# Chapter 16: Construction

## A. INTRODUCTION

This chapter summarizes the anticipated construction phasing and schedule for the proposed Lenox Hill Hospital redevelopment (the Proposed Project) and assesses the potential for significant adverse impacts during the construction period with both Envelope 1 and Envelope 2. The city, state, and federal regulations and policies that govern construction are described, followed by the anticipated construction schedule and the types of activities likely to occur during construction. The types of construction equipment are also discussed, along with the number of workers and truck deliveries. Finally, the potential impacts from construction activity are assessed.

As described in Chapter 1, "Project Description," Lenox Hill Hospital (the Applicant) is requesting a series of discretionary actions from the City Planning Commission (CPC) to facilitate the enlargement and modernization of the existing LHH on Block 1411, Lots 1 and 113 (Projected Development Site 1), bounded by Park and Lexington Avenues and East 76th and East 77th Streets in Manhattan. The Proposed Project would include a new building fronting on Lexington Avenue, as well as additions and modifications to portions of the existing hospital complex on Projected Development Site 1 and connections between the new hospital building and the renovated buildings. Two building envelopes are proposed, each of which would accommodate the Proposed Project's program. Envelope 1 would include a new approximately 771,000-gross-square-foot (gsf) building on Lexington Avenue and 56,000 gsf of additions to the existing hospital. Envelope 2 would include a new approximately 867,000-gsf building and 8,000 gsf of additions to the existing hospital. With the existing buildings to remain, the overall gross floor area of the Proposed Project on Projected Development Site 1 would be approximately 1.4 million gsf with either envelope. The program, project population (staff, patients, visitors), site access, zoning actions, and construction duration would be the same for both Envelope 1 and Envelope 2.

This Environmental Impact Statement (EIS) also considers the as-of-right development of a building with hospital support functions at 111-115 East 77th Street between Lexington and Park Avenues (Block 1412, Lots 9, 10, and 11) (Projected Development Site 1a) as part of the Proposed Project. It would be connected to Projected Development Site 1 by a utility tunnel under East 77th Street. In addition, the Applicant proposes to provide improvements to the 77th Street subway station of the Lexington Avenue (No. 6) line, providing Americans with Disabilities Act (ADA) access to the downtown platform and improving sidewalk conditions in the immediate area.

### PRINCIPAL CONCLUSIONS

Construction associated with the Proposed Actions would result in temporary disruptions in the surrounding area. As described below, the Proposed Project's construction activities under both Envelope 1 and Envelope 2 would result in temporary significant adverse noise impacts. Findings specific to each of the key technical areas are summarized below.

*TRANSPORTATION*

Potential transportation impacts during peak construction conditions were assessed as described below.

*Traffic*

For purposes of the construction traffic analysis, the combined daily workforce and truck trip projections in the peak quarter (second quarter of Year 4, which would occur in 2030 for both Envelope 1 and Envelope 2) were used as the basis for estimating peak hour construction trips. Based on a detailed assignment of these project-generated vehicle trips, two intersections (East 79th Street and Park Avenue and East 77th Street and Third Avenue) were selected for detailed analysis during the construction AM and PM peak hours (6:00 to 7:00 AM and 3:00 to 4:00 PM). During all stages, as under existing conditions, one travel lane on East 76th Street and East 77th Street would be maintained, and one bus lane and two travel lanes on Lexington Avenue would be maintained. Therefore, on streets bordering the Project Site, traffic capacity would not be reduced by the construction Maintenance and Protection of Traffic (MPT) elements because there would be no travel lane closures. The two intersections would operate at similar levels of service in the 2030 With Action condition when compared to the 2030 No Action condition, and no significant adverse traffic impacts would occur during the weekday AM and PM construction peak hours.

*Transit*

During peak construction for both Envelope 1 and Envelope 2, the estimated number of peak-hour transit trips would be 220, with 195 subway trips and 25 bus trips. Proposed Project-generated subway trips would be dispersed among the study area's subway stations/lines such that trip-making for any single subway station/line would not exceed the 2021 *City Environmental Quality Review (CEQR) Technical Manual* analysis threshold of 200 or more peak hour subway trips. Proposed Project-generated bus trips would be dispersed among the local bus routes serving the study area such that trip-making for any single bus route would not exceed the *CEQR Technical Manual* analysis threshold of 50 or more peak hour bus trips on any bus route in any direction. Construction worker-related transit trips would also be made outside of the commuter peak hours, which correspond with lower background transit levels and are typically not subject to concern or assessment of operating conditions. Therefore, consistent with the *CEQR Technical Manual*, a detailed transit analysis for the Proposed Project's construction condition is not warranted and the Proposed Project would not result in any significant adverse construction transit impacts.

*Pedestrians*

During peak construction for both Envelope 1 and Envelope 2, the estimated number of peak-hour person trips traversing the area's sidewalks, corners, and crosswalks would be approximately 415 pedestrians per hour during the weekday AM and PM construction peak hours. Based on the detailed assignment of construction-generated pedestrian trips, one sidewalk and one corner would exceed the *CEQR* analysis threshold of 200 pedestrian trips during the weekday AM and PM construction peak hours. In addition to this sidewalk and corner, considering the effects of a planned narrowing of study area sidewalks and corners during construction due to MPT elements and the diversions of pedestrian trips due to the short, temporary relocation of the emergency department (ED) walk-in entrance from the south side of East 77th Street to the north side of East 76th Street (with Envelope 1 and Envelope 2), a total of seven sidewalks and three corners were selected for detailed analysis for the weekday AM and PM construction peak hours, and typical

weekday AM, midday, and PM peak hours. No significant adverse pedestrian impacts were identified at these pedestrian elements during any peak hour. Therefore, the Proposed Project would not result in any significant adverse construction pedestrian impacts.

*Street User Safety*

The Proposed Project under Envelope 1 and Envelope 2 would add modest pedestrian and vehicular trips to routes already traversed by heavy volumes at high crash locations in the study area. Therefore, the Proposed Project is not expected to result in the potential for significant adverse safety impacts.

*Parking*

The parking demand from construction activities under both Envelope 1 and Envelope 2 is expected to be fully accommodated by parking facilities within a ¼-mile radius of the Project Site, and the Proposed Project would not result in any significant adverse parking impacts during construction.

*AIR QUALITY*

Measures would be taken to reduce pollutant emissions during construction of the Proposed Project under both Envelope 1 and Envelope 2 in accordance with applicable laws, regulations, and building codes. These include the use of ultra-low sulfur diesel (ULSD) fuel, dust suppression measures, idling restrictions, and diesel equipment reduction. In addition, construction of the Proposed Project would utilize newer equipment (i.e., equipment meeting the United States Environmental Protection Agency's [EPA] Tier 3 emission standard) and best available tailpipe reduction technologies to further reduce air pollutant emissions. With the implementation of these emission reduction measures, which would be included in the Project Component Related to the Environment (PCREs), the dispersion modeling analysis of construction-related air emissions for both non-road and on-road sources determined that particulate matter ($PM_{2.5}$ and $PM_{10}$), annual average nitrogen dioxide ($NO_2$), and carbon monoxide (CO) concentrations would be below their corresponding *de minimis* thresholds or National Ambient Air Quality Standards (NAAQS), respectively. Therefore, construction of the Proposed Project under both Envelope 1 and Envelope 2 would not result in significant adverse air quality impacts due to construction sources.

*NOISE*

Noise levels from construction of the Proposed Project under both Envelope 1 and Envelope 2 are expected to be comparable to those from typical New York City (NYC) construction projects involving a new building or buildings with concrete slab floors and foundation on piles. Similarly, potential disruptions to adjacent residences and other receptors from elevated noise levels generated by construction would be expected to be comparable to those that would occur immediately adjacent to a typical NYC construction site during the periods when the loudest activities would occur.

A detailed analysis of construction noise considered the magnitude and duration of potential construction noise effects by evaluating noise from construction of the Proposed Project during various periods throughout construction. During approximately two years of the construction schedule in which only interior fit-out work at newly constructed spaces would be occurring (i.e., Stage 2 and 3 interior fit-out), an exterior hoist would still have the potential to generate noise and thus was consequently included in the construction noise analysis. However, as the only exterior noise-generating equipment during these times, the hoist alone would not have the potential to

result in significant adverse noise impacts during these periods. Additionally, the portion of Stage 4 occurring after completion of Stage 3, which is entirely interior renovations, would not include any exterior noise-generating equipment. This period would therefore not have the potential to produce substantial noise effects at nearby receptors because the existing building façade would shield interior noise-generating construction equipment. Consequently, this portion of Stage 4 was not evaluated as part of the construction noise analysis.

The construction noise analysis predicted that noise levels due to construction with Envelope 1 could exceed the impact criteria at 16 receptors surrounding the proposed construction work area. Noise levels due to construction with Envelope 2 could exceed the impact criteria at 14 receptors, most but not all of which are the same receptors as with Envelope 1. At these receptors, construction would produce noise level increases that would be noticeable and potentially intrusive during the most noise-intensive nearby construction activities; however, the predicted maximum levels would not persist throughout construction, and the noise levels would fluctuate over the course of the construction period. While the greatest levels of construction noise would not persist throughout construction, these locations would experience construction noise levels whose magnitude and duration could constitute temporary significant adverse impacts. Further construction noise control measures are discussed in Chapter 18, "Mitigation."

*VIBRATION*

For both Envelope 1 and Envelope 2, the buildings of most concern for potential structural or architectural damage due to vibration are the existing buildings and structures immediately adjacent to Projected Development Sites 1 and 1a. However, given their distances from the construction work areas, vibration levels at these buildings and structures would not be expected to exceed 0.50 inches per second (in/sec) Peak Particle Velocity (PPV), including during sitework activities, where use of the vibratory roller would be the most vibration-intensive activity. Additional receptors farther away from the Project Site would experience less vibration than those listed above, and similarly would not be expected to cause structural or architectural damage.

In terms of potential vibration levels that would be perceptible and annoying, the equipment that would have the most potential for producing levels that exceed the 65 vibration decibels (VdB) limit is the vibratory roller, which would have the potential to produce perceptible vibration levels (i.e., vibration levels exceeding 65 VdB) at receptor locations within a distance of approximately 250 feet, depending on soil conditions. However, the operation of this equipment would occur for limited periods of time at any given location, and therefore would not result in any significant adverse impacts. Consequently, there is no potential for significant adverse vibration impacts from construction of the Proposed Project under Envelope 1 or Envelope 2.

## B. GOVERNMENTAL COORDINATION AND OVERSIGHT

Construction oversight involves several city, state, and federal agencies. **Table 16-1** lists the primary involved agencies and their areas of responsibility. For projects in NYC, primary construction oversight lies with the New York City Department of Buildings (DOB), which ensures that construction projects meet the requirements of the NYC Building Code and that buildings are structurally, electrically, and mechanically safe. In addition, DOB enforces safety regulations to protect workers and the general public during construction: the areas of oversight include installation and operation of equipment such as cranes, sidewalk sheds, and safety netting and scaffolding. The New York City Department of Environmental Protection (DEP) enforces the NYC Noise Code, reviews and approves any needed Remedial Action Work Plans (RAPs) and Construction Health

and Safety Plans (CHASP), and regulates water disposal into the sewer system as well as abatement of hazardous materials. The City of New York Department of Sanitation (DSNY) has regulatory and enforcement oversight of the storage, transport, and disposal of asbestos waste. The New York City Fire Department (FDNY) has primary oversight of compliance with the NYC Fire Code and the installation of tanks containing flammable materials. The New York City Department of Transportation (DOT) Office of Construction Mitigation and Coordination (OCMC) reviews and approves any traffic lane and sidewalk closures. The New York City Transit (NYCT) is responsible for bus stop relocations, if necessary. The New York City Landmarks Preservation Commission (LPC) reviews any archaeological testing or monitoring that may be required. LPC also reviews and approves Construction Protection Plans (CPPs) and any monitoring measures necessary to prevent damage to historic structures.

**Table 16-1**
**Construction Oversight in New York City**

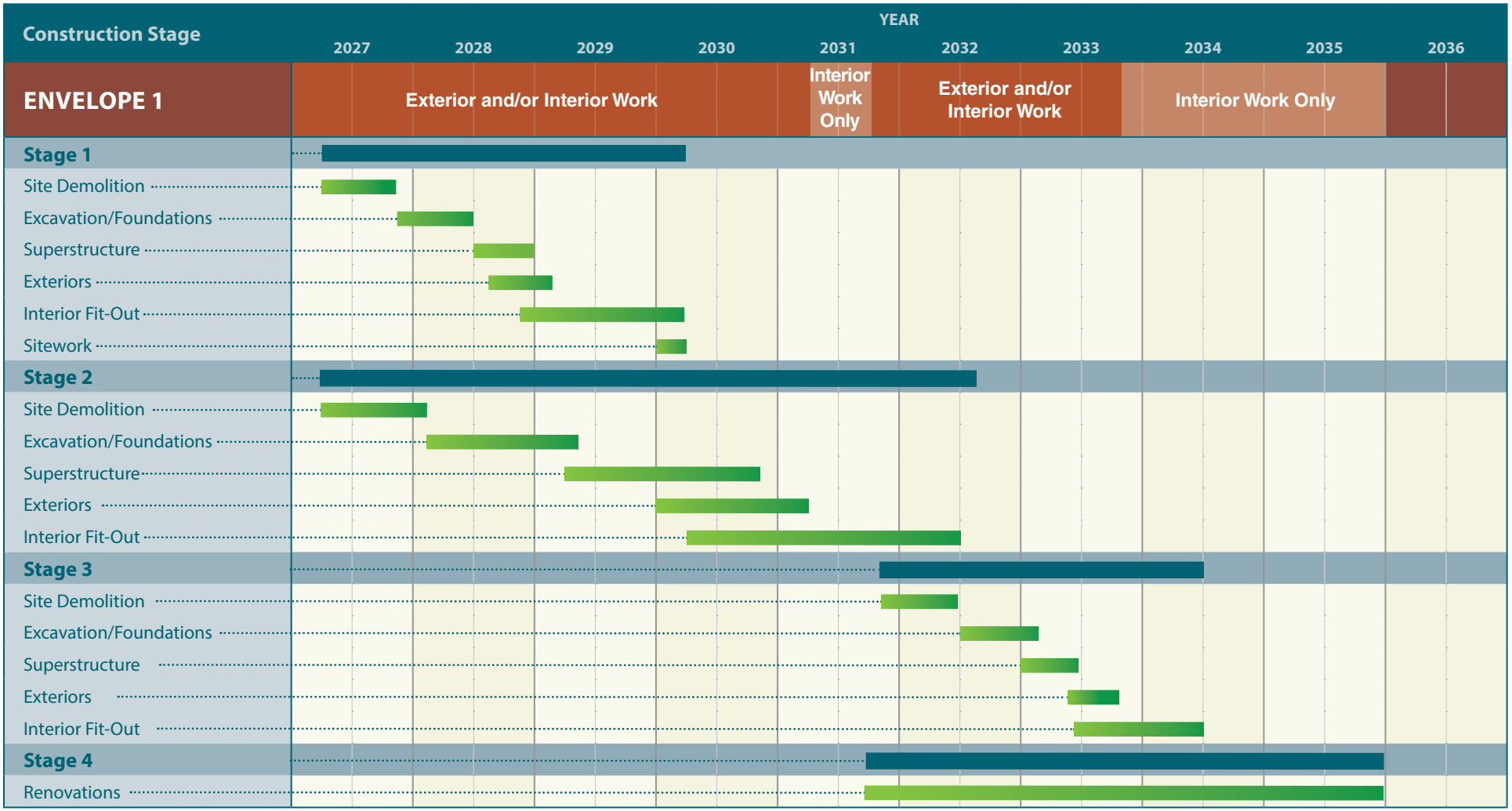
| Agency | Areas of Responsibility |
|---|---|
| **New York City** | |
| Department of Buildings | Primary oversight for Building Code and site safety |
| Department of Environmental Protection | Noise, RAPs/CHASPs, dewatering, hazardous materials abatement |
| Department of Sanitation | Storage, transport, and disposal of asbestos waste |
| Fire Department | Compliance with Fire Code, fuel tank installation |
| Department of Transportation | Lane and sidewalk closures |
| New York City Transit | Bus stop relocation |
| Landmarks Preservation Commission | Historic and archaeological resources |
| **New York State** | |
| Department of Labor | Asbestos workers |
| Department of Environmental Conservation | Hazardous materials and fuel/chemical storage tanks |
| **United States** | |
| Environmental Protection Agency | Air emissions, noise, hazardous materials, poisons |
| Occupational Safety and Health Administration | Worker safety |

At the state level, the New York State Department of Labor (DOL) licenses asbestos workers. The New York State Department of Environmental Conservation (DEC) regulates disposal of hazardous materials, and construction and operation of bulk petroleum and chemical storage tanks. At the federal level, EPA has wide-ranging authority over environmental matters, including air emissions, noise, hazardous materials, and the use of poisons, although much of the responsibility is delegated to the state level. The Occupational Safety and Health Administration (OSHA) sets standards for work site safety and construction equipment.

## C. CONSTRUCTION STAGES AND SCHEDULE

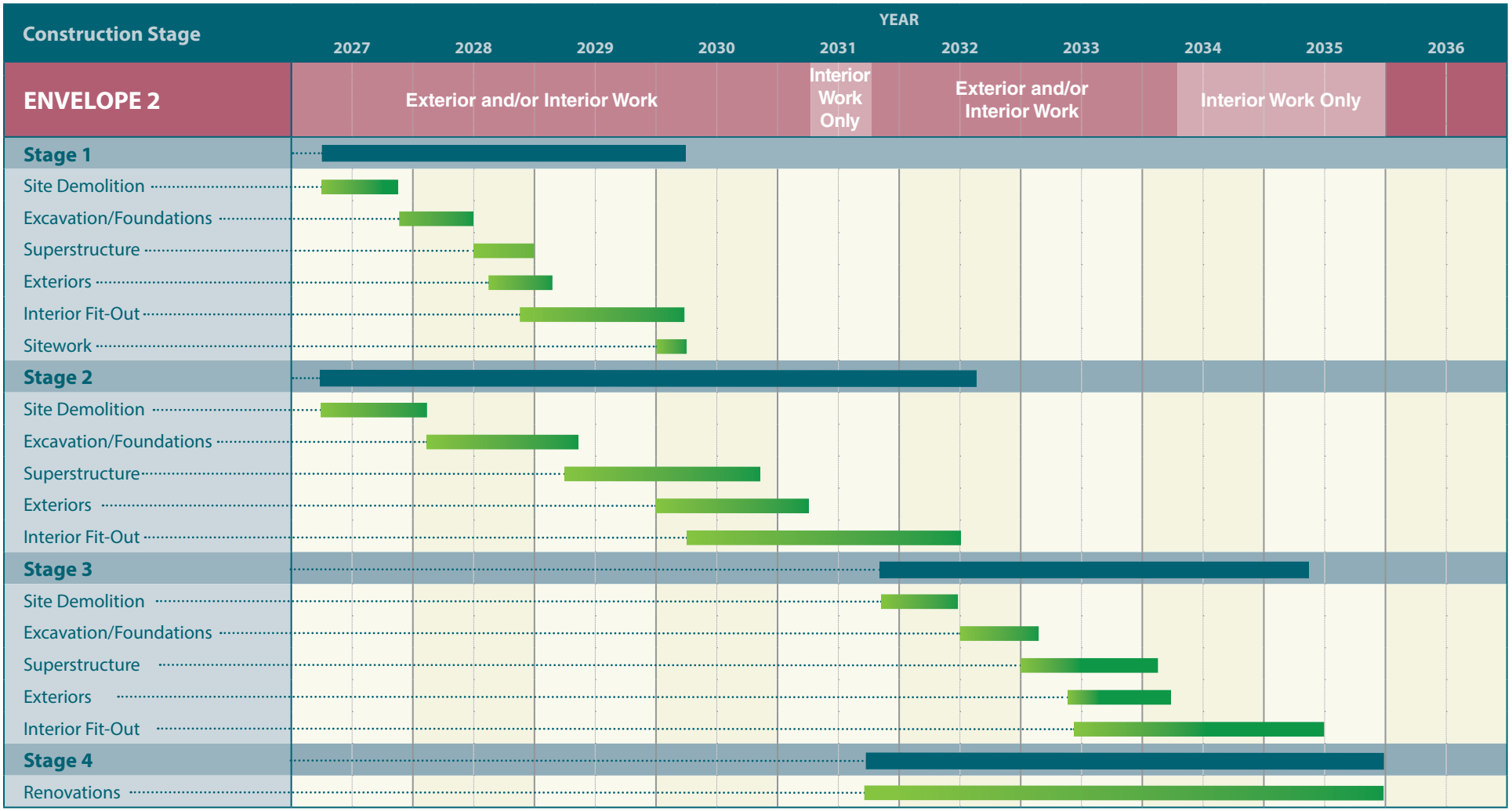
### ENVELOPE 1

**Table 16-2** and **Figures 16-1a and 16-1b** present the anticipated construction schedule for the Proposed Project with Envelope 1 and Envelope 2, respectively. Construction is anticipated to begin in 2027 and be complete by 2036, an approximately 9-year period. Construction of the Proposed Project would proceed in multiple stages, some of which would overlap. Figure 1-2 identifies the names and the locations of the buildings within the existing LHH complex and **Figure 16-2** illustrates the locations of each stage of construction. Stage 1 would involve the construction of a six-story building on Projected Development Site 1a and a utility tunnel under East 77th Street. Stage 2 would involve the demolition of the existing buildings—the William Black Hall of Nursing, the Achelis building, the Einhorn building, and two townhouses on the eastern portion




