D
E World Trade Center Station					
N94	Turnstile	0.87	E	0.71	D
N94.X3	1 HXT plus 2 HEET (north)	0.64	D	0.66	D
Notes: v/c = volume/capacity ratio; LOS = Level of Service; HEET = High Entrance/Exit Turnstile; HXT = High Revolving Exit Gate					
Source: Louis Berger Group, Inc., 2003.					

The AM, midday, and PM peak period 2009 crosswalk analysis results for the future with the Proposed Action–Pre-September 11 conditions were compared with the future without the Proposed Action–Pre-September 11. The results of these comparisons are provided in Tables 13B-40 through 42 for the AM, midday, and PM peak periods, respectively. *The pedestrian analysis for the FGEIS was updated to reflect more specific midday pedestrian flow data for the Project Site, made available by the Port Authority since the issuance of the DGEIS.*

Table 13B-39
Future with the Proposed Action—Pre-September 11 Scenario
2009 Crosswalk Analysis (LOS E or F)

Intersection	AM Period LOS Crosswalk				Midday Period LOS Crosswalk				PM Period LOS Crosswalk			
	North	East	South	West	North	East	South	West	North	East	South	West
Church St. @ Dey St.	B	E	B	-	B	E	C	-	B	E	C	-
Church St. @ Fulton St.	B	D	B	C	C	D	C	D	B	E	C	E
Church St. @ Vesey St.	D	E	D	E	C	E	C	E	D	E	D	F
Broadway @ John St.	C	D	D	D	D	E	E	D	C	E	B	D
Broadway @ Fulton St.	B	E	D	C	C	E	D	D	C	E	D	D
Church St. @ Liberty St. (with underground connection)	D	B	C	E	C	B	B	C	D	C	C	D
Church St. @ Liberty St. (without underground connection)	E	B	E	E	C	B	B	C	E	C	D	E
Broadway @ Liberty St.	C	B	C	C	D	E	B	D	C	D	C	C
Greenwich St. @ Liberty St.	A	B	D	D	A	B	C	E	B	B	D	D
W. Broadway @ Vesey St.	E	C	C	D	E	C	D	D	E	C	D	D
Greenwich St. @ Fulton St.	C	B	C	D	D	C	C	E	D	B	D	E

Source: Louis Berger Group, Inc., 2003.

The DGEIS analysis in absence of midday specific data used the morning and evening commuter peak pedestrian travel patterns to calculate the on-site trips anticipated during the midday peak hour. This overestimated in the DGEIS the number of office workers that would leave the WTC Site for lunch and therefore the number of workers crossing Route 9A, Church Street, Vesey Street, and Liberty Street during the midday period. Based upon consultations with the Port Authority since the release of the WTC DGEIS, the analysis was updated to reflect more realistic midday peak hour pedestrian travel patterns and all crosswalk locations were reanalyzed for the midday peak hour to reflect the updated information.

In addition, since the release of the DGEIS, a second crosswalk has been planned at the proposed Route 9A and Fulton Street intersection. The number of pedestrians projected to cross Route 9A at this intersection was updated in the FGEIS for the AM, midday, and PM peak hours and the pedestrian analysis was updated accordingly.

The results reported in Tables 13B-40, 13B-41, and 13B-42 for 2009 conditions and Tables 13B-46, 13B-47, 13B-48 for 2015 conditions reflect the updated analysis. The results predicted in the FGEIS are similar to those initially calculated in the DGEIS.

Based on CEQR criteria, three crosswalks were determined to have impacts during the AM peak period, four crosswalks were determined to have impacts during the midday peak period, and three crosswalks were determined to have impacts during the PM peak period.

Corridors and Sidewalks

None of these locations would be impacted in 2009 by the Proposed Action. The complete results of the analysis are provided in Appendix F.

Subway Elements

The analysis locations at the No. 4/5 Fulton Street, No. 1/9 Cortlandt Street, N/R Cortlandt Street, No. 2/3 Park Place, E World Trade Center, and A/C Chambers Street Stations generally operate at LOS C or better during the peak periods. However, there are capacity constraints at a

**Table 13B-40
2009 Crosswalk Impact Assessment—AM Peak Period**

Intersection	2009 Future Without the Proposed Action Pre-September 11 Scenario								2009 Future With the Proposed Action Pre-September 11 Scenario ^{1,2}								Significant Impacts of the Proposed Action			
	Crosswalk								Crosswalk											
	North		East		South		West		North		East		South		West		Crosswalk			
	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	North	East	South	West
Church St. @ Dey St.	14	E	8	E	18	D	-	-	90	B	12	E	59	B	-	-	NO	NO	NO	NO
Church St. @ Fulton St.	37	C	9	E	9	E	-	-	59	B	16	D	50	B	25	C	NO	NO	NO	NO
Church St. @ Vesey St.	42	B	22	D	35	C	8	E	16	D	10	E	21	D	8	E	NO	YES	NO	NO
Church St. @ Barclay St.	124	B	46	B	247	A	67	B	147	A	35	C	63	B	30	C	NO	NO	NO	NO
Broadway @ John St.	19	D	11	E	12	E	14	E	27	C	16	D	17	D	19	D	NO	NO	NO	NO
Broadway @ Fulton St.	33	C	17	D	17	D	26	C	43	B	11	E	22	D	35	C	NO	YES	NO	NO
Church St. @ Liberty St. (with underground connection)	7	E	106	B	5	F	4	F	15	D	57	B	30	C	12	E	NO	NO	NO	NO
Church St. @ Liberty St. (without underground connection)	7	E	106	B	5	F	4	F	6	E	57	B	14	E	9	E	YES	NO	NO	NO
Church St. @ Cortlandt St.	40	B	40	B	36	C	-	-	29	C	66	B	43	B	-	-	NO	NO	NO	NO
Broadway @ Cortlandt St.	14	E	38	C	11	E	33	C	17	D	54	B	15	D	43	B	NO	NO	NO	NO
Broadway @ Liberty St.	25	C	34	C	32	C	25	C	24	C	44	B	39	C	32	C	NO	NO	NO	NO
Greenwich St. @ Liberty St.	-	-	16	D	-	-	45	B	149	A	50	B	16	D	18	D	NO	NO	NO	NO
Route 9A @ Liberty St.	52	B	-	-	205	A	-	-	1,089	A	716	A	24	C	-	-	NO	NO	NO	NO
Route 9A @ Vesey St.	541	A	-	-	158	A	-	-	36	C	66	B	358	A	-	-	NO	NO	NO	NO
W. Broadway @ Vesey St.	-	-	28	C	-	-	49	B	7	E	28	C	26	C	20	D	NO	NO	NO	NO
Route 9A @ Fulton St.	-	-	-	-	-	-	-	-	88	B	78	B	218	A	-	-	NO	NO	NO	NO
Greenwich St. @ Fulton St.	-	-	-	-	-	-	-	-	31	C	55	B	32	C	15	D	NO	NO	NO	NO

Notes: ¹ The Predicted results reflect an additional crosswalk at the proposed Route 9A and Fulton Street intersection.
² Because data were not available for the west crosswalks at the Route 9A intersections at Liberty Street and Vesey Street for the Pre September 11 Scenario, these crosswalks could not be analyzed.

Source: Louis Berger Group, Inc., 2003.

**Table 13B-41
2009 Crosswalk Impact Assessment—Midday Peak Period**

Intersection	2009 Future Without the Proposed Action Pre-September 11 Scenario								2009 Future With the Proposed Action Pre-September 11 Scenario ^{1,2}								Significant Impacts of the Proposed Action			
	Crosswalk								Crosswalk											
	North		East		South		West		North		East		South		West		Crosswalk			
	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	North	East	South	West
Church St. @ Dey St.	24	C	7	E	24	C	-	-	97	B	10	E	37	C	-	-	NO	NO	NO	NO
Church St. @ Fulton St.	37	C	9	E	16	D	-	-	39	C	16	D	38	C	16	D	NO	NO	NO	NO
Church St. @ Vesey St.	36	C	13	E	32	C	6	E	23	C	12	E	30	C	11	E	NO	YES	NO	NO
Church St. @ Barclay St.	147	A	47	B	72	B	31	C	174	A	38	C	43	B	25	C	NO	NO	NO	NO
Broadway @ John St.	12	E	5	F	7	E	12	E	18	D	6	E	10	E	17	D	NO	NO	NO	NO
Broadway @ Fulton St.	19	D	8	E	17	D	13	E	25	C	10	E	23	D	17	D	NO	NO	NO	NO
Church St. @ Liberty St. (with underground connection)	14	E	61	B	29	C	16	D	34	C	89	B	42	B	30	C	NO	NO	NO	NO
Church St. @ Liberty St. (without underground connection)	14	E	61	B	29	C	16	D	32	C	89	B	41	B	30	C	NO	NO	NO	NO
Church St. @ Cortlandt St.	28	C	14	E	14	E	-	-	23	D	23	D	26	C	-	-	NO	NO	NO	NO
Broadway @ Cortlandt St.	13	E	18	D	21	D	18	D	18	D	25	C	30	C	25	C	NO	NO	NO	NO
Broadway @ Liberty St.	13	E	8	E	31	C	16	D	16	D	11	E	41	B	20	D	NO	NO	NO	NO
Greenwich St. @ Liberty St.	-	-	22	D	-	-	49	B	233	A	43	B	25	C	13	E	NO	NO	NO	YES
Route 9A @ Liberty St.	72	B	-	-	291	A	-	-	778	A	95	B	36	C	-	-	NO	NO	NO	NO
Route 9A @ Vesey St.	773	A	-	-	231	A	-	-	49	B	22	D	107	B	-	-	NO	NO	NO	NO
W. Broadway @ Vesey St.	-	-	35	C	-	-	55	B	10	E	30	C	17	D	15	D	NO	NO	NO	NO
Route 9A @ Fulton St.	-	-	-	-	-	-	-	-	34	C	26	C	242	A	-	-	NO	NO	NO	NO
Greenwich St. @ Fulton St.	-	-	-	-	-	-	-	-	23	D	50	B	25	C	11	E	NO	NO	NO	NO