NOTE: “Interior Work Only” portion would last for approximately 3 years under Envelope 1

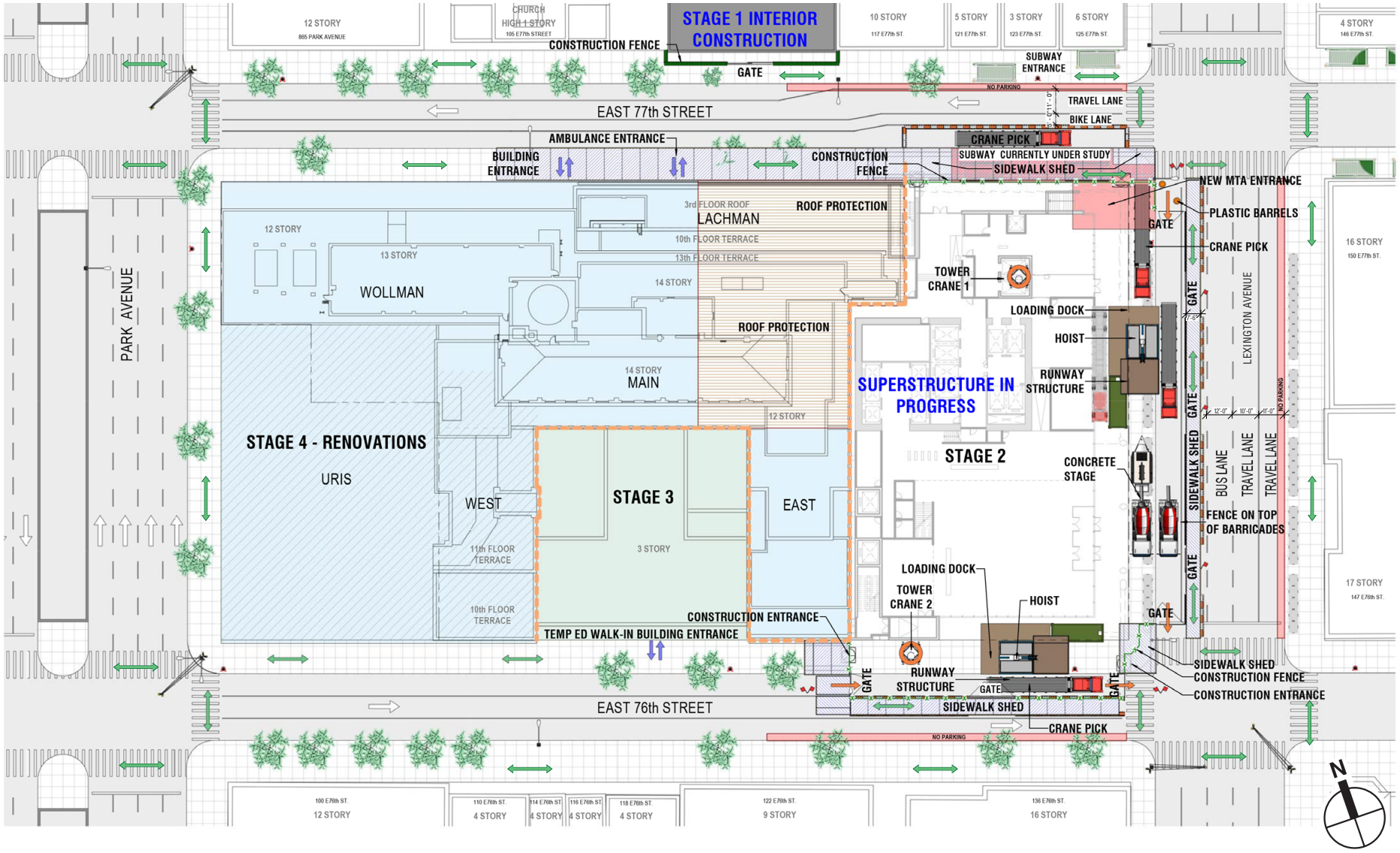
Anticipated Construction Schedule for Envelope 1




NOTE: “Interior Work Only” portion would last for approximately 2.5 years under Envelope 2

Anticipated Construction Schedule for Envelope 2

7.25.24




Source: Lendlease

NOTE: DRAWING NOT TO SCALE

Construction Plan--Maintenance and Protection of Traffic

**LENOX HILL HOSPITAL REDEVELOPMENT**

**Figure 16-2**

of Projected Development Site 1—and the construction of the new hospital building that would also incorporate the East building into its podium. Work to create the new subway entrance and the ambulance bay would also be undertaken during Stage 2. Stage 3 would involve demolition of the south end of the Main building in the middle of the block and construction of the new truck docks and materials handling facility at ground level with a portion of the ED, diagnostic and treatment facilities, and mechanical space above. Stage 4 would involve renovations in Uris, West, and Wollman and the creation of a new Park Avenue entrance and lobby for the Mother-Baby Hospital.

As shown in **Figures 16-1a and 16-1b**, although the overall construction period of the Proposed Project is anticipated to be approximately 9 years, a portion of this period would have interior work only (e.g., interior fit-out activities and/or renovation work). Specifically, for Envelope 1, approximately 3 years out of the 9-year period are projected to have interior work only, including an approximately 9-month period in 2031 during Stage 2 construction and an approximately 28-month period from mid-2033 to 2035 during Stage 3 and 4 of construction. Those periods of only interior work would generally involve reduced noise levels as well as reduced disruption to roadways and sidewalks since most of the activities would occur within the enclosed building and would not require crane lifts.

**ENVELOPE 2**

As with Envelope 1, construction of the Proposed Project with Envelope 2 would take approximately 9 years and would proceed in four primary stages, some of which would overlap. Stage 1 would involve the construction of a six-story building on Projected Development Site 1a and a utility tunnel under East 77th Street. Stage 2 would involve the demolition of the existing buildings—the William Black Hall of Nursing, the Achelis building, the Einhorn building, and two townhouses on the eastern portion of Projected Development Site 1—and the construction of the new hospital building that would also incorporate the East building into its podium. Work to create the new subway entrance and the ambulance bay would also be undertaken during Stage 2. Stage 3 would involve demolition of the south end of the Main building in the middle of the block and construction of the new truck docks and materials handling facility at ground level with a portion of the ED, diagnostic and treatment facilities, and mechanical space above. Stage 4 would involve renovations in Uris, West, and Wollman and the creation of a new Park Avenue entrance and lobby for the Mother-Baby Hospital.

As presented in **Table 16-2** and **Figures 16-1a and 16-1b**, the overall duration of construction from Stage 1 to Stage 4 would be the same for Envelope 1 and Envelope 2, each commencing in March 2027 and ending in December 2035, for a period of approximately 9 years. For Envelope 2, approximately 2.5 years out of the 9-year period are projected to have interior work only, including an approximately 9-month period in 2031 during Stage 2 construction and an approximately 22-month period from mid-2033 to 2035 during Stage 3 and 4 of construction. Although the overall construction phasing, activities, and logistics for Envelope 2 would be similar to those for Envelope 1, there are some differences in the intermediate construction stages between Envelope 1 and Envelope 2. One key difference is that the increased height of the proposed building in the midblock under Envelope 2 would require additional superstructure and interior fit-out activities, increasing the duration for those activities under Stage 3 construction by approximately a year under Envelope 2. Another difference is that the proposed building on Lexington for Envelope 2 would be approximately 2 stories shorter as compared to that for Envelope 1, and as such, Stage 2 superstructure and interior-fit out activities are anticipated to be approximately one month shorter under Envelope 2. Although there are differences in the

intermediate stages of construction, as presented later in this chapter and in **Figures 16-1a and 16-1b**, the first and last stages of construction (Stages 1 and 4) and the overall start and end dates for the Proposed Project are the same under both Envelope 1 and Envelope 2.

**Table 16-2**
**Anticipated Construction Schedule under Envelope 1 and Envelope 2**

| Construction Task | Envelope 1 | | | Envelope 2 | | |
|---|---|---|---|---|---|---|
| | Start Month | Finish Month | Duration (Months) | Start Month | Finish Month | Duration (Months) |
| Stage 1 | March 2027 | March 2030 | 37 (overlaps with Stage 2 for 37 months) | March 2027 | March 2030 | 37 (overlaps with Stage 2 for 37 months) |
| Stage 2 | March 2027 | July 2032 | 65 (overlaps with Stage 1 for 37 months and Stage 2 for 8 months) | March 2027 | June 2032 | 64 (overlaps with Stage 1 for 37 months and Stage 2 for 7 months) |
| Stage 3 | December 2031 | June 2034 | 31 (overlaps with Stage 2 for 8 months and Stage 4 for 31 months) | December 2031 | May 2035 | 42 (overlaps with Stage 2 for 7 months and Stage 4 for 42 months) |
| Stage 4 | November 2031 | December 2035 | 50 (overlaps with Stage 3 for 31 months) | November 2031 | December 2035 | 50 (overlaps with Stage 3 for 42 months) |
| **Total** | **March 2027** | **December 2035** | **106** | **March 2027** | **December 2035** | **106** |

## D. CONSTRUCTION DESCRIPTION

The following provides a description of the general construction practices and activities for the Proposed Project.

### GENERAL CONSTRUCTION PRACTICES

*HOURS OF WORK*

Construction would generally be carried out in accordance with NYC laws and regulations, which allow construction activities between 7:00 AM and 6:00 PM on weekdays. Construction work would typically begin at 7:00 AM on weekdays, with most workers arriving between 6:00 AM and 7:00 AM. Work would normally end at 3:30 PM, but it can be expected that to complete certain critical tasks (e.g., finishing a concrete pour for a floor deck), the workday may occasionally be extended beyond normal work hours. Any extended workdays would generally last until approximately 6 PM and would not include all construction workers on-site, but only those involved in the specific task requiring additional work time.

While not expected to be frequent, weekend or night work may also be occasionally required for certain construction activities. Appropriate work permits from DOB would be obtained for any necessary work outside of normal construction hours, and no work outside of normal construction hours would be performed until such permits are obtained. The numbers of workers and pieces of equipment in operation for night or weekend work would typically be limited to those needed to complete the particular authorized task. Therefore, the level of activity for any weekend or night work would be less than that of a normal workday.

*DELIVERIES AND ACCESS*

During construction, access to the construction area would be fully controlled. Work areas would be fenced off, and limited access points for workers and trucks would be provided. Material deliveries to the construction area would be controlled and scheduled. Based on preliminary construction logistics plans, no travel lane closures are anticipated. MPT plans would be developed to ensure the safety of the construction workers and the public passing through the area. Approval and implementation of these plans would be coordinated with OCMC.

*PUBLIC SAFETY*

A variety of measures would typically be employed to ensure public safety during the construction, including sidewalk bridges to provide overhead protection; safety signs to alert the public about active construction work; safety barriers to ensure the safety of the public passing by construction areas; flag persons to control trucks entering and exiting the construction areas and/or to provide guidance for pedestrian and bicyclist safety; and safety nettings as the superstructure work advances upward to prevent debris from falling to the ground. All DOB safety requirements would be followed to ensure the safety of the community and the construction workers themselves.

*RODENT CONTROL*

Construction contracts would typically include provisions for a rodent (i.e., mouse and rat) control program. Before the start of construction, the contractor would survey and bait the appropriate areas and provide for proper site sanitation. During construction, the contractor would carry out a maintenance program, as necessary. Signage would be posted, and coordination would be conducted with appropriate agencies.

## DESCRIPTION OF CONSTRUCTION ACTIVITIES

Prior to the commencement of construction, the work area would be fenced off and public safety measures such as barriers, netting, and signs would be installed. Worker and truck access points would be established, and existing street trees would be protected.

Construction of Stage 1 on Projected Development Site 1a and construction of Stages 2 and 3 on Projected Development Site 1 would then proceed with the demolition, excavation and foundation, superstructure and exteriors, interior fit-out, and sitework activities. Stage 4 would involve renovation activities of the existing hospital complex. These activities are discussed in further detail below.

*DEMOLITION*

Stage 1 would involve the demolition of the three existing buildings on Projected Development Site 1a. Stage 2 would involve the demolition of the existing buildings on the eastern portion of Projected Development Site 1, starting with the demolition of the Einhorn building and the two townhouses on the southeast corner of the site, followed by the demolition of the William Black Hall of Nursing and the Achelis building. Stage 3 would involve the demolition of the south end of the Main building in the middle of the block. Stage 4 would involve interior demolition for renovations in Uris, West, and Wollman.

Before the commencement of demolition activities, the existing buildings would be surveyed for asbestos by an NYC-certified asbestos investigator and, if present, those materials would be removed by a DOL-licensed asbestos abatement contractor in accordance with local, state, and

federal requirements. Abatement would occur simultaneously with any demolition activities necessary to make abatement possible. Asbestos abatement is strictly regulated by DEP, DOL, EPA, and OSHA to protect the health and safety of construction workers and nearby residents, workers, and visitors. Any activities with the potential to disturb lead-based paint (LBP) would be performed in accordance with the applicable OSHA regulations (including federal OSHA regulation 29 CFR 1926.62—*Lead Exposure in Construction*). In addition, any suspected polychlorinated biphenyls (PCB)-containing equipment that would be disturbed (such as fluorescent light ballasts) would be evaluated prior to disturbance. Unless labeling or test data indicates the contrary, such equipment would be assumed to contain PCBs, and would be removed and disposed of at properly licensed facilities in accordance with applicable regulatory requirements.

Prior to demolition, any economically salvageable materials that could be reused would typically be removed. Then the buildings would likely be demolished using excavators with hoe ram attachments. Demolition activities would also involve the use of jackhammers, compressors, and generators. Demolition debris would be removed from the Project Site; this debris would typically be sorted prior to being disposed at landfills to maximize recycling opportunities. Any patient rooms or care areas would be removed from areas adjacent to demolition.

*EXCAVATION AND FOUNDATIONS*

The Proposed Project would require excavation activities at the Project Site for the buildings' cellars and foundations. Excavation work would begin with the installation of walls to contain soil around the excavation area, and excavators would then be used to excavate soil. The soil would be loaded onto dump trucks for transport to a licensed disposal facility or stored for reuse on any portion of the Project Site that needs fill. Excavation would be followed by the construction of the foundation and below-grade elements of the proposed building. Piles would be installed with the use of drill rigs. Excavation and foundations activities may also involve the use of a mobile crane, concrete trowels, welder, and rebar benders.

Stage 1 would also include the construction of a utility tunnel under East 77th Street, which would ultimately connect the six-story hospital support functions building on Projected Development Site 1a to the main hospital building on Projected Development Site 1. It is anticipated that horizontal drilling techniques or shallow trenches that are commonly used for street utility work would be employed for the construction of the utility tunnel instead of open-cut excavation techniques.

*Dewatering*

Water from rain and snow collected in the excavation area during construction would be removed using a dewatering pump. If groundwater dewatering is required, it would be performed in accordance with DEP sewer use requirements.

*SUPERSTRUCTURE AND EXTERIORS*

The superstructure work would include the framework for the proposed buildings, such as beams, slabs, and columns. Construction of the interior structures of the buildings would include elevator shafts; vertical risers for mechanical, electrical, and plumbing systems; electrical and mechanical equipment rooms; core stairs; and restroom areas. For Stage 1, a crawler crane would be brought onto Projected Development Site 1a during the superstructure task and would be used to lift structural components and other large materials. For Stages 2 and 3, which entail construction on Projected Development Site 1, a tower crane would be employed. Superstructure and exterior work

would also include the installation of the exterior envelope systems of the proposed buildings. Superstructure and exteriors activities may also include the use of compressors, rebar benders, concrete vibrators, concrete trowels, and a variety of trucks. In addition, temporary construction elevators (hoists) would be used for the vertical movement of workers and materials during superstructure and exteriors activities.

*INTERIOR FIT-OUT*

Occurring in all stages, interior fit-out would include the construction of interior partitions, installation of lighting fixtures and interior finishes (e.g., flooring, painting, etc.), and mechanical and electrical work, such as the installation of elevators and lobby finishes. Final cleanup and touchup of the buildings and final building systems (e.g., electrical system, fire alarm, plumbing, etc.) testing and inspections would be part of this period of construction. Equipment used during interior fit-out would include a hoist and a variety of small handheld tools.

Interior fit-out would typically be the quietest period of construction in terms of its effect on the public because most of the activities would occur inside enclosed buildings with existing or substantially complete façades.

*SITE WORK*

Site work activities would include landscaping and installation of pavement, curbing, and sidewalks. Equipment used for sitework activities typically includes a backhoe, tamper, roller, and asphalt paver.

*RENOVATION ACTIVITES*

During Stage 2 renovation, a parking bay for six ambulances off East 77th Street would be created. Stage 4 of construction would involve renovations to the Uris, West, and Wollman buildings on the west end of Projected Development Site 1 to accommodate connections to the new hospital building's podium. A new Park Avenue entrance and a new lobby for the Mother-Baby Hospital, as well as an emergency stairway, would be provided on Park Avenue. Equipment used during renovation work would include a variety of small handheld tools.

## E. NUMBER OF CONSTRUCTION WORKERS AND MATERIAL DELIVERIES

**Tables 16-3a and 16-3b** show the estimated average daily number of workers and deliveries to the Project Site by calendar quarter for all construction activities under Envelope 1 and Envelope 2, respectively. For both Envelope 1 and Envelope 2, the combined peak construction worker vehicle and truck trip generation would occur during the second quarter of 2030. The average number of workers throughout the construction period would be 223 per day under Envelope 1 and 241 per day under Envelope 2. For truck trips, the average number of trucks would be 27 per day under Envelope 1 and 29 per day under Envelope 2.

**Table 16-3a**
**Average Number of Daily Workers and Trucks by Quarter – Envelope 1**

| Year | 2027 | | | | 2028 | | | | 2029 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Quarter | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th |
| Workers | 20 | 61 | 61 | 71 | 112 | 156 | 142 | 161 | 151 | 151 | 125 | 125 |
| Trucks | 6 | 19 | 19 | 21 | 28 | 31 | 28 | 38 | 37 | 38 | 33 | 33 |
| Year | 2030 | | | | 2031 | | | | 2032 | | | |
| Quarter | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th |
| Workers | 258 | **520** | 520 | 501 | 465 | 402 | 393 | 415 | 441 | 467 | 215 | 158 |
| Trucks | 39 | 33 | 32 | 28 | 19 | 17 | 16 | 26 | **45** | 43 | 37 | 35 |
| Year | 2033 | | | | 2034 | | | | 2035 | | | |
| Quarter | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th |
| Workers | 183 | 279 | 268 | 246 | 244 | 247 | 106 | 103 | 103 | 70 | 54 | 19 |
| Trucks | 30 | 39 | 35 | 33 | 33 | 29 | 17 | 16 | 15 | 13 | 7 | 0 |

| Year / Quarter | Peak | Average |
|---|---|---|
| Workers | **520** | 223 |
| Trucks | **45** | 27 |

**Source:** Lendlease, March 2024

**Table 16-3b**
**Average Number of Daily Workers and Trucks by Quarter – Envelope 2**

| Year | 2027 | | | | 2028 | | | | 2029 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Quarter | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th |
| Workers | 20 | 61 | 61 | 71 | 112 | 156 | 142 | 161 | 151 | 151 | 125 | 125 |
| Trucks | 6 | 19 | 19 | 21 | 28 | 31 | 28 | 38 | 37 | 38 | 33 | 33 |
| Year | 2030 | | | | 2031 | | | | 2032 | | | |
| Quarter | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th |
| Workers | 258 | **520** | **520** | 501 | 465 | 402 | 393 | 415 | 441 | 467 | 215 | 158 |
| Trucks | 39 | 33 | 32 | 28 | 19 | 17 | 16 | 26 | **47** | 45 | 39 | 37 |
| Year | 2033 | | | | 2034 | | | | 2035 | | | |
| Quarter | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th |
| Workers | 183 | 279 | 324 | 316 | 282 | 247 | 246 | 243 | 243 | 140 | 54 | 19 |
| Trucks | 32 | 42 | 43 | 41 | 34 | 35 | 34 | 33 | 32 | 19 | 7 | 0 |

| Year / Quarter | Peak | Average |
|---|---|---|
| Workers | **520** | 241 |
| Trucks | **47** | 29 |

**Source:** Lendlease, March 2024

## F. ENVIRONMENTAL EFFECTS OF THE PROPOSED PROJECT'S CONSTRUCTION ACTIVITIES

Similar to other construction projects in NYC, construction of the Proposed Project would result in some temporary disruptions to the surrounding area. The following analysis describes the temporary effects on transportation, air quality, noise, and vibration. It also considers potential effects in other technical areas, including land use and neighborhood character, socioeconomic conditions, community facilities, open space, historic and cultural resources, hazardous materials, and water and sewer infrastructure.