Notes: ¹ The Predicted results reflect updated information since the DGEIS, including more specific midday internal trip assumptions provided by PANYNJ and an additional crosswalk at the proposed Route 9A and Fulton Street intersection.
² Because data were not available for the west crosswalks at the Route 9A intersections at Liberty Street and Vesey Street for the Pre September 11 Scenario, these crosswalks could not be analyzed.

Source: Louis Berger Group, Inc., 2003.

Table 13B-42
2009 Crosswalk Impact Assessment – PM Peak Period

Intersection	2009 Future Without the Proposed Action Pre-September 11 Scenario								2009 Future With the Proposed Action Pre-September 11 Scenario ^{1,2}								Significant Impacts of the Proposed Action			
	Crosswalk								Crosswalk											
	North		East		South		West		North		East		South		West		Crosswalk			
	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	Sq.ft/ ped	LOS	North	East	South	West
Church St. @ Dey St.	16	D	7	E	22	D	-	-	69	B	9	E	34	C	-	-	NO	NO	NO	NO
Church St. @ Fulton St.	39	C	7	E	10	E	-	-	48	B	11	E	30	C	14	E	NO	NO	NO	NO
Church St. @ Vesey St.	53	B	22	D	26	C	8	E	19	D	10	E	16	D	5	F	NO	YES	NO	YES
Church St. @ Barclay St.	223	A	46	B	209	A	39	C	266	A	33	C	55	B	18	D	NO	NO	NO	NO
Broadway @ John St.	26	C	10	E	34	C	12	E	35	C	14	E	42	B	16	D	NO	NO	NO	NO
Broadway @ Fulton St.	27	C	18	D	18	D	15	D	35	C	13	E	22	D	21	D	NO	YES	NO	NO
Church St. @ Liberty St. (with underground connection)	6	E	28	C	14	E	11	E	16	D	35	C	37	C	17	D	NO	NO	NO	NO
Church St. @ Liberty St. (without underground connection)	6	E	28	C	14	E	11	E	9	E	35	C	23	D	14	E	NO	NO	NO	NO
Church St. @ Cortlandt St.	39	C	15	D	27	C	-	-	17	D	25	C	27	C	-	-	NO	NO	NO	NO
Broadway @ Cortlandt St.	24	C	17	D	23	D	28	C	28	C	23	D	30	C	38	C	NO	NO	NO	NO
Broadway @ Liberty St.	24	C	13	E	26	C	29	C	26	C	17	D	32	C	36	C	NO	NO	NO	NO
Greenwich St. @ Liberty St.	-	-	27	C	-	-	55	B	82	B	57	B	16	D	16	D	NO	NO	NO	NO
Route 9A @ Liberty St.	52	B	-	-	208	A	-	-	628	A	394	A	23	D	-	-	NO	NO	NO	NO
Route 9A @ Vesey St.	649	A	-	-	187	A	-	-	43	B	61	B	376	A	-	-	NO	NO	NO	NO
W. Broadway @ Vesey St.	-	-	29	C	-	-	39	C	7	E	30	C	23	D	16	D	NO	NO	NO	NO
Route 9A @ Fulton St.	-	-	-	-	-	-	-	-	96	B	77	B	180	A	-	-	NO	NO	NO	NO
Greenwich St. @ Fulton St.	-	-	-	-	-	-	-	-	19	D	51	B	20	D	9	E	NO	NO	NO	NO

Notes: ¹ The Predicted results reflect an additional crosswalk at the proposed Route 9A and Fulton Street intersection.
² Because data were not available for the west crosswalks at the Route 9A intersections at Liberty Street and Vesey Street for the Pre September 11 Scenario, these crosswalks could not be analyzed.

Source: Louis Berger Group, Inc., 2003.

Table 13B-43
Future with the Proposed Action—Pre-September 11 Scenario
2009 Subway Pedestrian Analysis (LOS D, E, or F)

Element		AM Peak		PM Peak	
		v/c	LOS	v/c	LOS
A and C Chambers Street Station					
N92.X2	<i>HXT</i>	0.85	E	0.15	A
P11	Stairway to Platform	0.69	B	1.95	F
P17	Stairway to Platform	0.80	C	1.16	D
Church Street Passageway					
N92.X2	<i>HXT</i> (south)	0.85	E	0.15	A
S3	Stairway to Street	0.95	C	1.35	E
S20 M14A/B	Stairway to Street	1.24	D	0.92	C
4 and 5 Fulton Street Station					
<i>Concourse Level</i>					
C3	A/C Platform Stairs	1.05	D	0.81	C
C4	A/C Platform Stairs	1.05	D	0.81	C
C5	A/C Platform Stairs	1.07	D	0.83	C
C23	Escalator down from platform to street	0.61	D	0.34	B
C24	Escalator down from platform to underpass	0.12	A	0.60	D
<i>Platform Level</i>					
P8	HEETs SB Lex platform (NW corner)	0.62	D	0.14	A
C23	Escalator down from platform to street	0.61	D	0.34	B
C24	Escalator down from platform to underpass	0.12	A	0.60	D
Notes: v/c = volume/capacity ratio; LOS = Level of Service; HEET = High Entrance/Exit Turnstile; <i>HXT</i> = High Revolving Exit Gate					
Source: Louis Berger Group, Inc., 2003.					

few locations during the AM and PM peak periods. These locations are shown in Table 13B-43. None of these facilities would be impacted in 2009 by the Proposed Action. The complete results of the analysis are provided in Appendix F.

FERRY

The number of ferry trips projected to be generated by the Proposed Action in 2009 would be less than the ferry trips generated as a result of the PATH closure from 2001 to 2003. Most of these new ferry customers would be served at the ferry terminal located at the World Financial Center. The capacity of this terminal would be increased significantly prior to 2009 and could accommodate an increase in ferry demand. Since private ferry operators serve the World Financial Center ferry terminal, service could be adjusted to accommodate an increase in demand.

MITIGATION

Of the *eight* crosswalks identified with impacts in 2009 as a result of the Proposed Action, *five* could be mitigated by widening the crosswalk. The other *three* crosswalks that could not be fully mitigated could be widened to a maximum of 20 feet to minimize the effect of the Proposed Action. These locations are identified in Table 13B-44. None of the impacted crosswalks are projected to operate at LOS F in 2009 as a result of the Proposed Action. Although the Proposed Action would cause some unmitigatable crosswalk impacts, pedestrians would be able to cross streets at these impacted crosswalk locations with slightly more congested conditions with little or no appreciable change in crossing time.

Table 13B-44

Future With the Proposed Action—Pre-September 11 Scenario 2009 Crosswalk Mitigation

Intersection	AM Period Crosswalk				Midday Period Crosswalk				PM Period Crosswalk			
	North	East	South	West	North	East	South	West	North	East	South	West
Church St. @ Vesey St.		X				O				X		X
Broadway @ Fulton St.		O								O		
Church St. @ Liberty St. (without underground connection)	O											
Greenwich St. @ Liberty St.								O				

Notes: O – Mitigatable Impact, X – Unmitigatable Impact
Source: Louis Berger Group, Inc., 2003.

**13B.4.6 PROBABLE IMPACTS OF THE PROPOSED ACTION 2015—
PRE-SEPTEMBER 11 SCENARIO**

TRANSIT

The subway trips projected to be generated by the Proposed Action in 2015 would also increase the demand on the subway lines serving the WTC Site. Each subway element within these stations was evaluated to determine their projected level of service during the AM and PM peak periods. Based upon a comparison between the future with the Proposed Action in 2015 and the future without the Proposed Action in 2015 under the Pre-September 11 Scenario, none of these elements would be impacted by the Proposed Action. In terms of subway line-haul capacity, none of the subway lines serving the WTC Site would be impacted by the Proposed Action.

The number of bus trips projected to be generated by the Proposed Action in 2015 would increase the demand for local and express buses. It is anticipated that most or all of the demand would be accommodated by unused capacity on the bus routes. It is likely that the local and express bus routes serving the area in the vicinity of the WTC Site would still operate below pre-September 11 levels. However, MTA/NYCT should evaluate bus operations in 2015 to determine whether routing or frequencies need to be adjusted to accommodate any isolated increases in demand on specific local or express routes.