For each of the various technical areas presented below, appropriate construction analysis periods were selected to represent reasonable worst-case conditions relevant to that technical area, which can occur at different times for different analyses. For example, the noisiest part of construction may not be at the same time as the heaviest construction traffic. Therefore, the analysis periods may differ for different analysis areas.

## TRANSPORTATION

The construction transportation analysis assesses the potential for construction activities to result in significant adverse impacts to traffic, transit (i.e., subway, railroad, and bus), pedestrian elements (i.e., sidewalks, corners, and crosswalks), street user safety, and parking conditions. The traffic intersections and pedestrian elements (i.e., sidewalks, crosswalks, and corner reservoir areas) selected for detailed analysis are based on the anticipated geometric effects shown in the construction logistic plan from MPT elements such as construction fences in parking lanes and reductions in pedestrian elements (see **Figure 16-2**), and construction worker and truck trip projections. The analysis is based on the peak worker and truck trips during construction of the Proposed Project, which, as described below, are developed based on several factors, including worker modal splits (how the workers access the site per mode of transportation: automobile, taxi, transit, or walking), vehicle occupancy and trip distribution, truck passenger car equivalents (PCEs), and arrival/departure patterns. As presented in **Tables 16-3a and 16-3b**, the combined peak construction worker vehicle and truck trip generation under both Envelope 1 and Envelope 2 would occur during 2030 construction for the Proposed Project. The trips from existing hospital staff, patient, and visitor populations captured in the 2023 traffic and pedestrian counts have been assumed to continue throughout construction, even though slight decreases in these populations would occur. These decreases would slightly reduce the volumes presented in the 2030 With Action condition for both Envelope 1 and Envelope 2. Therefore, the 2030 With Action condition presents more conservative conditions than what would be anticipated.

As described above, the overall construction period would be the same for both Envelope 1 and Envelope 2, but the schedules would differ within the overall approximately 9-year period; the primary difference between the construction schedule under Envelope 1 and Envelope 2 is that Stage 3 superstructure and interior activities would take approximately a year longer to complete under Envelope 2 due to the increased height of the proposed building's midblock. This difference would not result in any changes to the daily workforce and truck trip projections during the peak quarter of construction, which is anticipated to occur during the simultaneous activities for Stage 1 and Stage 2 construction, or create a new construction transportation peak period. Therefore, since the peak construction worker and truck trips would be the same for both Envelope 1 and Envelope 2, the analyses presented below would be the same for both Envelope 1 and Envelope 2.

### *TRAFFIC*

An evaluation of construction sequencing and worker/truck projections was undertaken to assess potential traffic impacts. During all stages, as under existing conditions, one travel lane on East 76th Street and East 77th Street would be maintained, and one 12-foot bus lane, one 10-foot general travel lane, and one 11-foot curb side travel lane on Lexington Avenue would be maintained. Therefore, on streets bordering the Project Site, traffic capacity would not be reduced by the construction MPT elements because there would be no travel lane closures.

*Construction Trip Generation Projections*

The quarterly average worker and truck trip projections shown in **Tables 16-3a and 16-3b** were further refined to account for worker modal splits and vehicle occupancy, arrival and departure distribution, and truck PCEs.

*Daily Workforce and Truck Deliveries*

For a reasonable worst-case analysis of potential traffic-related impacts during construction, the daily workforce and truck trip projections in the peak quarter were used to estimate peak hour construction trips. It is expected that construction of the Proposed Project would generate the highest amount of combined daily traffic in 2030, with an estimated average of 520 workers and 33 truck deliveries per day for the Proposed Project under either envelope. These estimates of construction activities are discussed further below.

*Construction Worker Modal Splits and Vehicle Occupancy*

Based on the latest available United States Census data for workers in the construction and excavation industry (2000 Census), it is anticipated that 45 percent of construction workers would commute to the Project Site using private autos, and 1 percent would commute using taxis, at an average occupancy of approximately 1.30 persons per vehicle. Similarly, it is expected that 53 percent of construction workers would commute via transit and 1 percent would walk.

*Peak Hour Construction Worker Vehicle and Truck Trips*

Similar to other construction projects in NYC, most of the construction activities at the Project Site are expected to take place from 7:00 AM to 3:30 PM. While construction truck trips would occur throughout the day (with more trips during the morning), and most trucks would remain in the area for short durations, most construction workers would commute during the hours before and after the work shift. For analysis purposes, each truck delivery was assumed to result in two truck trips during the same hour (one "in" and one "out"), whereas each worker vehicle was assumed to arrive near the work shift start hour and depart near the work shift end hour. Further, in accordance with the *CEQR Technical Manual*, it was assumed that each truck has a PCE of two.

The estimated daily vehicle trips were distributed throughout the workday based on projected work shift allocations and likely arrival/departure patterns for construction workers and trucks. For construction workers, the majority (approximately 80 percent) of the arrival and departure trips would take place during the hour before and after each work shift (6:00 to 7:00 AM for arrival and 3 to 4 PM for departure on a regular day shift). Construction truck deliveries (approximately 25 percent) into the construction site typically peak during the hour (6:00 to 7:00 AM) before each shift, overlapping with construction worker arrival traffic.

**Table 16-4** presents the peak hour trip projections for the peak construction period that is anticipated to occur during the second quarter of 2030 construction for the Proposed Project. As shown in **Table 16-4**, the maximum construction-related traffic increments would be approximately 182 PCEs between 6:00 AM and 7:00 AM and 158 PCEs between 3 PM and 4 PM for the Proposed Project under either envelope.

**Table 16-4**
**Peak Quarter of 2030 Construction Trip Generation Summary: Proposed Project**

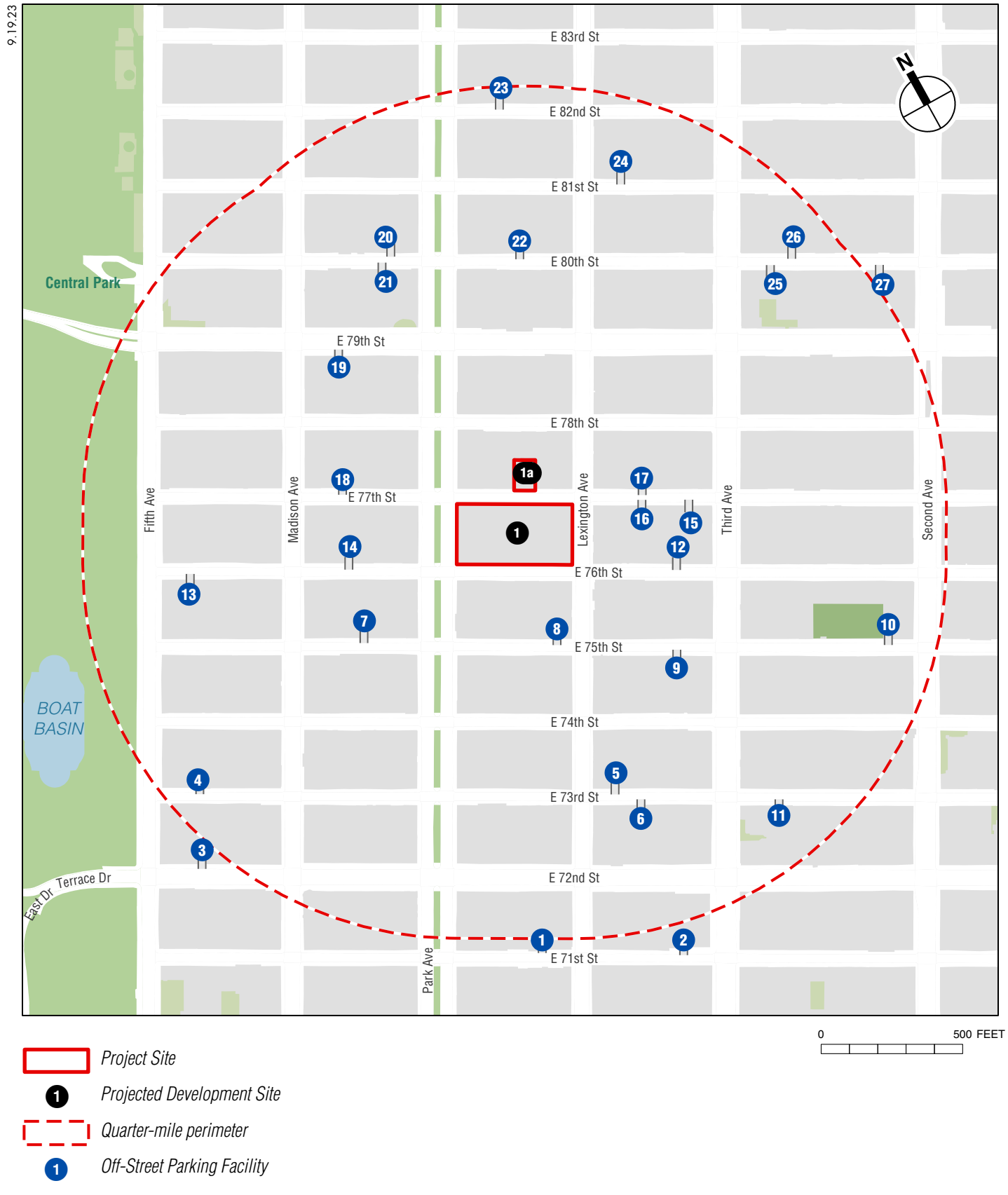
| | Peak Hour | In/Out | Person Trip | | | | | | Vehicle Trips (PCEs) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Auto | Taxi | Subway | Bus | Walk | Total | Auto | Taxi | Truck | Total |
| Proposed Project Construction Site | 6:00–7:00 AM | In | 187 | 4 | 195 | 25 | 4 | 415 | 144 | 3 | 16 | 163 |
| | | Out | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 16 | 19 |
| | | Total | 187 | 4 | 195 | 25 | 4 | 415 | 144 | 6 | 32 | 182 |
| | 3:00–4:00 PM | In | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 4 | 7 |
| | | Out | 187 | 4 | 195 | 25 | 4 | 415 | 144 | 3 | 4 | 151 |
| | | Total | 187 | 4 | 195 | 25 | 4 | 415 | 144 | 6 | 8 | 158 |

**Note:** PCE = Passenger Car Equivalent. A PCE factor of 2.0 has been applied to truck trips for transportation screening assessment purposes.

*LEVEL 2 SCREENING*

As shown in **Table 16-4**, incremental vehicle trips resulting from the construction of the Proposed Project would exceed the *CEQR* Level-1 screening threshold of 50 or more peak hour vehicle trips during the weekday AM and PM construction peak hours. These vehicle trips have been assigned to area intersections based on the most likely travel routes to and from the Project Site, prevailing travel patterns, commuter origin-destination (O-D) summaries from the census data, and the locations of off-street parking facilities. Taxi trips were assigned to pick up and drop off passengers on the west curbside of Lexington Avenue at the Project Site. Trucks would follow DOT-designated truck routes and would enter the Project Site on Lexington Avenue and East 76th Street.

**Table 16-5** and **Figure 16-3** show the available study area off-street parking facilities and their utilization during the weekday AM, midday, PM, and overnight peak periods. Level 2 traffic trip assignments were individually developed for the construction-generated worker vehicle trips and truck trips, as shown in **Figures 16-4 and 16-5**. Construction worker vehicle trips were assigned to the available off-street parking facilities in the study area based on the utilization and licensed capacity at each facility.

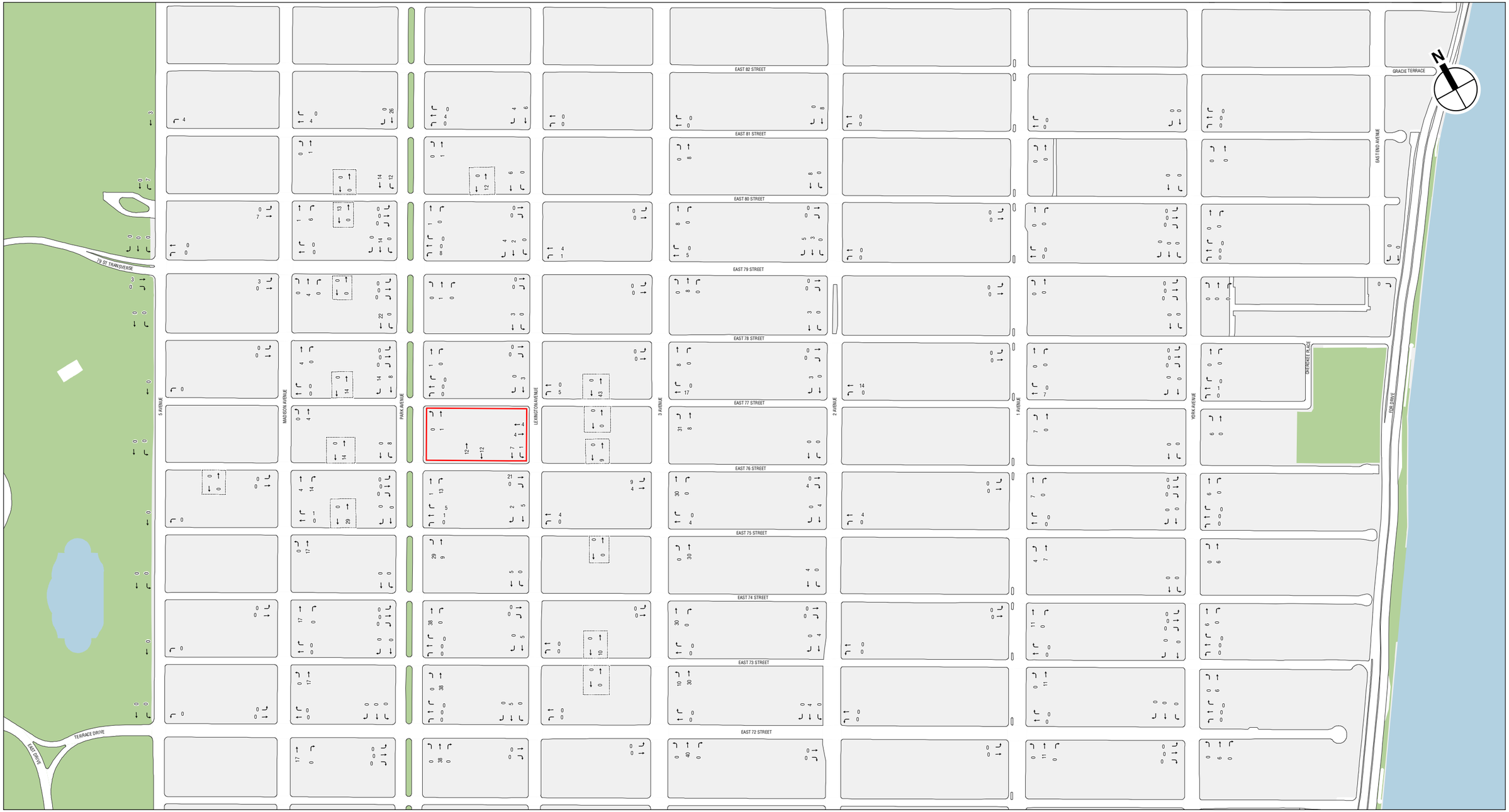



Off-Street Parking Facilities

**LENOX HILL HOSPITAL REDEVELOPMENT**

**Figure 16-3**

9.13.23



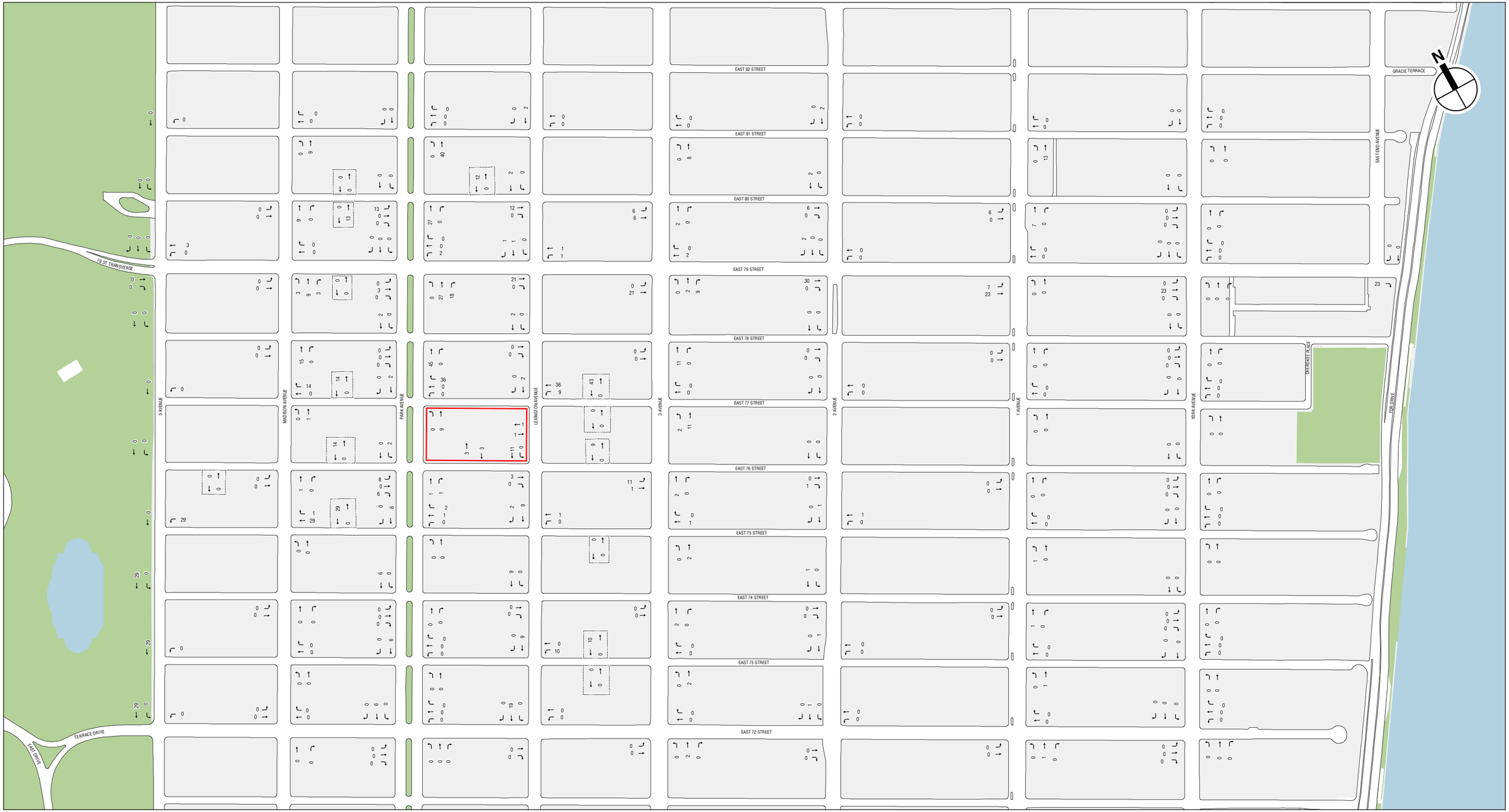

*Project Site*

*Parking Garages*

0 400 FEET

**LENOX HILL HOSPITAL REDEVELOPMENT**

Construction Generated PCE Vehicle Trips
Weekday Construction AM Peak Hour
**Figure 16-4**




*Project Site*

*Parking Garages*

0 400 FEET

**LENOX HILL HOSPITAL REDEVELOPMENT**

Construction Generated PCE Vehicle Trips
Weekday Construction PM Peak Hour
**Figure 16-5**

**Table 16-5**
**Existing Off-Street Parking Supply and Utilization**
**Approximately ¼-Mile Study Area**

| Map # | Name/Address | License Number | Licensed Capacity | Utilization Rate | | | | Utilized Spaces | | | | Available Spaces | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | AM | MD | PM | ON | AM | MD | PM | ON | AM | MD | PM | ON |
| 1 | E. 71st Street Garage Corp. / 135 East 71st Street | 469813 | 54 | 60% | 80% | 70% | 60% | 32 | 43 | 38 | 32 | 22 | 11 | 16 | 22 |
| 2 | Tower East Garage Corp. / 191 East 71st Street | 367970 | 62 | 90% | 75% | 75% | 65% | 56 | 47 | 47 | 40 | 6 | 15 | 15 | 22 |
| 3 | Central Parking System of NY Inc. / 910 Fifth Avenue | 1357464 | 56 | 55% | 95% | 60% | 70% | 31 | 53 | 34 | 39 | 25 | 3 | 22 | 17 |
| 4 | Manhattan Garage Entities / 923 Fifth Avenue | 1338871 | 73 | 80% | 80% | 70% | 60% | 58 | 58 | 51 | 44 | 15 | 15 | 22 | 29 |
| 5 | Townhouse Parking LLC / 117 East 73rd Street | 1319920 | 115 | 75% | 85% | 80% | 40% | 86 | 98 | 92 | 46 | 29 | 17 | 23 | 69 |
| 6 | 165 East Parking Corp / 165 East 73rd Street | 1319920 | 59 | 60% | 90% | 90% | 80% | 35 | 53 | 53 | 47 | 24 | 6 | 6 | 12 |
| 7 | Propark America New York LLC / 35 East 75th Street | 2053071 | 72 | 40% | 55% | 50% | 33% | 29 | 40 | 36 | 24 | 43 | 32 | 36 | 48 |
| 8 | Red Bull Parking Parkan Lex Garage LLC / 115 East 75th Street | 959361 | 165 | 70% | 75% | 60% | 60% | 116 | 124 | 99 | 99 | 49 | 41 | 66 | 66 |
| 9 | The Berger's Parking Corp. / 196 East 75th Street | 367613 | 27 | 95% | 95% | 95% | 95% | 26 | 26 | 26 | 26 | 1 | 1 | 1 | 1 |
| 10 | Equity Parking LLC / 1441-55 Second Avenue | 469373 | 70 | 70% | 80% | 85% | 65% | 49 | 56 | 60 | 46 | 21 | 14 | 10 | 24 |
| 11 | 73rd Street Parking Corp / 1257 Third Avenue & 200-202 East 73rd Street | 1323180 | 65 | 45% | 80% | 75% | 100% | 29 | 52 | 49 | 65 | 36 | 13 | 16 | 0 |
| 12 | Rapid E. 77th St Corp / 155 East 76th Street | 927031 | 70 | 65% | 80% | 75% | 75% | 46 | 56 | 53 | 53 | 24 | 14 | 17 | 17 |
| 13 | 4 E. 76th Street Garage / 4 East 76th Street | 429204 | 86 | 60% | 90% | 90% | 65% | 52 | 77 | 77 | 56 | 34 | 9 | 9 | 30 |
| 14 | Carlyle Car Park / 51-53 East 76th Street | 2009446 | 119 | 80% | 80% | 70% | 70% | 95 | 95 | 83 | 83 | 24 | 24 | 36 | 36 |
| 15 | 167 E. 77th Parking / 176 East 77th Street | 2046932 | 79 | 85% | 95% | 70% | 85% | 67 | 75 | 55 | 67 | 12 | 4 | 24 | 12 |
| 16 | Rapid E. 77th St. Corp. / 150 East 77th Street | 927032 | 37 | 100% | 100% | 100% | 100% | 37 | 37 | 37 | 37 | 0 | 0 | 0 | 0 |
| 17 | Imperial Parking Systems / 165 East 77th Street | 1389677 | 200 | 60% | 75% | 80% | 40% | 120 | 150 | 160 | 80 | 80 | 50 | 40 | 120 |
| 18 | Champion Parking 77th St / 51 East 77th Street | 908745 | 113 | 80% | 80% | 80% | 60% | 90 | 90 | 90 | 68 | 23 | 23 | 23 | 45 |
| 19 | 50 E. 79th St. Parking / 50 East 79th Street | 1222882 | 48 | 25% | 85% | 50% | 30% | 12 | 41 | 24 | 14 | 36 | 7 | 24 | 34 |
| 20 | ProPark America / 920 Park Avenue | 2053069 | 27 | 90% | 90% | 80% | 80% | 24 | 24 | 22 | 22 | 3 | 3 | 5 | 5 |
| 21 | Icon Parking / 900 Park Avenue | 699244 | 61 | 70% | 40% | 20% | 20% | 43 | 24 | 12 | 12 | 18 | 37 | 49 | 49 |
| 22 | GMC Parking / 120 East 81st Street | 2021125 | 94 | 65% | 65% | 50% | 40% | 61 | 61 | 47 | 38 | 33 | 33 | 47 | 56 |
| 23 | GMC 111 E. 82nd Partners LLC / 111 East 82nd Street | 2046567 | 143 | 45% | 60% | 60% | 50% | 64 | 86 | 86 | 72 | 79 | 57 | 57 | 71 |
| 24 | E. 81st St Realty LLC / 145 East 81st Street | 1070440 | 22 | 75% | 90% | 80% | 80% | 17 | 20 | 18 | 18 | 5 | 2 | 4 | 4 |
| 25 | SP Plus Corporation / 201 East 79th Street | 2020003 | 67 | 80% | 80% | 90% | 90% | 54 | 54 | 60 | 60 | 13 | 13 | 7 | 7 |
| 26 | SP Plus Corporation / 213-217 East 80th Street | 2022417 | 51 | 90% | 90% | 90% | 90% | 46 | 46 | 46 | 46 | 5 | 5 | 5 | 5 |
| 27 | MPG / 239 East 79th Street | 1091919 | 42 | 75% | 100% | 90% | 50% | 32 | 42 | 38 | 21 | 10 | 0 | 4 | 21 |
| **¼-Mile Area Total** | | | **2,077** | **68%** | **78%** | **72%** | **60%** | **1,407** | **1,628** | **1,493** | **1,255** | **670** | **449** | **584** | **822** |

**Notes:** MD = Midday; ON = Overnight
**Source:** Survey conducted by AKRF, Inc., June 2019

As shown in **Table 16-6** and **Figures 16-4 and 16-5**, based on the construction-generated traffic assignments, two intersections have been selected for the detailed construction traffic analysis: East 79th Street and Park Avenue, and East 77th Street and Third Avenue. These intersections

would experience 50 or more PCE vehicle trips during one or more peak hour. The selected traffic analysis locations are shown in **Figure 16-6**.

**Table 16-6**
**Traffic Level 2 Screening Analysis Results—**
**Selected Construction Traffic Analysis Locations**

| Intersection | Weekday Vehicle Trips | | Selected Analysis Location |
|---|---|---|---|
| | 6:00–7:00 AM | 3:00–4:00 PM | |
| East 76th Street and Madison Avenue | 18 | 1 | |
| East 75th Street and Madison Avenue | 18 | 30 | |
| East 74th Street and Madison Avenue | 17 | 0 | |
| East 73rd Street and Madison Avenue | 17 | 0 | |
| East 72nd Street and Madison Avenue | 17 | 0 | |
| East 81st Street and Park Avenue | 31 | 40 | |
| East 80th Street and Park Avenue | 27 | 40 | |
| East 79th Street and Park Avenue | 23 | 50 | ✓ |
| East 78th Street and Park Avenue | 23 | 47 | |
| East 77th Street and Park Avenue | 23 | 47 | |
| East 76th Street and Park Avenue | 22 | 18 | |
| East 75th Street and Park Avenue | 44 | 9 | |
| East 74th Street and Park Avenue | 38 | 6 | |
| East 73rd Street and Park Avenue | 38 | 6 | |
| East 72nd Street and Park Avenue | 38 | 6 | |
| East 81st Street and Lexington Avenue | 10 | 2 | |
| East 80th Street and Lexington Avenue | 6 | 14 | |
| East 79th Street and Lexington Avenue | 11 | 25 | |
| East 77th Street and Lexington Avenue | 8 | 47 | |
| East 76th Street and Lexington Avenue | 29 | 14 | |
| East 77th Street and Third Avenue | 56 | 13 | ✓ |
| East 76th Street and Third Avenue | 43 | 14 | |
| East 75th Street and Third Avenue | 34 | 3 | |
| East 74th Street and Third Avenue | 30 | 2 | |
| East 73rd Street and Third Avenue | 40 | 2 | |
| East 72nd Street and Third Avenue | 40 | 2 | |
| East 77th Street and Second Avenue | 17 | 0 | |
| East 77th Street and First Avenue | 14 | 0 | |
| East 75th Street and First Avenue | 11 | 1 | |
| East 74th Street and First Avenue | 11 | 1 | |
| East 73rd Street and First Avenue | 11 | 1 | |
| East 72nd Street and First Avenue | 11 | 1 | |

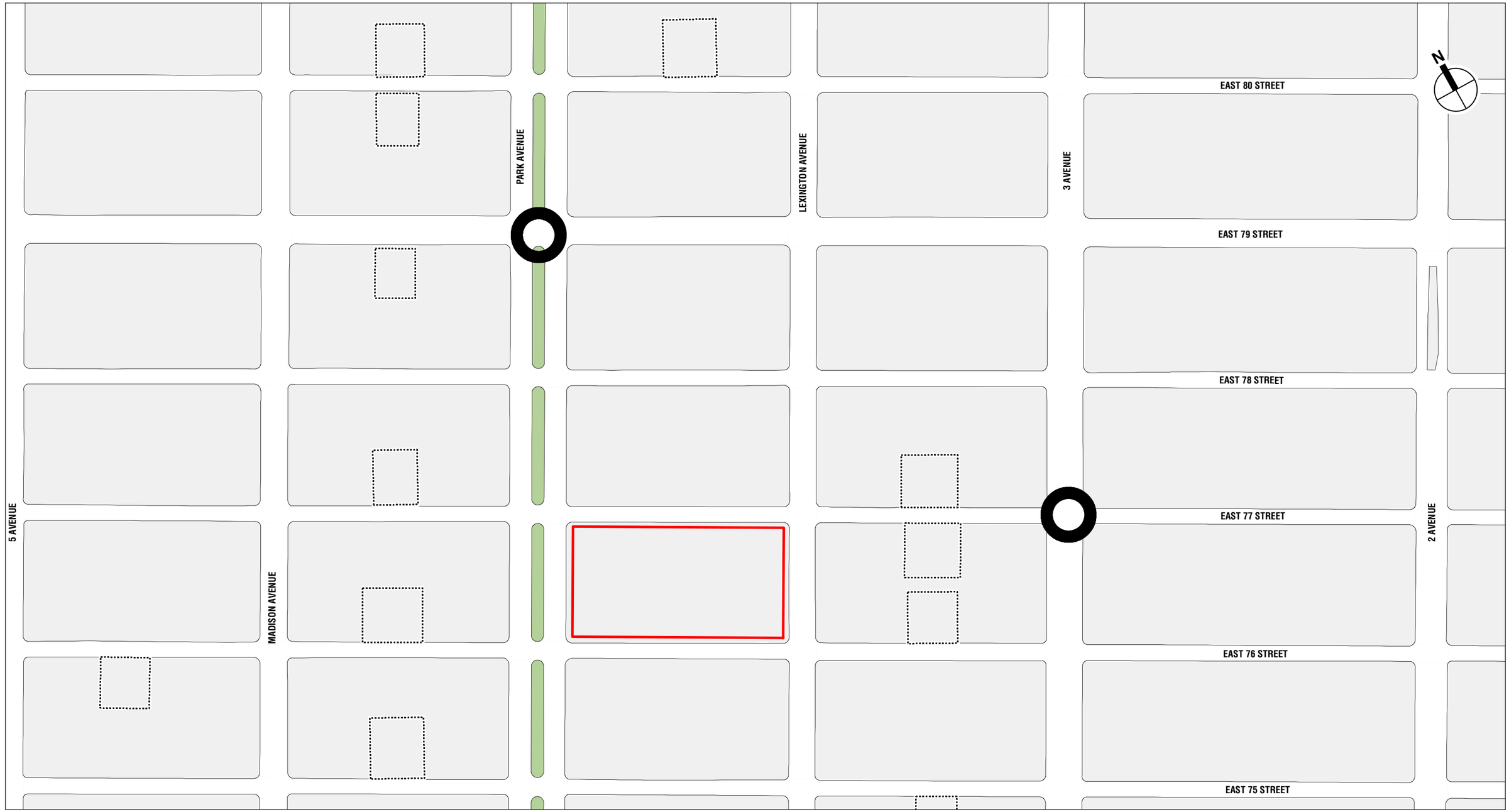
**Note:** ✓ denotes intersections selected for the detailed construction traffic analysis.

*TRANSPORTATION ANALYSIS METHODOLOGIES*

*Traffic Operations*

The operations of the signalized and unsignalized intersections in the study area were assessed using methodologies presented in the 2000 *Highway Capacity Manual (HCM)* using the *Synchro Software Version 11 (Synchro 11)*. The 2000 *HCM* procedure evaluates the level of service (LOS) for signalized and unsignalized intersections using average stop control delay, in seconds per vehicle, as described below.

9.13.23




*Project Site*

*Parking Garages*

*Traffic Analysis Location*

**LENOX HILL HOSPITAL REDEVELOPMENT**

Construction Traffic Study Area
**Figure 16-6**

*Signalized Intersections*

The average control delay per vehicle is the basis for LOS determination for individual lane groups (grouping of movements in one or more travel lanes), the approaches, and the overall intersection. The LOS criteria are defined in **Table 16-7**.

**Table 16-7**
**Level of Service Criteria for Signalized Intersections**

| LOS | Average Control Delay |
|---|---|
| A | ≤ 10.0 seconds |
| B | >10.0 and ≤ 20.0 seconds |
| C | >20.0 and ≤ 35.0 seconds |
| D | >35.0 and ≤ 55.0 seconds |
| E | >55.0 and ≤ 80.0 seconds |
| F | >80.0 seconds |

**Source:** Transportation Research Board. *Highway Capacity Manual*, 2000

Although the 2000 *HCM* methodology calculates a volume-to-capacity (v/c) ratio, there is no strict relationship between v/c ratios and LOS as defined in the 2000 *HCM*. A high v/c ratio indicates substantial traffic passing through an intersection, but a high v/c ratio combined with low average delay actually represents the most efficient condition in terms of traffic engineering standards, where an approach or the whole intersection processes traffic close to its theoretical maximum capacity with minimal delay. However, very high v/c ratios—especially those approaching or greater than 1.0—are often correlated with a deteriorated LOS. Other important variables affecting delay include cycle length, progression, and green time. LOS A and B indicate good operating conditions with minimal delay. At LOS C, the number of vehicles stopping is higher, but congestion is still fairly light. LOS D describes a condition where congestion levels are more noticeable and individual cycle failures (a condition where motorists may have to wait for more than one green phase to clear the intersection) can occur. Conditions at LOS E and F reflect poor service levels, and cycle breakdowns are frequent. The 2000 *HCM* methodology also provides for a summary of the total intersection operating conditions. The analysis chooses the two critical movements (the worst case from each roadway) and calculates a summary critical v/c ratio. The overall intersection delay, which determines the intersection's LOS, is based on a weighted average of control delays of the individual lane groups. Within NYC, LOS D or better (average control delay less than or equal to 55.0 seconds) is generally considered acceptable.

*Significant Impact Criteria*

The determination of significant adverse traffic impacts is based on the criteria presented in the *CEQR Technical Manual*. If a lane group under the With Action condition is within acceptable LOS A, B, C, or D, the impact is not considered significant. For a lane group with LOS E under the With Action condition, an increase in projected delay of 5.0 or more seconds compared to the No Action condition should be considered significant. For a lane group with LOS F under the With Action condition, an increase in projected delay of 4.0 or more seconds compared to the No Action condition should be considered significant.

*TRAFFIC CONDITIONS*

In order to establish an existing condition for the construction peak hour, automatic traffic recorder (ATR) data and video intersection counts were collected for the weekday AM construction

analysis peak hour (6:00 to 7:00 AM) and weekday PM construction analysis peak hour (3:00 to 4:00 PM). Existing data were collected in May 2023.

The existing condition construction AM and PM peak hour traffic volumes are shown in **Figures 16-7 and 16-8**, respectively. The No Action condition construction AM and PM peak hour traffic volumes are shown in **Figures 16-9 and 16-10**, respectively. The With Action condition construction AM and PM peak hour traffic volumes are shown in **Figures 16-11 and 16-12**, respectively. The 2030 No Action condition was developed by layering the CEQR background growth and trips generated by a discrete No Build project (1345 Third Avenue) in the area on top of the existing traffic volumes. To be conservative, the typical weekday AM and PM peak hour volumes from the discrete project were layered on top of the existing traffic volumes for the weekday AM and PM construction peak hours.

No Build projects in the area are summarized in **Table 16-8** below.

**Table 16-8**
**No Build Projects**

| Project | Description | Build Year | Transportation Notes |
|---|---|---|---|
| 1345 Third Avenue | 200,000 GSF ambulatory care facility | 2030 | Individually assigned, using travel demand factors from *Memorial Sloan Kettering/CUNY-Hunter Project at 74th Street FEIS* (2013) and U.S. Census Bureau, ACS 2012–2016 Five-Year Estimates |
| 1105 Lexington Avenue | 10 DUs residential and 1,691 GSF commercial | 2030 | Background Growth |
| 168 East 80th Street | 8,637 GSF medical office | 2030 | Background Growth |
| 26 East 78th Street | 5,308 GSF gallery | 2030 | Background Growth |
| 1299 Third Avenue | 47 DUs residential | 2030 | Background Growth |
| 200 East 75th Street | 38 DUs residential | 2030 | Background Growth |

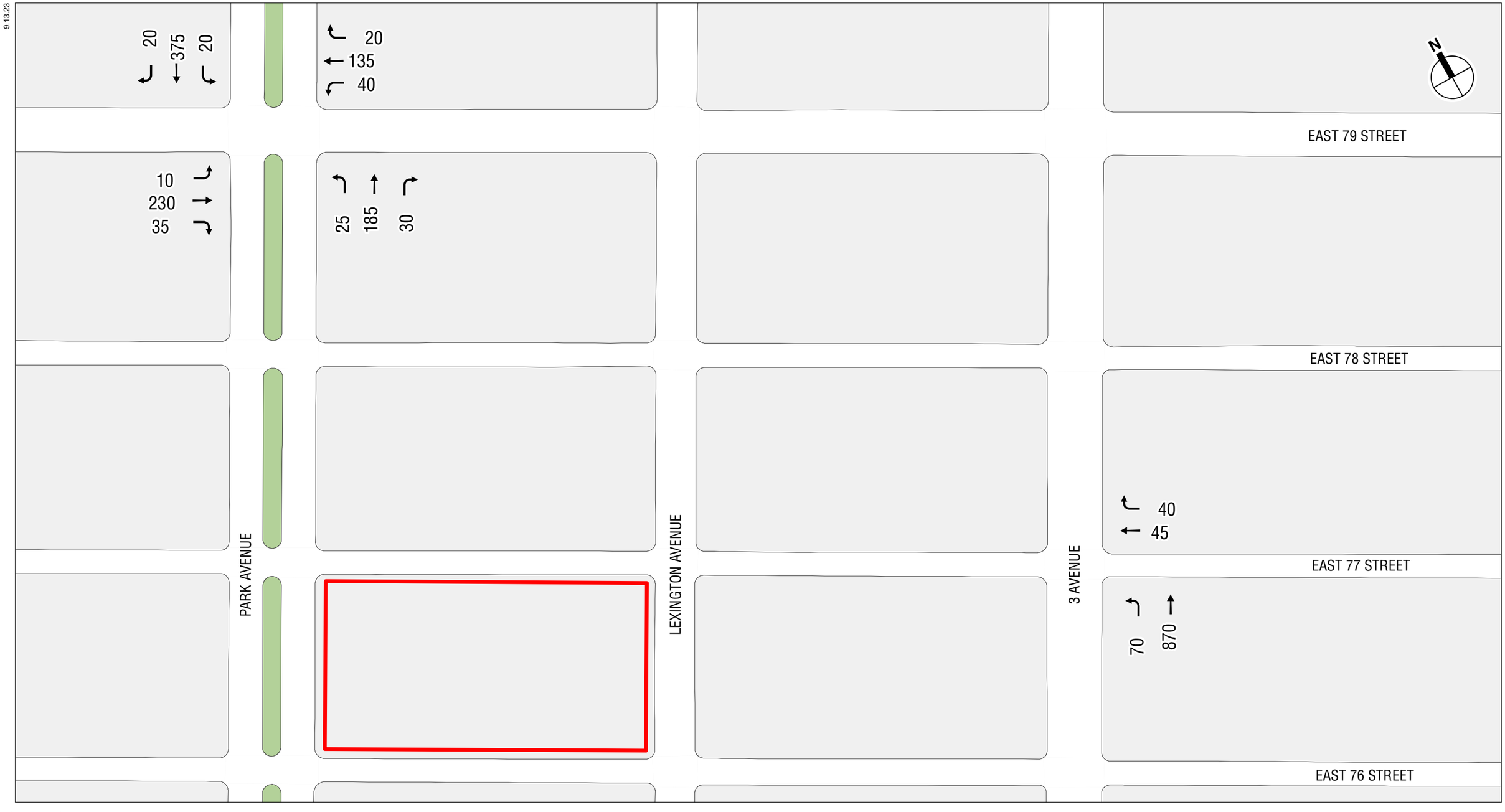
**Notes:** DUs = Dwelling Units; GSF = gross square feet
**Source:** DOB Active Major Construction database.