PEDESTRIANS

The redevelopment of the WTC Site includes buildings closer to Vesey Street than was the case prior to September 11. As a result, more pedestrian traffic is anticipated within the Vesey Street corridor. All pedestrian access to Tower 5 south of Liberty Street would be at-grade. Consequently, a significant number of pedestrians would be assigned to the Greenwich Street and Liberty Street intersection.

Crosswalks

Of the 16 intersections analyzed for 2015 with the Proposed Action—Pre-September 11 condition, 11 are projected to have at least one crosswalk operating at LOS E or F during the AM, midday or PM periods. Separate analyses were performed at the Church Street and Liberty Street intersection both with and without the underground connection between the WTC Site and Liberty Plaza. This intersection has crosswalks that are projected to operate at LOS E for both of these conditions. Two intersections (Church Street and Liberty Street intersection without the underground connection, and Church and Vesey Street) are projected to have a crosswalk operate at LOS F in 2015. The Church Street and Vesey Street intersection is projected to have

the most crosswalks operating at LOS E or F (a total of *seven* daily intersection approaches out of 12). The locations *with LOS E or F* are shown in Table 13B-45.

Table 13B-45
Future with the Proposed Action-Pre-September 11 Scenario
2015 Crosswalk Analysis (LOS E or F)

Intersection	AM Period LOS Crosswalk				Midday Period LOS Crosswalk				PM Period LOS Crosswalk			
	North	East	South	West	North	East	South	West	North	East	South	West
Church St. @ Dey St.	B	E	B	-	B	E	C	-	B	E	C	-
Church St. @ Fulton St.	C	D	B	D	D	D	C	E	C	E	C	E
Church St. @ Vesey St.	D	E	D	E	D	E	C	E	D	E	E	F
Broadway @ John St.	C	D	D	D	D	E	E	D	C	E	B	E
Broadway @ Fulton St.	B	E	D	C	C	E	D	D	C	E	D	D
Church St. @ Liberty St. (with underground connection)	E	C	D	E	D	B	C	C	E	C	C	E
Church St. @ Liberty St. (without underground connection)	F	C	E	E	D	B	C	D	E	C	D	E
Broadway @ Cortlandt St.	D	B	E	D	D	C	C	D	C	D	C	D
Broadway @ Liberty St.	D	B	C	C	D	E	C	D	C	D	C	C
Greenwich St. @ Liberty St.	D	D	E	E	C	D	D	E	D	D	E	E
W. Broadway @ Vesey St.	E	D	D	D	E	D	E	E	E	D	D	D
Greenwich St. @ Fulton St.	C	E	D	E	D	E	D	E	D	E	D	E

Source: Louis Berger Group, Inc., 2003.

The AM, midday, and PM peak period 2015 crosswalk analysis results for the future with the Proposed Action—Pre-September conditions were compared with the future without the Proposed Action—Pre-September 11 Scenario. The results of these comparisons are provided in Tables 13B-46 through 48 for the AM, midday, and PM peak periods, respectively. *As discussed for the 2009 analysis year, midday pedestrian data was updated for the FGEIS and reflects more accurate and specific operating information. Based on the CEQR criteria, five crosswalks were determined to have impacts during the AM peak period, seven crosswalks were determined to have impacts during the midday peak period, and five crosswalks were determined to have impacts during the PM peak period.*

Corridors and Sidewalks

None of these locations would be impacted in 2015 by the Proposed Action. The complete results of the analysis are provided in Appendix F.

Subway Elements

The analysis locations at the No. 4/5 Fulton Street, No. 1/9 Cortlandt Street, N/R Cortlandt Street, No. 2/3 Park Place, E World Trade Center, and A/C Chambers Street Stations generally operate at LOS C or better during the peak periods. However, there are capacity constraints at a few locations during the AM and PM peak periods. These locations are shown in Table 13B-49. None of these facilities would be impacted in 2015 by the Proposed Action. The complete results of the analysis are provided in Appendix F.

FERRY

The number of ferry trips projected to be generated by the Proposed Action in 2015 would also be less than the ferry trips generated as a result of the WTC PATH Terminal closure from 2001 to 2003. The capacity of the World Financial Center ferry terminal is expected to be increased prior to 2015, and that terminal could accommodate an increase in ferry demand. The private

World Trade Center Memorial and Redevelopment Plan GEIS

ferry operators serving the World Financial Center ferry terminal could adjust service to accommodate increased demand.

MITIGATION

Of the 13 crosswalks identified with impacts in 2015 as a result of the Proposed Action, *seven* could be mitigated by widening the crosswalk. The other *six* crosswalks that could not be fully mitigated could be widened to a maximum of 20 feet to minimize the effect of the Proposed Action. These locations are identified in Table 13B-50. None of the impacted crosswalks are projected to operate at LOS F in 2015 as a result of the Proposed Action. Although the Proposed Action would cause some unmitigatable crosswalk impacts, pedestrians would be able to cross streets at these impacted crosswalk locations with slightly more congested conditions with little or no appreciable change in crossing time.