Any observed road construction activity resulting in a loss in roadway capacity in the existing condition was also assumed to be no longer in effect in the 2030 No Action condition. The 2030 With Action condition volumes were developed by adding the construction vehicle trips presented in **Figures 16-4 and 16-5** to the No Action condition traffic volumes.

The operation of all the signalized intersections in the study area were assessed using methodologies presented in the 2000 *HCM* using Synchro 11.

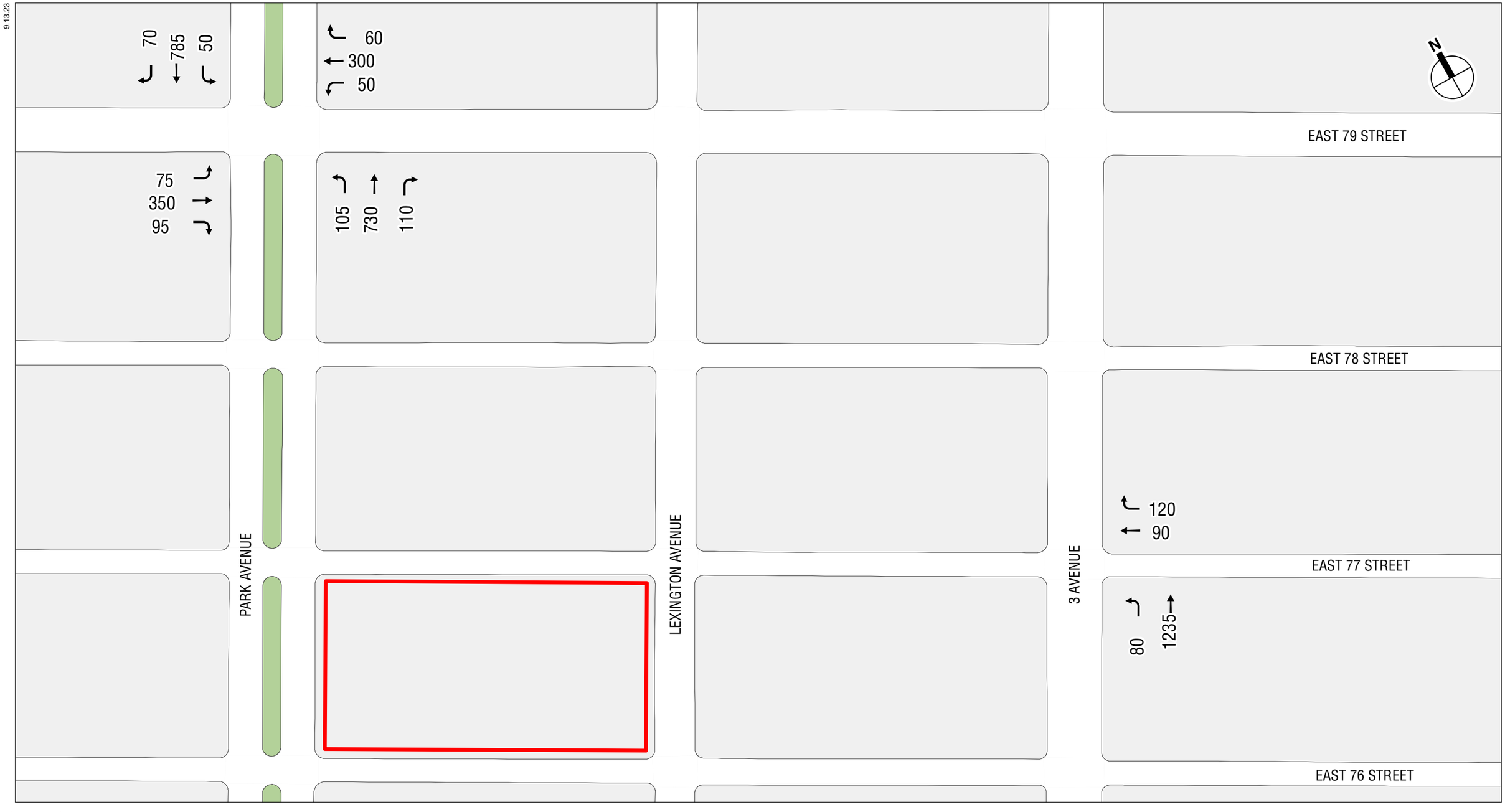
Detailed traffic analysis results for the construction conditions in terms of LOS, v/c ratios, and average delays are presented in **Tables 16-9 and 16-10**. As shown below, all signalized intersections in the study area would operate at a similar LOS in the 2030 With Action condition when compared to the 2030 No Action condition, and no significant adverse traffic impacts would occur during the weekday AM and PM construction peak hours.

9.13.23




Construction Existing Traffic Volumes
Weekday 6-7 AM Peak Hour
**Figure 16-7**

9.13.23




Construction Existing Traffic Volumes
Weekday 3-4 PM Peak Hour

**LENOX HILL HOSPITAL REDEVELOPMENT**

**Figure 16-8**

9.13.23




2030 Construction No Action Traffic Volumes
Weekday 6-7 AM Peak Hour

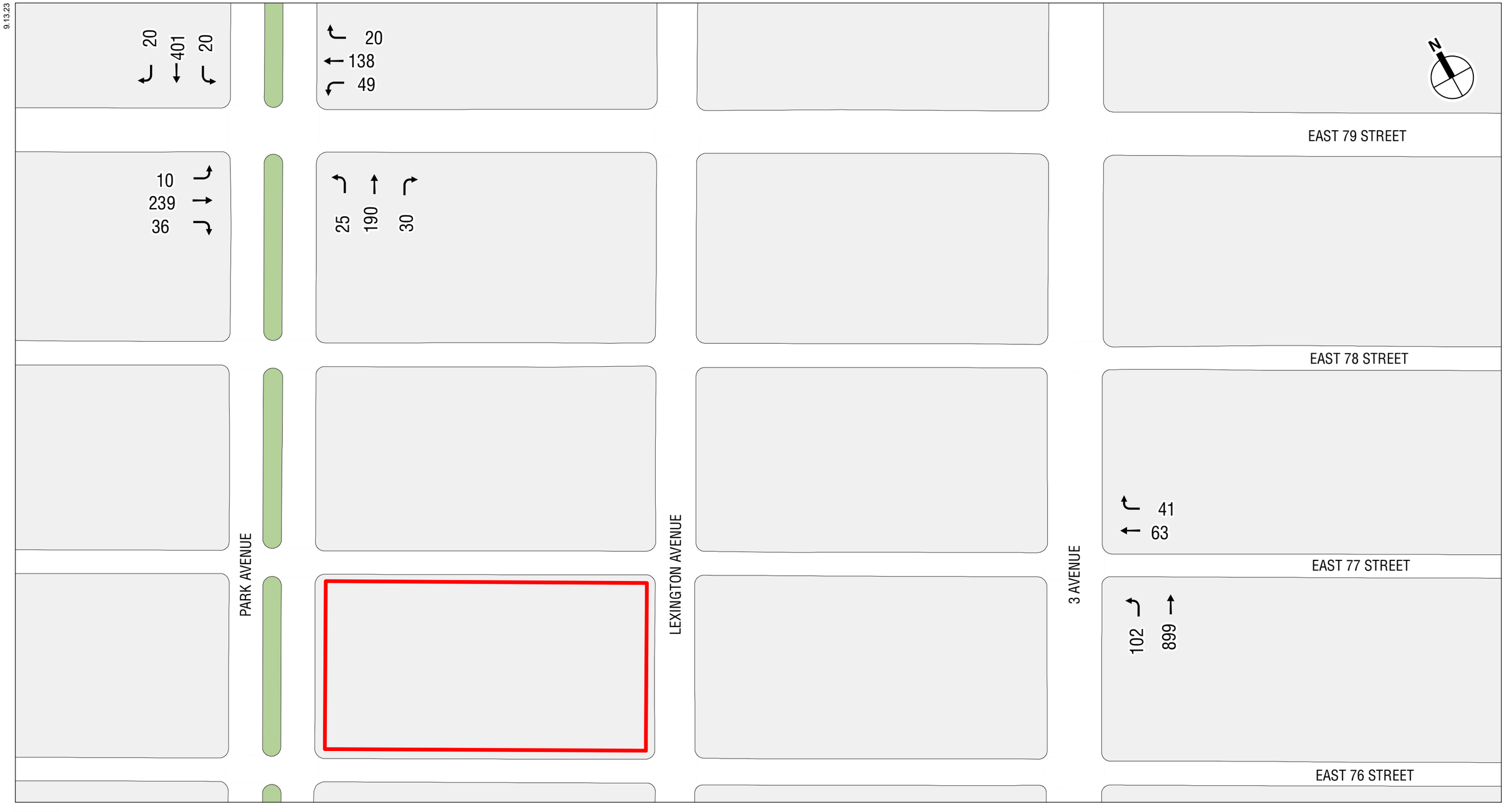
**Figure 16-9**

9.13.23




2030 Construction No Action Traffic Volumes
Weekday 3-4 PM Peak Hour
**Figure 16-10**

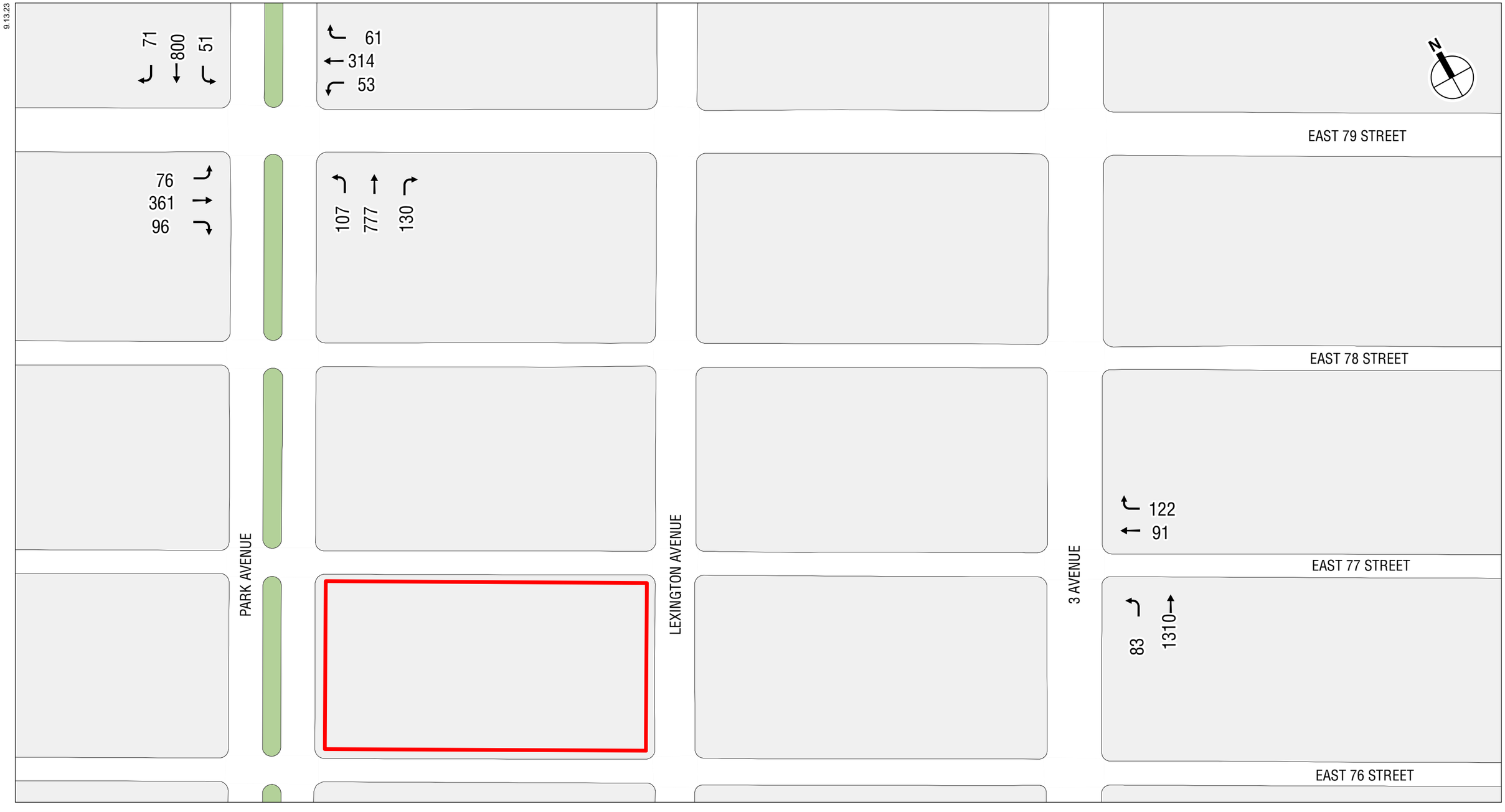
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2030 Construction With Action Traffic Volumes
Weekday 6-7 AM Peak Hour

**Figure 16-11**

9.13.23




2030 Construction With Action Traffic Volumes
Weekday 3-4 PM Peak Hour
**Figure 16-12**

## Table 16-9
## Construction Existing, No Action, and With Action Conditions LOS Analysis
## Weekday 6:00–7:00 AM Peak Hour

| Intersection | Weekday 6:00–7:00 AM | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Existing | | | | 2030 No Action | | | | 2030 With Action | | | |
| | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS |
| Signalized Intersections | | | | | | | | | | | | |
| East 79th Street and Park Avenue Southbound | | | | | | | | | | | | |
| Eastbound | L | 0.03 | 16.4 | B | L | 0.03 | 16.4 | B | L | 0.03 | 16.4 | B |
| | T | 0.40 | 21.3 | C | T | 0.42 | 21.6 | C | T | 0.42 | 21.6 | C |
| | R | 0.09 | 17.1 | B | R | 0.09 | 17.1 | B | R | 0.09 | 17.1 | B |
| Westbound | L | 0.15 | 9.3 | A | L | 0.15 | 9.4 | A | L | 0.18 | 10.0 | B |
| | T | 0.30 | 10.4 | B | T | 0.30 | 10.5 | B | T | 0.30 | 10.8 | B |
| Southbound | LTR | 0.26 | 18.5 | B | LTR | 0.27 | 18.6 | B | LTR | 0.28 | 18.6 | B |
| | Intersection | | 17.3 | B | Intersection | | 17.4 | B | Intersection | | 17.5 | B |
| East 79th Street and Park Avenue Northbound | | | | | | | | | | | | |
| Eastbound | L | 0.03 | 4.5 | A | L | 0.03 | 4.3 | A | L | 0.03 | 4.3 | A |
| | T | 0.44 | 6.8 | A | T | 0.46 | 6.8 | A | T | 0.46 | 6.8 | A |
| Westbound | L | 0.15 | 18.2 | B | L | 0.16 | 18.4 | B | L | 0.19 | 18.9 | B |
| | T | 0.26 | 19.1 | B | T | 0.26 | 19.2 | B | T | 0.26 | 19.2 | B |
| | R | 0.05 | 16.6 | B | R | 0.05 | 16.6 | B | R | 0.05 | 16.6 | B |
| Northbound | LTR | 0.16 | 17.5 | B | LTR | 0.17 | 17.5 | B | LTR | 0.17 | 17.5 | B |
| | Intersection | | 13.8 | B | Intersection | | 13.8 | B | Intersection | | 19.6 | B |
| East 77th Street and Third Avenue | | | | | | | | | | | | |
| Westbound | TR | 0.36 | 32.3 | C | TR | 0.28 | 25.9 | C | TR | 0.33 | 26.6 | C |
| Northbound | LT | 0.57 | 22.2 | C | LT | 0.59 | 18.5 | B | LT | 0.62 | 19.0 | B |
| | Intersection | | 23.1 | C | Intersection | | 19.2 | B | Intersection | | 19.8 | B |

**Notes:** L = Left Turn, T = Through, R = Right Turn, LOS = Level of Service

## Table 16-10
## Construction Existing, No Action, and With Action Conditions LOS Analysis
## Weekday 3:00–4:00 PM Peak Hour

| Intersection | Weekday 3:00–4:00 PM | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Existing | | | | 2030 No Action | | | | 2030 With Action | | | |
| | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS |
| Signalized Intersections | | | | | | | | | | | | |
| East 79th Street and Park Avenue Southbound | | | | | | | | | | | | |
| Eastbound | L | 0.41 | 25.7 | C | L | 0.43 | 26.7 | C | L | 0.43 | 26.7 | C |
| | T | 0.53 | 24.0 | C | T | 0.54 | 24.3 | C | T | 0.55 | 24.4 | C |
| | R | 0.28 | 20.1 | C | R | 0.29 | 20.2 | C | R | 0.29 | 20.2 | C |
| Westbound | L | 0.24 | 13.0 | B | L | 0.25 | 12.9 | B | L | 0.26 | 12.9 | B |
| | T | 0.67 | 21.0 | C | T | 0.70 | 21.5 | C | T | 0.70 | 21.4 | C |
| Southbound | LTR | 0.53 | 22.2 | C | LTR | 0.55 | 22.4 | C | LTR | 0.55 | 22.4 | C |
| | Intersection | | 22.0 | C | Intersection | | 22.3 | C | Intersection | | 22.3 | C |
| East 79th Street and Park Avenue Northbound | | | | | | | | | | | | |
| Eastbound | L | 0.30 | 10.5 | B | L | 0.31 | 10.7 | B | L | 0.31 | 10.6 | B |
| | T | 0.64 | 15.2 | B | T | 0.66 | 15.6 | B | T | 0.66 | 15.6 | B |
| Westbound | L | 0.31 | 22.4 | C | L | 0.32 | 22.9 | C | L | 0.33 | 23.3 | C |
| | T | 0.50 | 23.3 | C | T | 0.52 | 23.8 | C | T | 0.52 | 23.8 | C |
| | R | 0.18 | 18.5 | B | R | 0.19 | 18.6 | B | R | 0.19 | 18.6 | B |
| Northbound | LTR | 0.63 | 24.0 | C | LTR | 0.64 | 24.4 | C | LTR | 0.68 | 25.2 | C |
| | Intersection | | 21.3 | C | Intersection | | 21.7 | C | Intersection | | 22.2 | C |
| East 77th Street and Third Avenue | | | | | | | | | | | | |
| Westbound | TR | 0.98 | 86.0 | F | TR | 0.86 | 58.0 | E | TR | 0.86 | 58.0 | E |
| Northbound | LT | 0.76 | 26.1 | C | LT | 0.75 | 20.2 | C | LT | 0.76 | 20.4 | C |
| | Intersection | | 34.9 | C | Intersection | | 25.8 | C | Intersection | | 25.9 | C |

**Notes:** L = Left Turn, T = Through, R = Right Turn, LOS = Level of Service

*TRANSIT*

Based on the modal splits derived from the 2000 reverse-journey-to-work data for construction and excavation occupations from the United States Census Bureau, it is anticipated that approximately 47 percent and 6 percent of workers would commute to the Project Site via subway and bus, respectively. During the construction worker shift (7:00 AM to 3:30 PM) during the peak quarter of 2030, there would be 520 average daily construction workers, with 80 percent of these workers arriving or departing during the construction peak hours. As shown in **Table 16-4**, the incremental subway and bus trips generated by the construction of the Proposed Project would be 195 subway trips and 25 bus trips during both the weekday AM and PM construction peak hours. Furthermore, the analysis of subway and bus impacts is performed for the hours of 8:00 to 9:00 AM and 5:00 to 6:00 PM, the typical commuter periods, when there would typically be no transit trips from construction workers.

The Project Site is served by the New York City Transit (NYCT) 77th Street (No. 6) and 72nd Street (N, Q, and R) subway stations, as well as the M79 Select Bus Service and the M98, M101, M102, and M103 bus routes. The additional subway trips generated during the construction period are below the *CEQR Technical Manual's* subway analysis threshold of 200 or more peak hour subway trips. The additional bus trips generated during the construction period are below the *CEQR Technical Manual's* bus analysis threshold of 50 or more bus trips. Therefore, no further subway or bus analysis is required.

The project would likely require temporary relocation of the bus stop along Lexington Avenue between East 76th and East 77th Streets. The location would be explored in coordination with NYCT for a nearby alternative location. However, as previously stated, there would typically be no bus trips from construction workers when the analysis of bus impacts is performed for the hours of 8:00 to 9:00 AM and 5:00 to 6:00 PM.

*PEDESTRIANS*

As shown in **Table 16-4**, the incremental pedestrian trips generated by construction of the Proposed Project would be 415 during both the weekday AM and PM construction peak hours, respectively. All trips generated by the Proposed Project would traverse the pedestrian elements (i.e., sidewalks, corners, and crosswalks) surrounding the Project Site. A Level 2 screening assessment (presented in the section below) has been conducted to determine if there is a need for additional quantified pedestrian analyses.

*Level 2 Screening*

As part of the Level 2 screening assessment, project generated trips have been assigned to specific pedestrian elements near the Project Site. Further quantified analyses to assess the potential impacts of the Proposed Project on the transportation system would be warranted if the trip assignments were to identify key pedestrian elements incurring 200 or more peak hour pedestrian trips.

Level 2 pedestrian trip assignments have been individually developed for the Proposed Project-generated pedestrian trips. These trip assignments are shown in **Figures 16-13 and 16-14** and discussed below.

- Auto Trips—Construction workers would primarily seek parking at off-street parking facilities in the study area. Construction workers parking at off-site facilities would walk to and from these off-street parking facilities.

1.25.24




**LENOX HILL HOSPITAL REDEVELOPMENT**

Construction Generated Pedestrian Trips
Weekday Construction AM Peak Hour
**Figure 16-13**

1.25.24




Construction Generated Pedestrian Trips
Weekday Construction PM Peak Hour
**Figure 16-14**

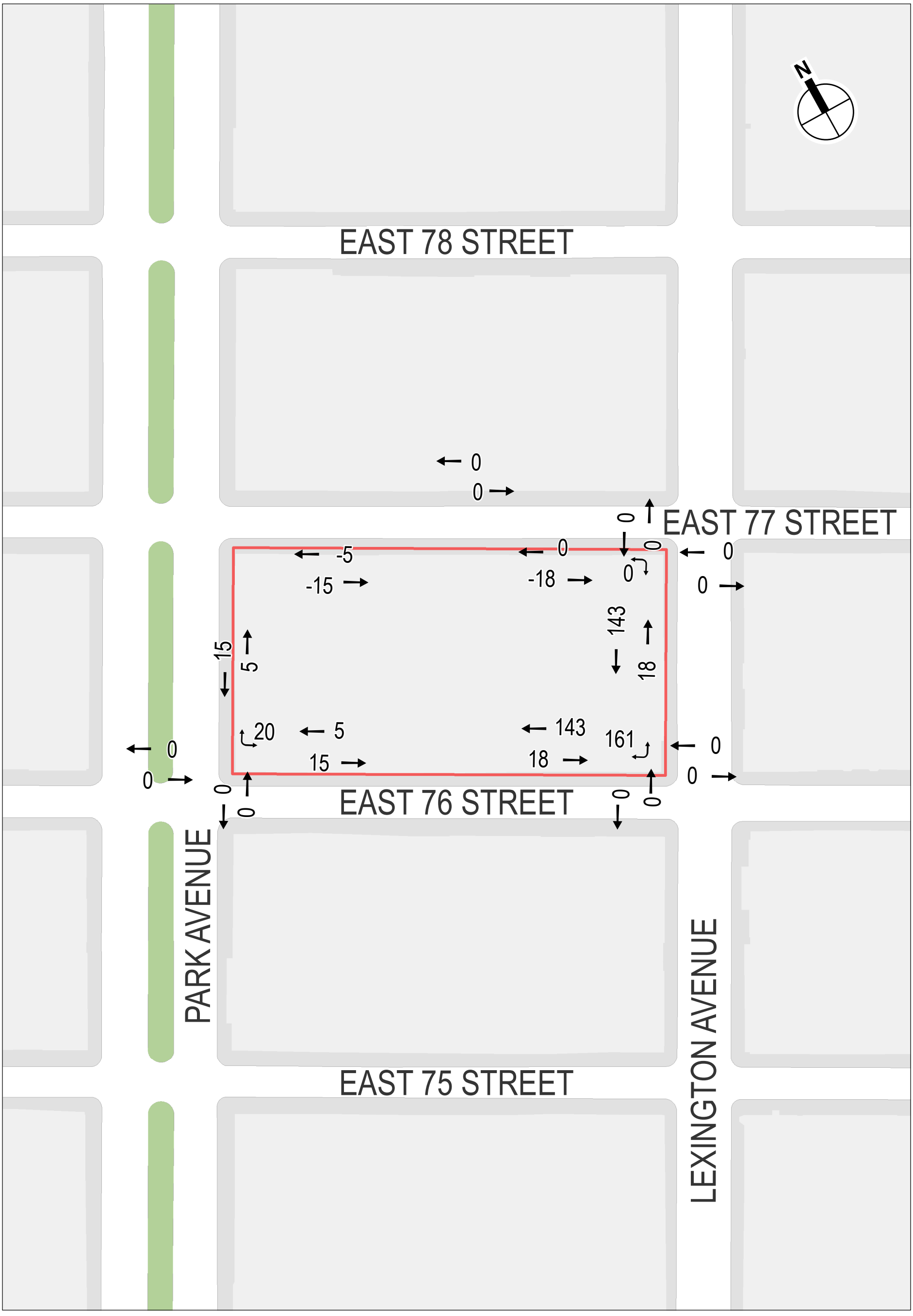
**LENOX HILL HOSPITAL REDEVELOPMENT**

- City Bus Trips—City bus riders would take buses stopping on Fifth Avenue, Madison Avenue, Lexington Avenue, Third Avenue, and East 79th Street.
- Subway Trips—Subway riders would use the 77th Street station (No. 6 train), and the 72nd Street station (Q train).
- Walk-Only Trips—Pedestrian walk-only trips were assigned to area pedestrian facilities (i.e., sidewalks, corner reservoirs, and crosswalks) based on commuter O-D summaries from the Census data.

During construction, pedestrian paths bypassing the 77th Street building and hospital would be maintained, with no diversions to the opposite side of the street. Depending on the stage, pedestrian paths would be temporarily narrowed to provide MPT elements. A five-foot walkway would be provided past the 77th Street building on the north side of East 77th Street. Six-and-a-half-foot walkways would be provided past the hospital block work areas on the south side of East 77th Street and the north side of East 76th Street, and a seven-and-a-half-foot walkway would be provided on the west side of Lexington Avenue. An area clear of obstructions of 132.25 square feet would be provided on the southwest corner of East 77th Street and Lexington Avenue and an area clear of obstructions of 100 square feet would be provided on the northwest corner of East 76th Street and Lexington Avenue. Reconstruction of the new subway stairway within the building footprint and demolition of the existing subway stairway within the sidewalk on the south side of East 77th Street would be staged so that access to the station would be maintained on the southwest corner of East 77th Street and Lexington Avenue. During the construction sequence coinciding with the peak quarter of construction and detailed pedestrian analyses, the ED walk-in entrance on the south sidewalk of East 77th Street between Park Avenue and Lexington Avenue would be temporarily relocated to the north sidewalk of East 76th Street between Park Avenue and Lexington Avenue. Ambulance parking and patient service via ambulance for the ED would continue to be located on the south sidewalk of East 77th Street between Park Avenue and Lexington Avenue. The assignment of the diversion of pedestrian trips currently using the ED walk-in entrance is summarized in **Figures 16-15 through 16-19** for the construction and operational peak hours.

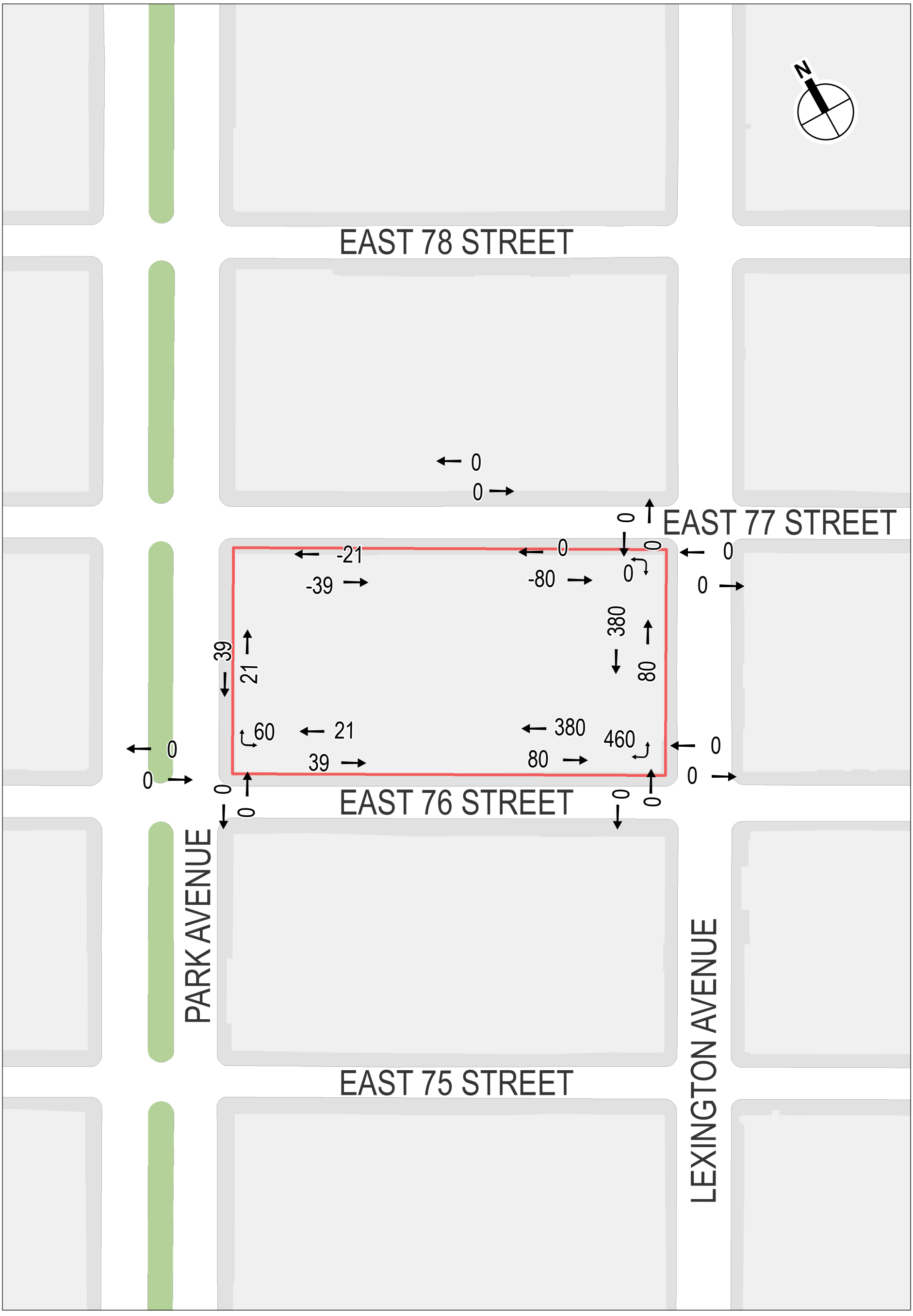
Based on the detailed assignment of construction-generated pedestrian trips, one sidewalk and one corner would exceed the *CEQR* analysis threshold of 200 pedestrian trips during the weekday AM and PM construction peak hours. In addition to this sidewalk and corner, considering the effects of narrowing sidewalks and corners during construction due to MPT elements as well as the diverted pedestrian trips due to the temporary relocation of the ED walk-in entrance on the south side of East 77th Street, a total of seven sidewalks and three corners were selected for detailed analysis: the west sidewalk along Lexington Avenue between East 77th Street and East 76th Street, the north sidewalk along East 76th Street between Lexington Avenue and the Hospital Entrance, the north sidewalk along East 76th Street between Park Avenue and the Hospital Entrance, the north sidewalk along East 77th Street between Lexington Avenue and Park Avenue, the south sidewalk along East 77th Street between Lexington Avenue and the Hospital Entrance, the south sidewalk along East 77th Street between Park Avenue and the Hospital Entrance, the east sidewalk along Park Avenue between East 77th Street and East 76th Street, the southwest corner of Lexington Avenue and East 77th Street, the northwest corner of Lexington Avenue and East 76th Street, and the northeast corner of Park Avenue and East 76th Street. The peak hour construction-generated pedestrian trips and the 10 recommended pedestrian analysis locations are shown in **Table 16-11**. The selected pedestrian analysis locations are shown in **Figure 16-20**.