**Table 13B-46
2015 Crosswalk Impact Assessment – AM Peak Period**

Intersection	2015 Future Without the Proposed Action Pre-September 11 Scenario								2015 Future With the Proposed Action ^{1,2}								Significant Impacts of the Proposed Action			
	Crosswalk								Crosswalk											
	North		East		South		West		North		East		South		West		Crosswalk			
	Sq.ft /ped	LOS	Sq.ft /ped	LOS	Sq.ft /ped	LOS	Sq.ft /ped	LOS	Sq.ft /ped	LOS	Sq.ft /ped	LOS	Sq.ft /ped	LOS	Sq.ft /ped	LOS	North	East	South	West
Church St. @ Dey St.	14	E	8	E	18	D	-	-	63	B	11	E	51	B	-	-	NO	NO	NO	NO
Church St. @ Fulton St.	36	C	9	E	8	E	-	-	30	C	15	D	50	B	15	D	NO	NO	NO	NO
Church St. @ Vesey St.	40	B	21	D	34	C	8	E	15	D	9	E	18	D	7	E	NO	YES	NO	YES
Church St. @ Barclay St.	121	B	45	B	241	A	65	B	143	A	21	D	63	B	22	D	NO	NO	NO	NO
Broadway @ John St.	19	D	11	E	12	E	13	E	26	C	15	D	16	D	15	D	NO	NO	NO	NO
Broadway @ Fulton St.	32	C	16	D	17	D	26	C	42	B	11	E	21	D	34	C	NO	YES	NO	NO
Church St. @ Liberty St. (with underground connection)	7	E	102	B	5	F	4	F	10	E	39	C	19	D	10	E	NO	NO	NO	NO
Church St. @ Liberty St. (without underground connection)	7	E	102	B	5	F	4	F	5	F	39	C	11	E	7	E	YES	NO	NO	NO
Church St. @ Cortlandt St.	39	C	39	C	35	C	-	-	27	C	47	B	32	C	-	-	NO	NO	NO	NO
Broadway @ Cortlandt St.	13	E	37	C	10	E	32	C	17	D	52	B	14	E	19	D	NO	NO	NO	NO
Broadway @ Liberty St.	24	C	33	C	31	C	24	C	23	D	43	B	38	C	26	C	NO	NO	NO	NO
Greenwich St. @ Liberty St.	-	-	15	D	-	-	44	B	16	D	17	D	9	E	6	E	NO	NO	NO	YES
Route 9A @ Liberty St.	50	B	-	-	202	A	-	-	545	A	1125	A	22	D	-	-	NO	NO	NO	NO
Route 9A @ Vesey St.	541	A	-	-	153	A	-	-	34	C	47	B	280	A	-	-	NO	NO	NO	NO
W. Broadway @ Vesey St.	-	-	28	C	-	-	48	B	6	E	16	D	17	D	16	D	NO	NO	NO	NO
Route 9A @ Fulton St.	-	-	-	-	-	-	-	-	74	B	58	B	193	A	-	-	NO	NO	NO	NO
Greenwich St. @ Fulton St.	-	-	-	-	-	-	-	-	25	C	12	E	22	D	12	E	NO	NO	NO	NO

NOTES ¹ The Predicted results an additional crosswalk at the proposed Route 9A and Fulton Street intersection.

² Because data were not available for the west crosswalks at the Route 9A intersections at Liberty Street and Vesey Street for the Pre September 11 Scenario, these crosswalks could not be analyzed.

Source: Louis Berger Group, Inc., 2003.

**Table 13B-47
2015 Crosswalk Impact Assessment – Midday Peak Period**

Intersection	2015 Future Without the Proposed Action Pre-September 11 Scenario								2015 Future With the Proposed Action ^{1,2}								Significant Impacts of the Proposed Action			
	Crosswalk								Crosswalk											
	North		East		South		West		North		East		South		West		Crosswalk			
	Sq.ft /ped	LOS	Sq.ft/ ped	LOS	Sq.ft /ped	LOS	Sq.ft/ ped	LOS	Sq.ft /ped	LOS	Sq.ft/ ped	LOS	Sq.ft /ped	LOS	Sq.ft /ped	LOS	North	East	South	West
Church St. @ Dey St.	24	C	7	E	23	D	-	-	62	B	10	E	34	C	-	-	NO	NO	NO	NO
Church St. @ Fulton St.	36	C	9	E	15	D	-	-	22	D	16	D	39	C	11	E	NO	NO	NO	NO
Church St. @ Vesey St.	35	C	13	E	31	C	6	E	23	D	11	E	25	C	9	E	NO	YES	NO	NO
Church St. @ Barclay St.	143	A	46	B	70	B	30	C	168	A	24	C	42	B	19	D	NO	NO	NO	NO
Broadway @ John St.	12	E	4	F	7	E	11	E	17	D	6	E	9	E	15	D	NO	NO	NO	NO
Broadway @ Fulton St.	18	D	8	E	17	D	13	E	24	C	9	E	22	D	17	D	NO	NO	NO	NO
Church St. @ Liberty St. (with underground connection)	14	E	59	B	28	C	15	D	21	D	73	B	30	C	25	C	NO	NO	NO	NO
Church St. @ Liberty St. (without underground connection)	14	E	59	B	28	C	15	D	20	D	73	B	29	C	25	C	NO	NO	NO	NO
Church St. @ Cortlandt St.	27	C	13	E	14	E	-	-	22	D	21	D	22	D	-	-	NO	NO	NO	NO
Broadway @ Cortlandt St.	13	E	17	D	21	D	17	D	18	D	25	C	29	C	21	D	NO	NO	NO	NO
Broadway @ Liberty St.	12	E	8	E	31	C	15	D	16	D	11	E	39	C	19	D	NO	NO	NO	NO
Greenwich St. @ Liberty St.	-	-	21	D	-	-	48	B	25	C	20	D	15	D	6	E	NO	NO	NO	YES
Route 9A @ Liberty St.	70	B	-	-	281	A	-	-	224	A	143	A	27	C	-	-	NO	NO	NO	NO
Route 9A @ Vesey St.	773	A	-	-	222	A	-	-	44	B	18	D	89	B	-	-	NO	NO	NO	NO
W. Broadway @ Vesey St.	-	-	28	C	-	-	48	B	8	E	16	D	11	E	12	E	NO	NO	NO	YES
Route 9A @ Fulton St.	-	-	-	-	-	-	-	-	28	C	21	D	165	A	-	-	NO	NO	NO	NO
Greenwich St. @ Fulton St.	-	-	-	-	-	-	-	-	17	D	11	E	18	D	10	E	NO	NO	NO	NO

NOTES: ¹ The Predicted results reflect updated information since the DGEIS, including more specific midday internal trip assumptions provided by PANYNJ and an additional crosswalk at the proposed Route 9A and Fulton Street intersection.

² Because data were not available for the west crosswalks at the Route 9A intersections at Liberty Street and Vesey Street for the Pre September 11 Scenario, these crosswalks could not be analyzed.

Source: Louis Berger Group, Inc., 2003.

**Table 13B-48
2015 Crosswalk Impact Assessment – PM Peak Period**

Intersection	2015 Future Without the Proposed Action Pre-September 11 Scenario								2015 Future With the Proposed Action ^{1,2}								Significant Impacts of the Proposed Action				
	Crosswalk								Crosswalk												
	North		East		South		West		North		East		South		West		Crosswalk				
	Sq.ft /ped	LOS	Sq.ft /ped	LOS	Sq.ft /ped	LOS	Sq.ft /ped	LOS	Sq.ft /ped	LOS	Sq.ft /ped	LOS	Sq.ft /ped	LOS	Sq.ft /ped	LOS	Sq.ft /ped	LOS	North	East	South
Church St. @ Dey St.	15	D	7	E	21	D	-	-	55	B	9	E	34	C	-	-	NO	NO	NO	NO	
Church St. @ Fulton St.	38	C	6	E	9	E	-	-	30	C	11	E	34	C	10	E	NO	NO	NO	NO	
Church St. @ Vesey St.	51	B	21	D	26	C	7	E	18	D	8	E	14	E	5	F	NO	YES	YES	YES	
Church St. @ Barclay St.	218	A	45	B	205	A	37	C	252	A	20	D	54	B	15	D	NO	NO	NO	NO	
Broadway @ John St.	25	C	10	E	33	C	11	E	34	C	14	E	40	B	14	E	NO	NO	NO	NO	
Broadway @ Fulton St.	26	C	18	D	17	D	15	D	34	C	13	E	21	D	20	D	NO	YES	NO	NO	
Church St. @ Liberty St. (with underground connection)	5	F	27	C	14	E	11	E	12	E	27	C	25	C	14	E	NO	NO	NO	NO	
Church St. @ Liberty St. (without underground connection)	5	F	27	C	14	E	11	E	8	E	27	C	17	D	12	E	NO	NO	NO	NO	
Church St. @ Cortlandt St.	38	C	14	E	26	C	-	-	18	D	21	D	23	D	-	-	NO	NO	NO	NO	
Broadway @ Cortlandt St.	24	C	16	D	22	D	27	C	28	C	23	D	30	C	20	D	NO	NO	NO	NO	
Broadway @ Liberty St.	23	D	12	E	25	C	29	C	25	C	16	D	31	C	31	C	NO	NO	NO	NO	
Greenwich St. @ Liberty St.	-	-	27	C	-	-	54	B	18	D	19	D	10	E	7	E	NO	NO	NO	YES	
Route 9A @ Liberty St.	50	B	-	-	202	A	-	-	467	A	606	A	21	D	-	-	NO	NO	NO	NO	
Route 9A @ Vesey St.	624	A	-	-	184	A	-	-	41	B	47	B	299	A	-	-	NO	NO	NO	NO	
W. Broadway @ Vesey St.	-	-	28	C	-	-	38	C	7	E	18	D	17	D	15	D	NO	NO	NO	NO	
Route 9A @ Fulton St.	-	-	-	-	-	-	-	-	81	B	60	B	174	A	-	-	NO	NO	NO	NO	
Greenwich St. @ Fulton St.	-	-	-	-	-	-	-	-	18	D	12	E	17	D	9	E	NO	NO	NO	NO	