5.7.24




Construction Diverted Pedestrian Trips
Weekday 6-7 AM Peak Hour
**Figure 16-15**

5.7.24

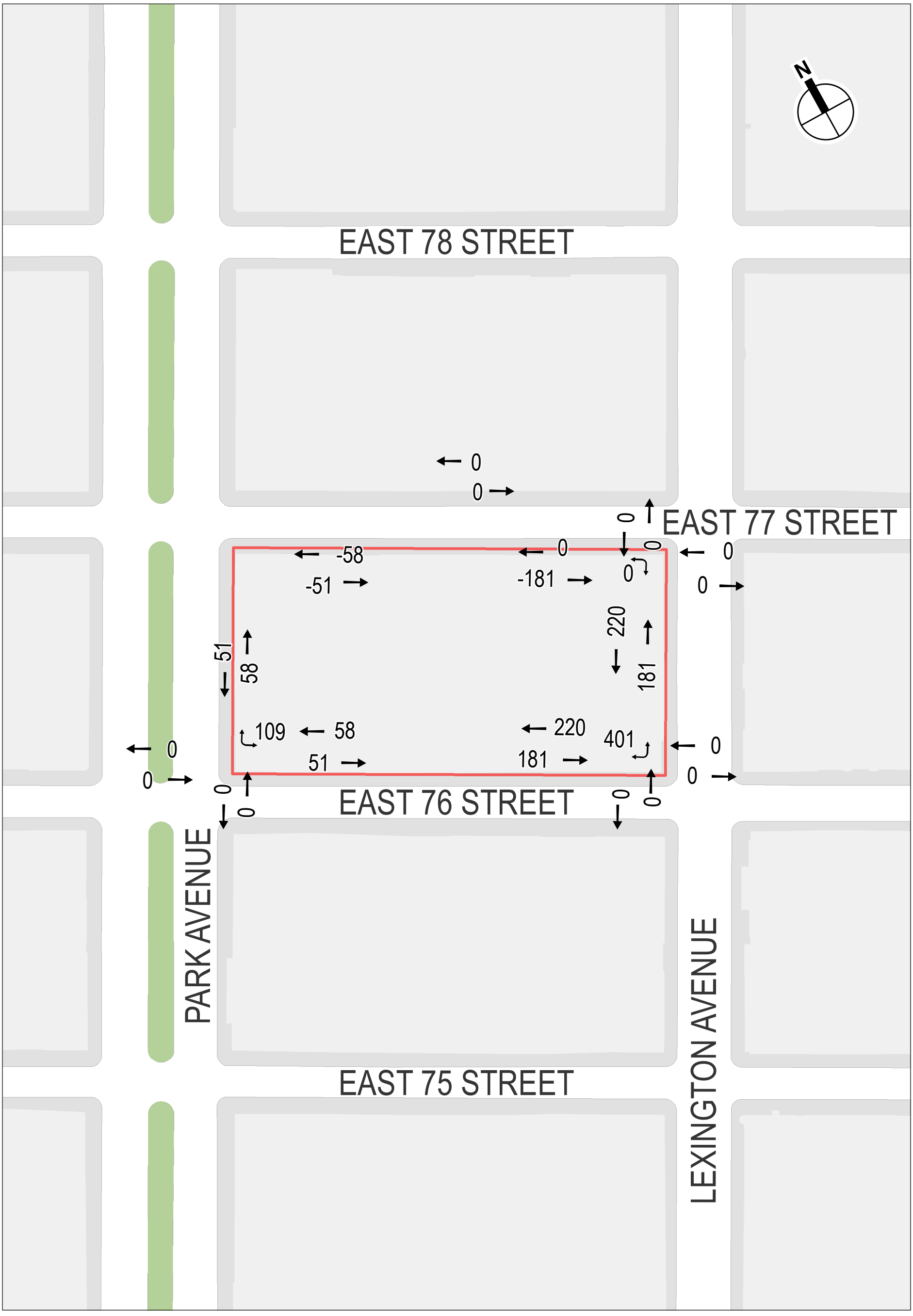



Construction Diverted Pedestrian Trips
Weekday 8-9 AM Peak Hour

**LENOX HILL HOSPITAL REDEVELOPMENT**

**Figure 16-16**

5.7.24

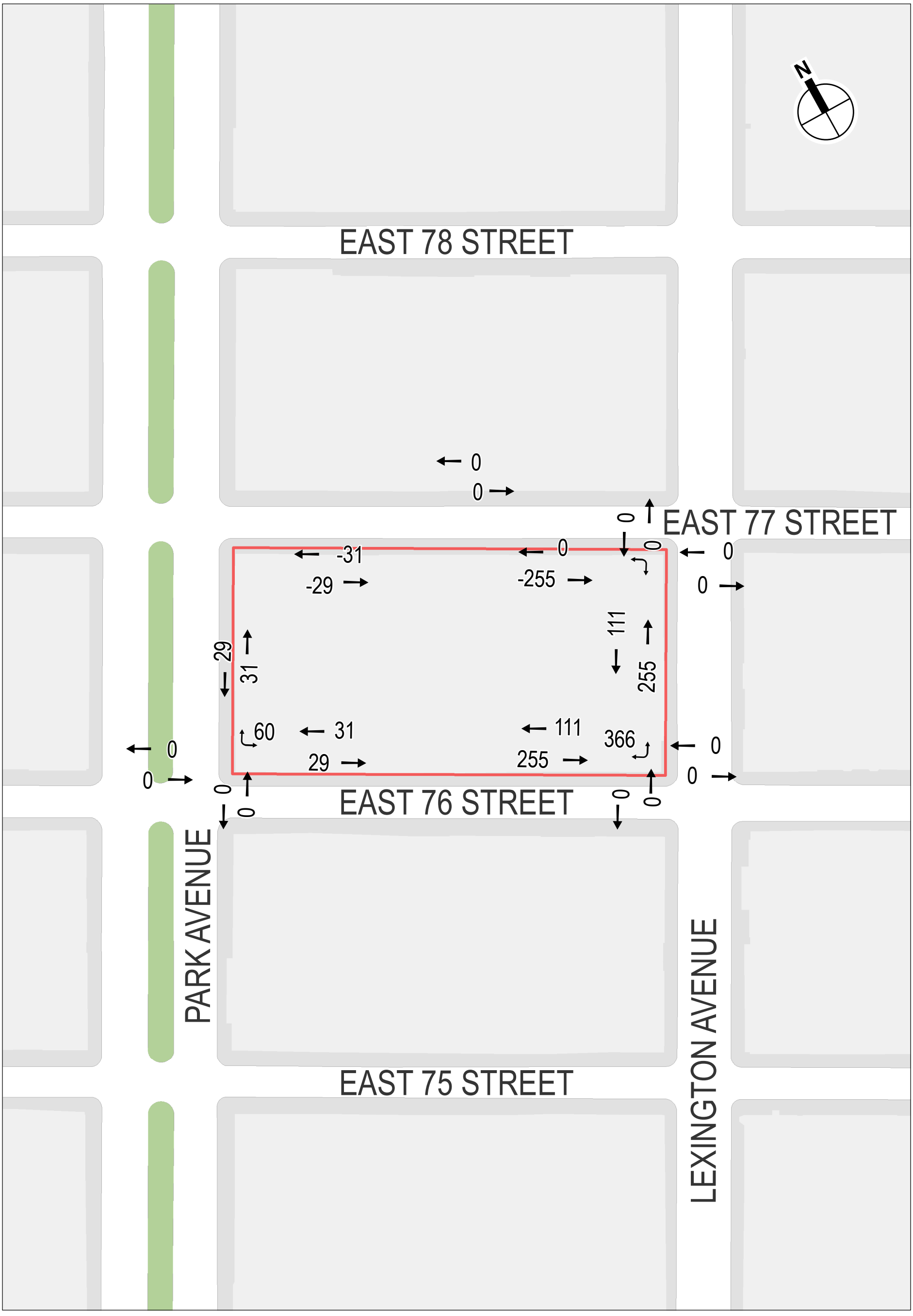



Construction Diverted Pedestrian Trips
Weekday 12:15-1:15 PM Peak Hour

**LENOX HILL HOSPITAL REDEVELOPMENT**

**Figure 16-17**

5.7.24

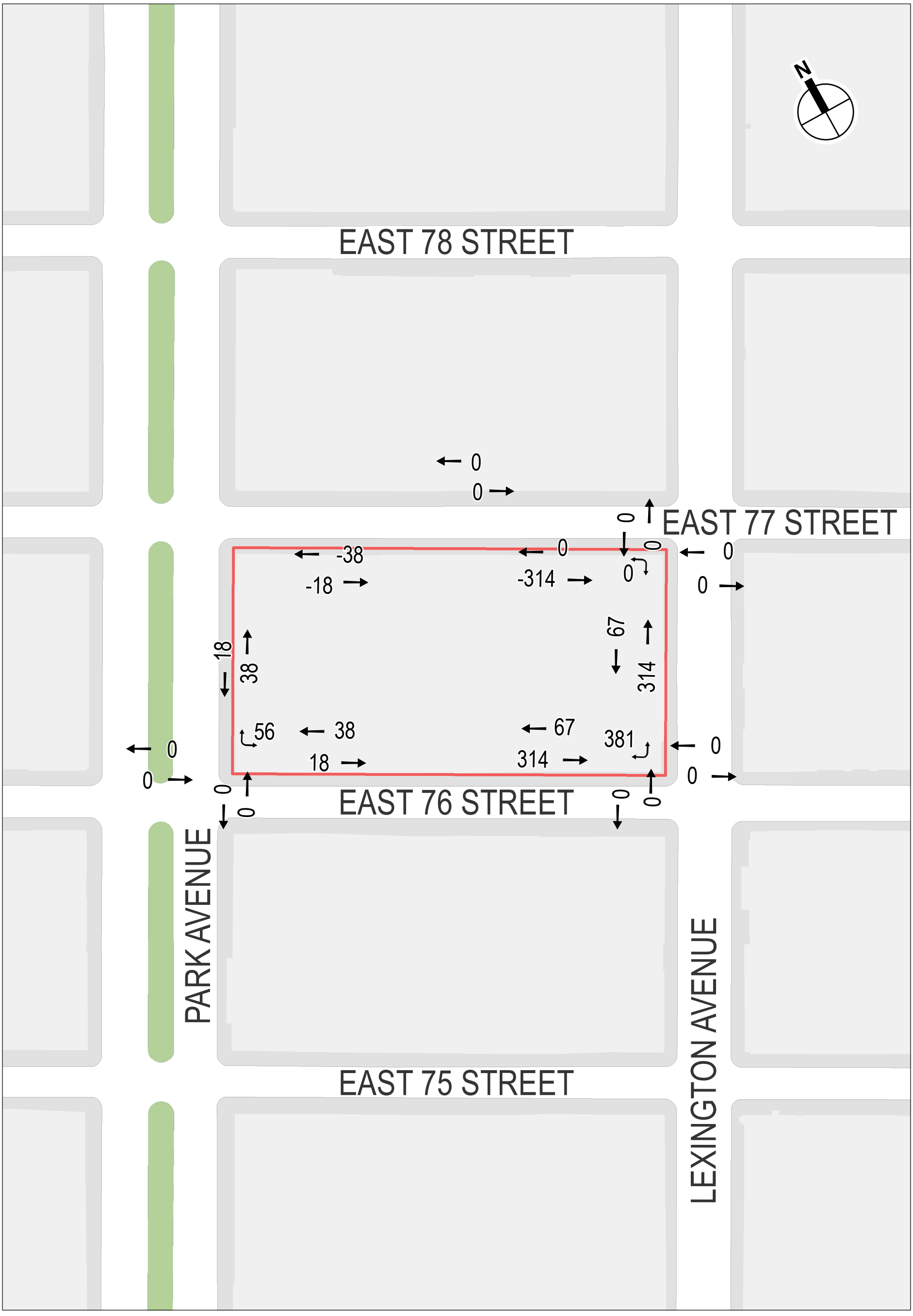



Project Site

0 200 FEET

Construction Diverted Pedestrian Trips
Weekday 3-4 PM Peak Hour
**Figure 16-18**

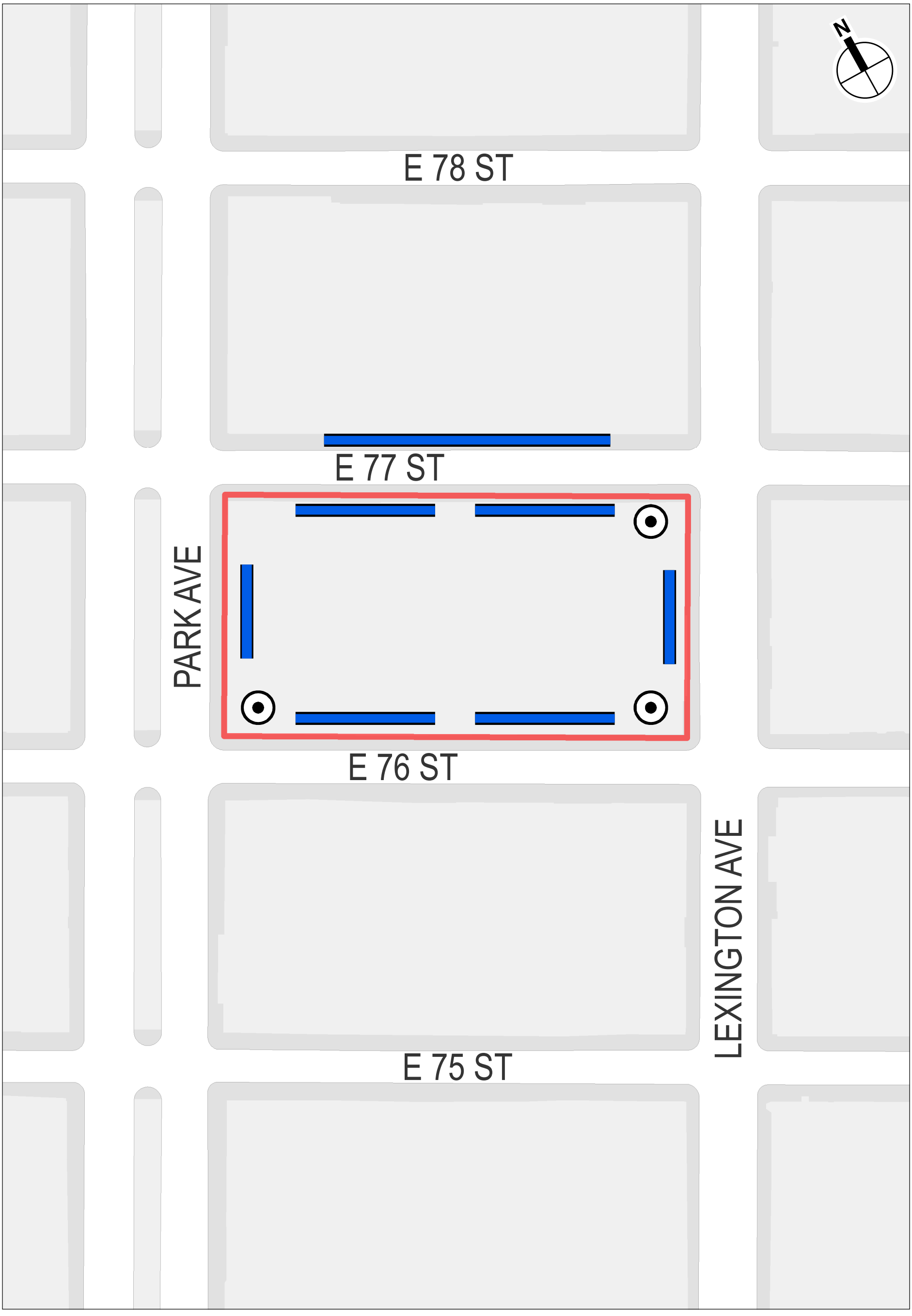
5.7.24




Construction Diverted Pedestrian Trips
Weekday 4:15-5:15 PM Peak Hour

**Figure 16-19**

5/7/2024




*Project Site*

*Sidewalk Analysis Location*

*Corner Analysis Location*

0 200 FEET

**LENOX HILL HOSPITAL REDEVELOPMENT**

Construction Pedestrian Study Area

**Figure 16-20**

## Table 16-11
## Construction Pedestrian Level 2 Screening Results—Selected Analysis Locations

| Pedestrian Elements | Weekday Pedestrian Trips 6:00–7:00 AM | Weekday Pedestrian Trips 3:00–4:00 PM | Selected Analysis Locations |
|---|---|---|---|
| **Lexington Avenue and East 77th Street** | | | |
| North Crosswalk | 30 | 31 | |
| East Crosswalk | 30 | 29 | |
| South Crosswalk | 126 | 67 | |
| West Crosswalk | 32 | 33 | |
| Northeast Corner | 60 | 60 | |
| Southeast Corner | 156 | 96 | |
| Southwest Corner* | 245 | 234 | ✓ |
| Northwest Corner | 62 | 64 | |
| East Sidewalk along Lexington Avenue between East 77th Street and East 76th Street | 0 | 0 | |
| West Sidewalk along Lexington Avenue between East 77th Street and East 76th Street* | 358 | 358 | ✓ |
| North Sidewalk along East 77th Street between Lexington Avenue and Park Avenue* | 0 | 0 | ✓ |
| South Sidewalk along East 77th Street between Park Avenue and Hospital Entrance* | 87 | 134 | ✓ |
| South Sidewalk along East 77th Street between Lexington Avenue and Hospital Entrance* | 87 | 134 | ✓ |
| **Lexington Avenue and East 76th Street** | | | |
| North Crosswalk | 11 | 11 | |
| East Crosswalk | 0 | 0 | |
| South Crosswalk | 4 | 4 | |
| West Crosswalk | 92 | 92 | |
| Northeast Corner | 11 | 11 | |
| Southeast Corner | 4 | 4 | |
| Southwest Corner | 96 | 96 | |
| Northwest Corner* | 103 | 103 | ✓ |
| East Sidewalk along Lexington Avenue between East 76th Street and East 75th Street | 2 | 2 | |
| West Sidewalk along Lexington Avenue between East 76th Street and East 75th Street | 88 | 88 | |
| South Sidewalk along East 76th Street between Lexington Avenue and Park Avenue | 0 | 0 | |
| North Sidewalk along East 76th Street between Park Avenue and Hospital Entrance* | 57 | 57 | ✓ |
| North Sidewalk along East 76th Street between Lexington Avenue and Hospital Entrance* | 57 | 57 | ✓ |
| **Lexington Avenue and East 75th Street** | | | |
| Northwest Corner | 88 | 88 | |
| **Park Avenue and East 77th Street** | | | |
| North Crosswalk | 9 | 9 | |
| East Crosswalk | 41 | 41 | |
| South Crosswalk | 10 | 10 | |
| West Crosswalk | 9 | 9 | |
| Northeast Corner | 50 | 50 | |
| Southeast Corner | 51 | 51 | |
| Southwest Corner | 19 | 19 | |
| Northwest Corner | 18 | 18 | |
| South Sidewalk along East 77th Street between Park Avenue and Madison Avenue | 1 | 1 | |
| North Sidewalk along East 77th Street between Park Avenue and Madison Avenue | 19 | 19 | |
| **Park Avenue and East 76th Street** | | | |
| North Crosswalk | 28 | 28 | |
| East Crosswalk | 29 | 29 | |
| South Crosswalk | 9 | 9 | |
| West Crosswalk | 9 | 9 | |
| Northeast Corner* | 57 | 57 | ✓ |
| Southeast Corner | 38 | 38 | |
| Southwest Corner | 18 | 18 | |
| Northwest Corner | 37 | 37 | |
| East Sidewalk along Park Avenue between East 77th Street and East 76th Street* | 0 | 0 | ✓ |
| East Sidewalk along Park Avenue between East 76th Street and East 75th Street | 20 | 20 | |
| West Sidewalk along Park Avenue between East 76th Street and East 75th Street | 19 | 19 | |
| South Sidewalk along East 76th Street between Park Avenue and Madison Avenue | 0 | 0 | |
| North Sidewalk along East 76th Street between Park Avenue and Madison Avenue | 19 | 19 | |

**Notes:**
✓ denotes pedestrian elements selected for detailed analysis.
* Pedestrian elements selected for detailed analysis due to narrowed sidewalks and corners from MPT elements and/or diverted pedestrian trips from the temporary relocation of the ED walk-in entrance on the south side of East 77th Street. Recommended analysis locations are for the weekday AM and PM construction peak hours, and typical weekday AM, midday, and PM peak hours.

*TRANSPORTATION ANALYSIS METHODOLOGIES*

*Pedestrian Operations*

The adequacy of a study area's sidewalk, corner reservoir, and crosswalk capacities in relation to the demand imposed on them is evaluated based on the methodologies presented in the *2010 HCM*, pursuant to procedures detailed in the *CEQR Technical Manual*.

The primary performance measure for sidewalks and walkways is pedestrian space, expressed as square feet per pedestrian (SFP), which is an indicator of the quality of pedestrian movement and comfort. The calculation of the sidewalk SFP is based on the pedestrian volumes by direction, the effective sidewalk or walkway width, and average walking speed. The SFP forms the basis for a sidewalk LOS analysis.

Street corners and crosswalks are not easily measured in terms of free pedestrian flow, as they are influenced by the effects of traffic signals. Street corners must be able to provide sufficient space for a mix of standing pedestrians (queued to cross a street) and circulating pedestrians (crossing the street or moving around the corner). The 2010 *HCM* methodologies apply a measure of time and space availability based on the area of the corner, the timing of the intersection signal, and the estimated space used by circulating pedestrians. The total "time-space" available for these activities, expressed in square feet-seconds, is calculated by multiplying the net area of the corner (in square feet) by the signal's cycle length. The analysis then determines the total circulation time for all pedestrian movements at the corner per signal cycle (expressed as pedestrians per second). The ratio of net time-space divided by the total pedestrian circulation volume per signal cycle provides the LOS measurement of SFP.

Crosswalk LOS is also a function of time and space. Similar to the street corner analysis, crosswalk conditions are first expressed as a measurement of the available area (the crosswalk width multiplied by the width of the street) and the permitted crossing time. This measure is expressed in square feet-seconds. The average time required for a pedestrian to cross the street is calculated based on the width of the street and an assumed walking speed. The ratio of time-space available in the crosswalk to the total crosswalk pedestrian occupancy time is the LOS measurement of available square feet per pedestrian. The LOS analysis also accounts for vehicular turning movements that traverse the crosswalk.

The LOS standards for sidewalks, corner reservoirs, and crosswalks are summarized in **Table 16-12**. The *CEQR Technical Manual*-specified acceptable LOS in Central Business District (CBD) areas is mid-LOS D or better (minimum of 31.5 SFP for sidewalks; minimum of 19.5 SFP for corners and crosswalks), which was the criteria used in the pedestrian analyses.

**Table 16-12**
**Level of Service Criteria for Pedestrian Elements**

| LOS | Sidewalks | Corner Reservoirs and Crosswalks |
|---|---|---|
| A | ≥ 530.1 SFP | ≥ 60.1 SFP |
| B | 90.1 – 530.0 SFP | 40.1 – 60.0 SFP |
| C | 40.1 – 90.0 SFP | 24.1 – 40.0 SFP |
| D | 23.1 – 40.0 SFP | 15.1 – 24.0 SFP |
| E | 11.1 – 23.0 SFP | 8.1 – 15.0 SFP |
| F | ≤ 11.0 SFP | ≤ 8.0 SFP |

**Note:** SFP = square feet per pedestrian
**Source:** New York City Mayor's Office of Environmental Coordination, 2021 *CEQR Technical Manual*

*SIGNIFICANT IMPACT CRITERIA*

The determination of significant pedestrian impacts considers the level of predicted decrease in pedestrian space between the No Action and With Action conditions. For different pedestrian elements, flow conditions, and area types, the *CEQR Technical Manual* procedure for impact determination corresponds with various sliding-scale formulas, as further detailed below.

*Sidewalks*

The CBD sliding-scale formula for determining sidewalk impacts is $Y \geq X/(9.5 – 0.321)$, where Y is the decrease in pedestrian space in SFP and X is the No Action condition pedestrian space in SFP. Since a decrease in pedestrian space within acceptable levels would not constitute a significant impact, these formulas would apply only if the With Action condition pedestrian space falls short of mid-LOS D. **Table 16-13** summarizes the sliding scale guidance provided by the *CEQR Technical Manual* for determining potential significant sidewalk impacts.

*Corner Reservoirs and Crosswalks*

The determination of significant corner and crosswalk impacts in the CBD is also based on a sliding scale using the following formula: $Y \geq X/9.0 – 0.31$, where Y is the decrease in pedestrian space in SFP and X is the No Action condition pedestrian space in SFP. Since a decrease in pedestrian space within acceptable levels would not constitute a significant impact, this formula would apply only if the With Action condition pedestrian space falls short of mid-LOS D. **Table 16-14** summarizes the sliding scale guidance provided by the *CEQR Technical Manual* for determining potential significant corner reservoir and crosswalk impacts.

## Table 16-13
## Significant Impact Guidance for Sidewalks

| CBD Platoon Flow Sliding Scale Formula: *Y ≥ X/(9.5—0.321)* | |
|---|---|
| **No Action Condition Pedestrian Space (X, SFP)** | **With Action Condition Pedestrian Space Reduction (Y, SFP)** |
| No Action Condition Pedestrian Space ≥ 34.7 | With Action Condition Pedestrian Space ≤ 31.4 |
| 34.0 to 34.6 | ≥ 3.3 |
| 33.0 to 33.9 | ≥ 3.2 |
| 32.1 to 32.9 | ≥ 3.1 |
| 31.1 to 32.0 | ≥ 3.0 |
| 30.2 to 31.0 | ≥ 2.9 |
| 29.2 to 30.1 | ≥ 2.8 |
| 28.3 to 29.1 | ≥ 2.7 |
| 27.3 to 28.2 | ≥ 2.6 |
| 26.4 to 27.2 | ≥ 2.5 |
| 25.4 to 26.3 | ≥ 2.4 |
| 24.5 to 25.3 | ≥ 2.3 |
| 23.5 to 24.4 | ≥ 2.2 |
| 22.6 to 23.4 | ≥ 2.1 |
| 21.6 to 22.5 | ≥ 2.0 |
| 20.7 to 21.5 | ≥ 1.9 |
| 19.7 to 20.6 | ≥ 1.8 |
| 18.8 to 19.6 | ≥ 1.7 |
| 17.8 to 18.7 | ≥ 1.6 |
| 16.9 to 17.7 | ≥ 1.5 |
| 15.9 to 16.8 | ≥ 1.4 |
| 15.0 to 15.8 | ≥ 1.3 |
| 14.0 to 14.9 | ≥ 1.2 |
| 13.1 to 13.9 | ≥ 1.1 |
| 12.1 to 13.0 | ≥ 1.0 |
| 11.2 to 12.0 | ≥ 0.9 |
| 10.2 to 11.1 | ≥ 0.8 |
| 9.3 to 10.1 | ≥ 0.7 |
| 8.3 to 9.2 | ≥ 0.6 |
| 7.4 to 8.2 | ≥ 0.5 |
| 6.4 to 7.3 | ≥ 0.4 |
| ≤ 6.3 | ≥ 0.3 |

**Notes:** SFP = square feet per pedestrian; Y = decrease in pedestrian space in SFP; X = No Action condition pedestrian space in SFP.
**Sources:** New York City Mayor's Office of Environmental Coordination, 2021 *CEQR Technical Manual*

**Table 16-14**
**Significant Impact Guidance for Corners and Crosswalks**

| CBD Sliding Scale Formula: $Y \geq X/9.0–0.31$ | |
|---|---|
| **No Action Condition Pedestrian Space (X, SFP)** | **With Action Pedestrian Condition Space Reduction (Y, SFP)** |
| No Action Condition Pedestrian Space ≥ 21.5 | With Action Condition Pedestrian Space ≤ 19.4 |
| 21.3 to 21.4 | ≥ 2.1 |
| 20.4 to 21.2 | ≥ 2.0 |
| 19.5 to 20.3 | ≥ 1.9 |
| 18.6 to 19.4 | ≥ 1.8 |
| 17.7 to 18.5 | ≥ 1.7 |
| 16.8 to 17.6 | ≥ 1.6 |
| 15.9 to 16.7 | ≥ 1.5 |
| 15.0 to 15.8 | ≥ 1.4 |
| 14.1 to 14.9 | ≥ 1.3 |
| 13.2 to 14.0 | ≥ 1.2 |
| 12.3 to 13.1 | ≥ 1.1 |
| 11.4 to 12.2 | ≥ 1.0 |
| 10.5 to 11.3 | ≥ 0.9 |
| 9.6 to 10.4 | ≥ 0.8 |
| 8.7 to 9.5 | ≥ 0.7 |
| 7.8 to 8.6 | ≥ 0.6 |
| 6.9 to 7.7 | ≥ 0.5 |
| 6.0 to 6.8 | ≥ 0.4 |
| 5.1 to 5.9 | ≥ 0.3 |
| ≤ 5.0 | ≥ 0.2 |

**Notes:** SFP = square feet per pedestrian; Y = decrease in pedestrian space in SFP; X = No Action condition pedestrian space in SFP.
**Sources:** New York City Mayor's Office of Environmental Coordination, 2021 *CEQR Technical Manual*