NOTES: ¹ The Predicted results reflect an additional crosswalk at the proposed Route 9A and Fulton Street intersection.

² Because data were not available for the west crosswalks at the Route 9A intersections at Liberty Street and Vesey Street for the Pre September 11 Scenario, these crosswalks could not be analyzed.

Source: Louis Berger Group, Inc., 2003.

**Table 13B-49
Future with the Proposed Action—Pre-September 11 Scenario
2015 Subway Pedestrian Analysis (LOS D, E, or F)**

Element		AM Peak		PM Peak	
		v/c	LOS	v/c	LOS
A and C Chambers Street Station					
N92.X2	HXT	0.88	E	0.15	A
N92.X4	HXT	0.73	D	0.07	A
P11	Stairway to Platform	0.82	C	2.31	F
P17	Stairway to Platform	0.82	C	1.20	D
Church Street Passageway					
N94	Turnstile	0.73	D	0.70	D
N92.X2	HXT	0.88	E	0.15	A
N92	Turnstile (north)	0.37	B	0.60	D
N92.X4	HXT	0.73	D	0.07	A
P2 A/B	Stairway to Street	0.75	C	1.08	D
S3	Stairway to Street	1.04	D	1.46	E
S20 M14A/B	Stairway to Street	1.28	D	0.95	C
E World Trade Center Station					
N94	Turnstile	0.73	D	0.70	D
4 and 5 Fulton Street Station					
<i>Street Level</i>					
P9A	Street Stairs	1.09	D	0.24	A
P15	Escalator up from platform to World of Golf	0.60	D	0.01	A
<i>Concourse Level</i>					
C3	A/C Platform Stairs	1.23	D	0.95	C
C4	A/C Platform Stairs	1.23	D	0.95	C
C5	A/C Platform Stairs	1.26	D	0.98	C
C8	Escalator up to platform (north)	0.65	D	0.05	A
C23	Escalator down from platform to street	0.71	D	0.40	C
C24	Escalator down from platform to underpass	0.14	A	0.71	D
<i>Platform Level</i>					
P6 and P13	Turnstile	0.60	D	0.68	D
P8	HEETs SB Lex platform (NW corner)	0.72	D	0.16	A
P9A	Street Stairs	1.09	D	0.24	A
P15	Escalator up from platform to World of Golf	0.60	D	0.01	A
C23	Escalator down from platform to street	0.71	D	0.40	C
C24	Escalator down from platform to underpass	0.14	A	0.71	D
Notes: v/c = volume/capacity ratio; LOS = Level of Service; HEET = High Entrance/Exit Turnstile; HXT = High Revolving Exit Gate					
Source: Louis Berger Group, Inc., 2003.					

**Table 13B-50
Future with the Proposed Action—Pre-September 11 Scenario—2015 Crosswalk Mitigation**

Intersection	AM Period LOS Crosswalk				Midday Period LOS Crosswalk				PM Period LOS Crosswalk			
	North	East	South	West	North	East	South	West	North	East	South	West
Church St. @ Vesey St.		X		O		O				X	O	O
Broadway @ Fulton St.		O								O		
Church St. @ Liberty St. (without underground connection)	X											
Greenwich St. @ Liberty St.				X				X				X
W. Broadway @ Vesey St.								O				
Notes: O – Mitigatable Impact; X – Unmitigatable Impact												
Source: Louis Berger Group, Inc., 2003.												

*