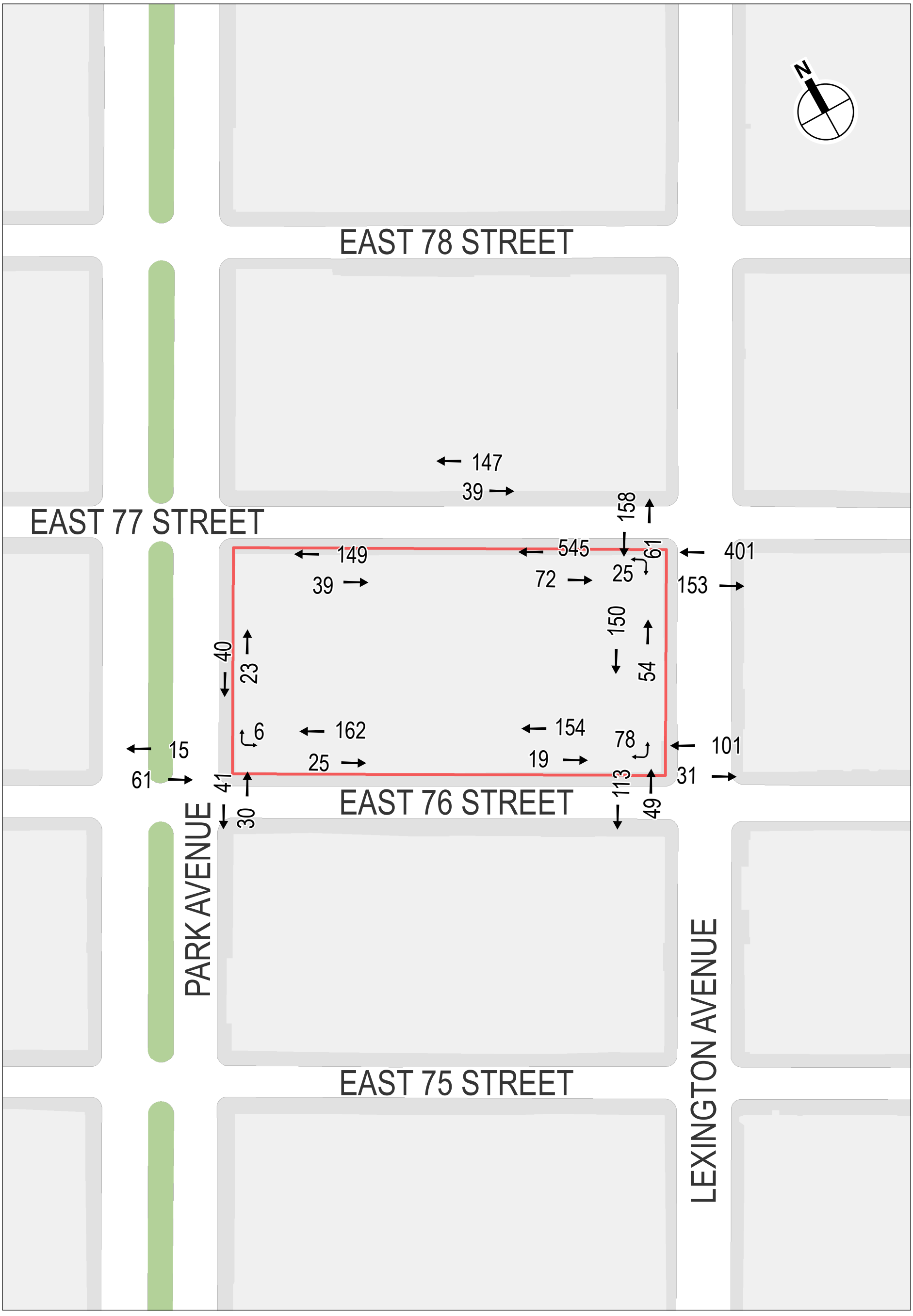
*Pedestrian Conditions*

As described above, Level 1 and Level 2 screening analyses have been prepared to identify the pedestrian elements that warrant a detailed analysis. Based on the assignment of pedestrian trips and in consideration of sidewalk conditions during construction of the Proposed Project, seven sidewalks and three corners have been selected for analysis for the weekday AM and PM construction peak hours, and typical weekday AM, midday, and PM peak hours.

In order to establish an existing condition for the peak hours, pedestrian counts were collected for the weekday AM construction analysis peak hour (6:00 to 7:00 AM), the weekday PM construction analysis peak hour (3:00 to 4:00 PM), and for the typical weekday AM, midday, and PM analysis peaks. Existing data were collected in May 2023.

The weekday AM and PM construction peak hour and typical weekday AM, midday, and PM peak hour volumes are shown in **Figures 16-21 through 16-25**. The No Action condition pedestrian volumes are shown in **Figures 16-26 through 16-30**. The With Action condition pedestrian volumes are shown in **Figures 16-31 through 16-35**. The 2030 construction No Action condition was developed by layering the CEQR background growth and trips generated by a discrete No Build project in the area described in the "Traffic Conditions" section. To be conservative, the typical weekday AM and PM peak hour volumes from the discrete project were layered on top of the existing pedestrian volumes for the weekday AM and PM construction peak hours. The 2030 construction With Action condition volumes were developed by adding the construction pedestrian trips presented in **Figures 16-13 and 16-14**, and the pedestrian trips

5.7.24

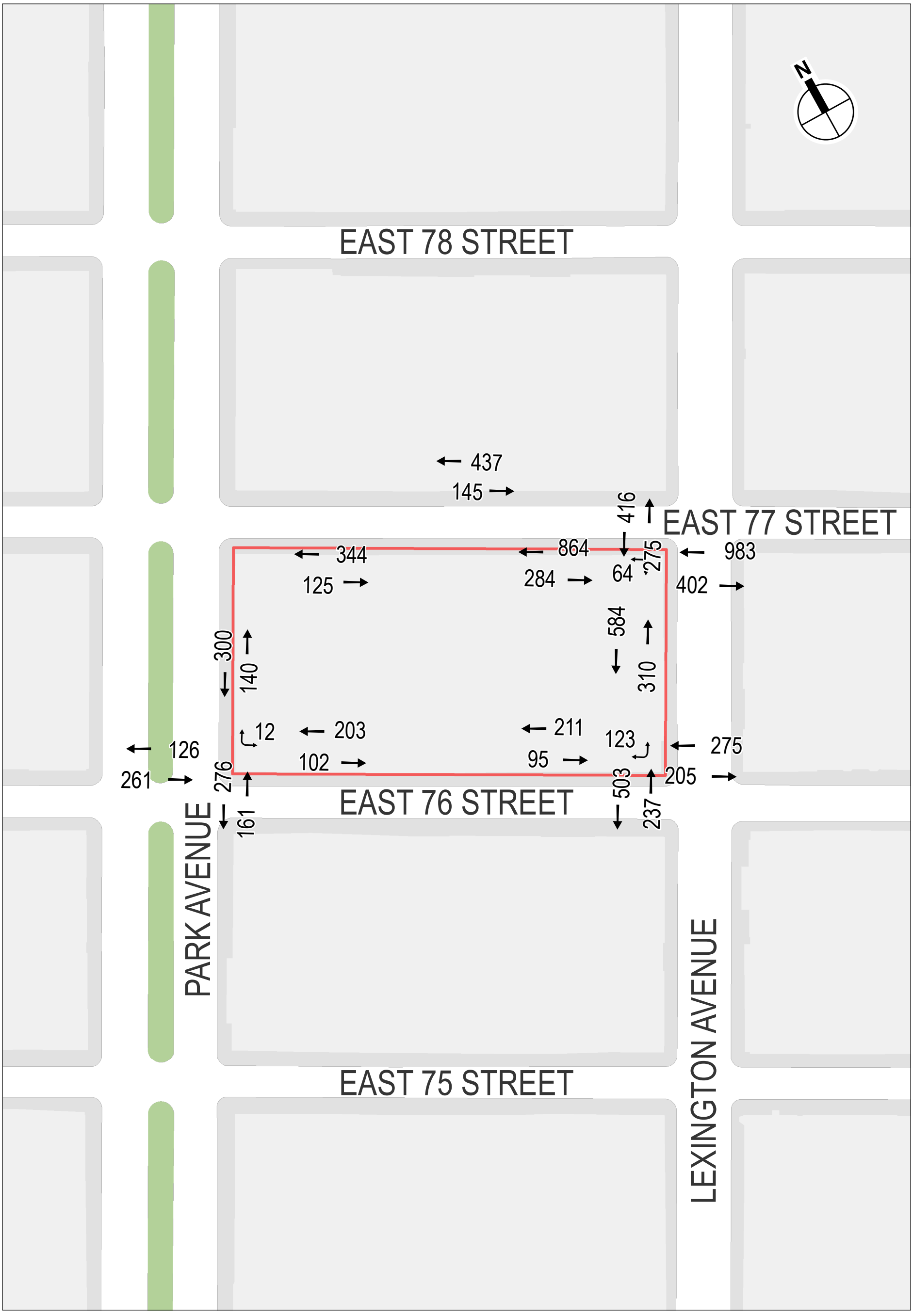



Construction Existing Pedestrian Volumes
Weekday 6-7 AM Peak Hour

**LENOX HILL HOSPITAL REDEVELOPMENT**

**Figure 16-21**

5.7.24



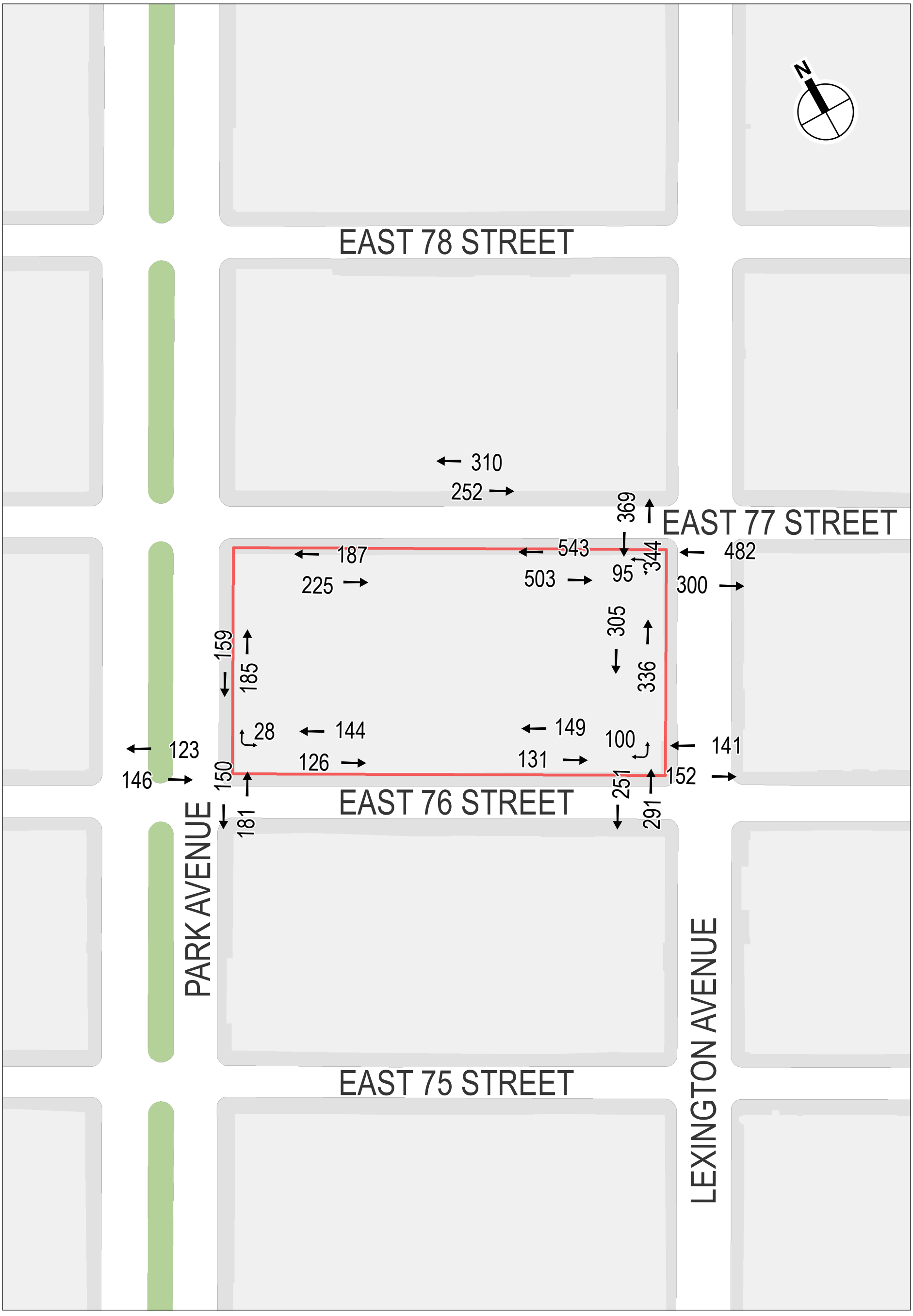

Project Site

0 200 FEET

Construction Existing Pedestrian Volumes
Weekday 8-9 AM Peak Hour
**Figure 16-22**

**LENOX HILL HOSPITAL REDEVELOPMENT**

5.7.24



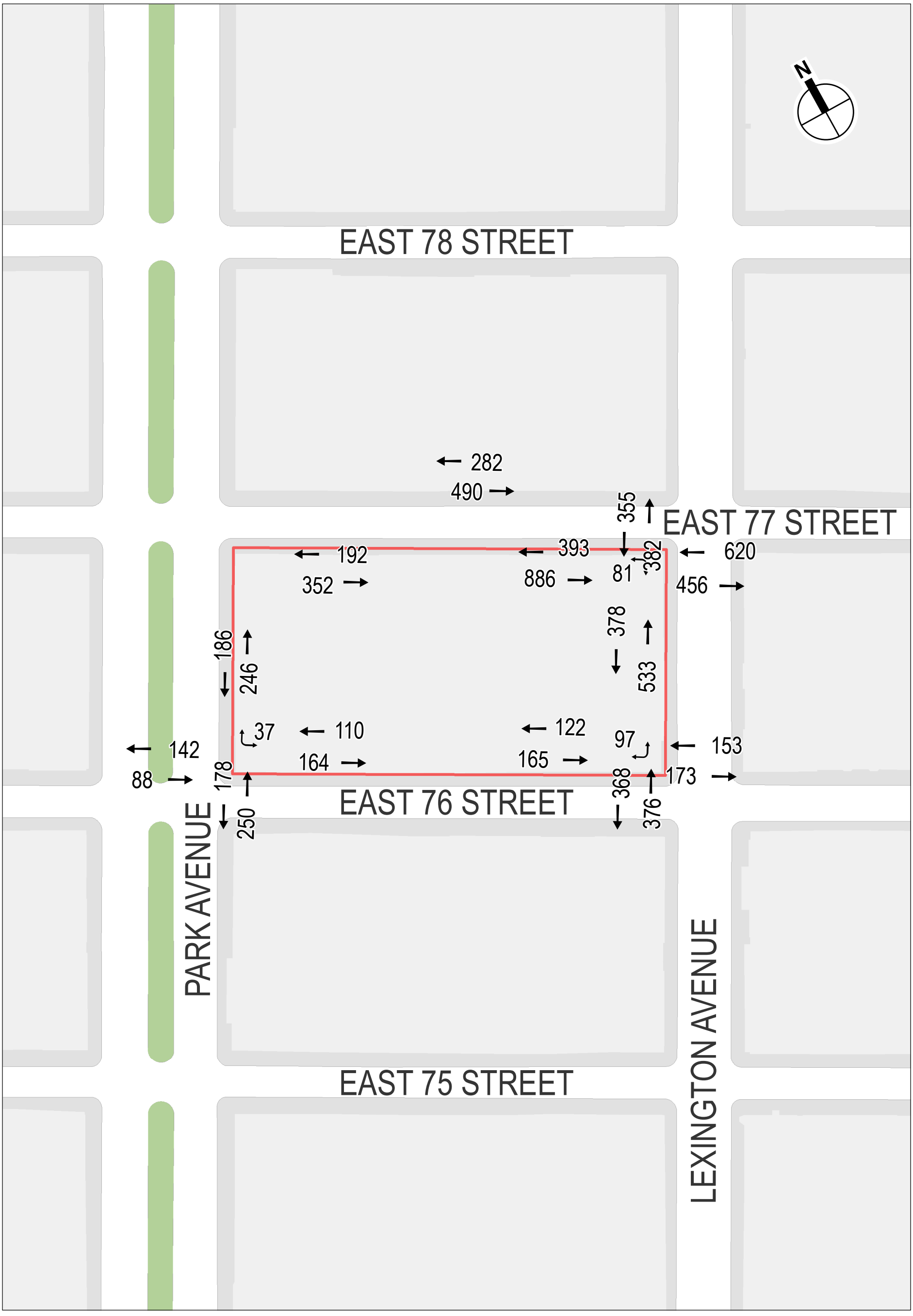

Project Site

0 200 FEET

Construction Existing Pedestrian Volumes
Weekday 12:15-1:15 PM Peak Hour

**Figure 16-23**

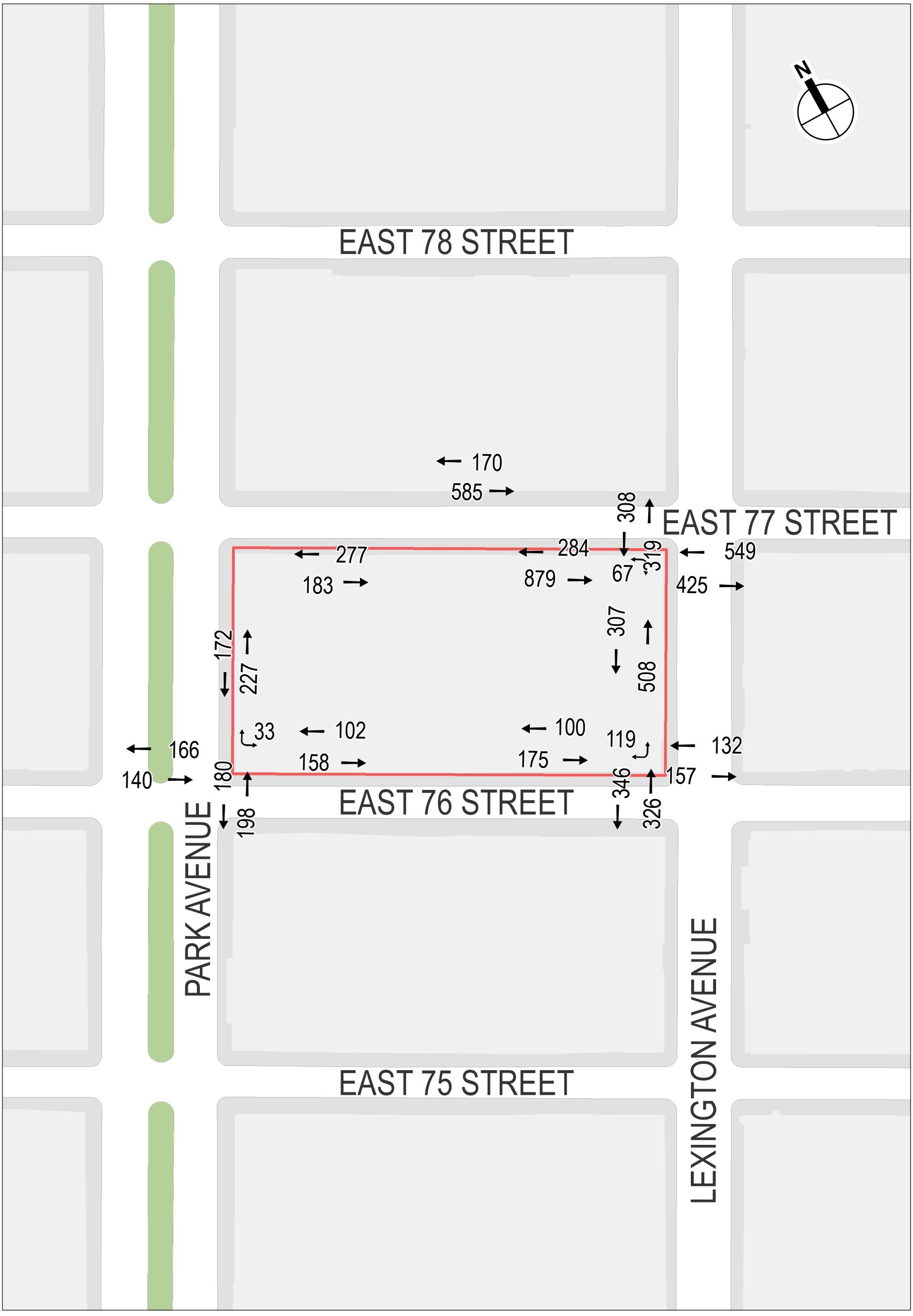
5.7.24




Construction Existing Pedestrian Volumes
Weekday 3-4 PM Peak Hour

**Figure 16-24**

5.7.24

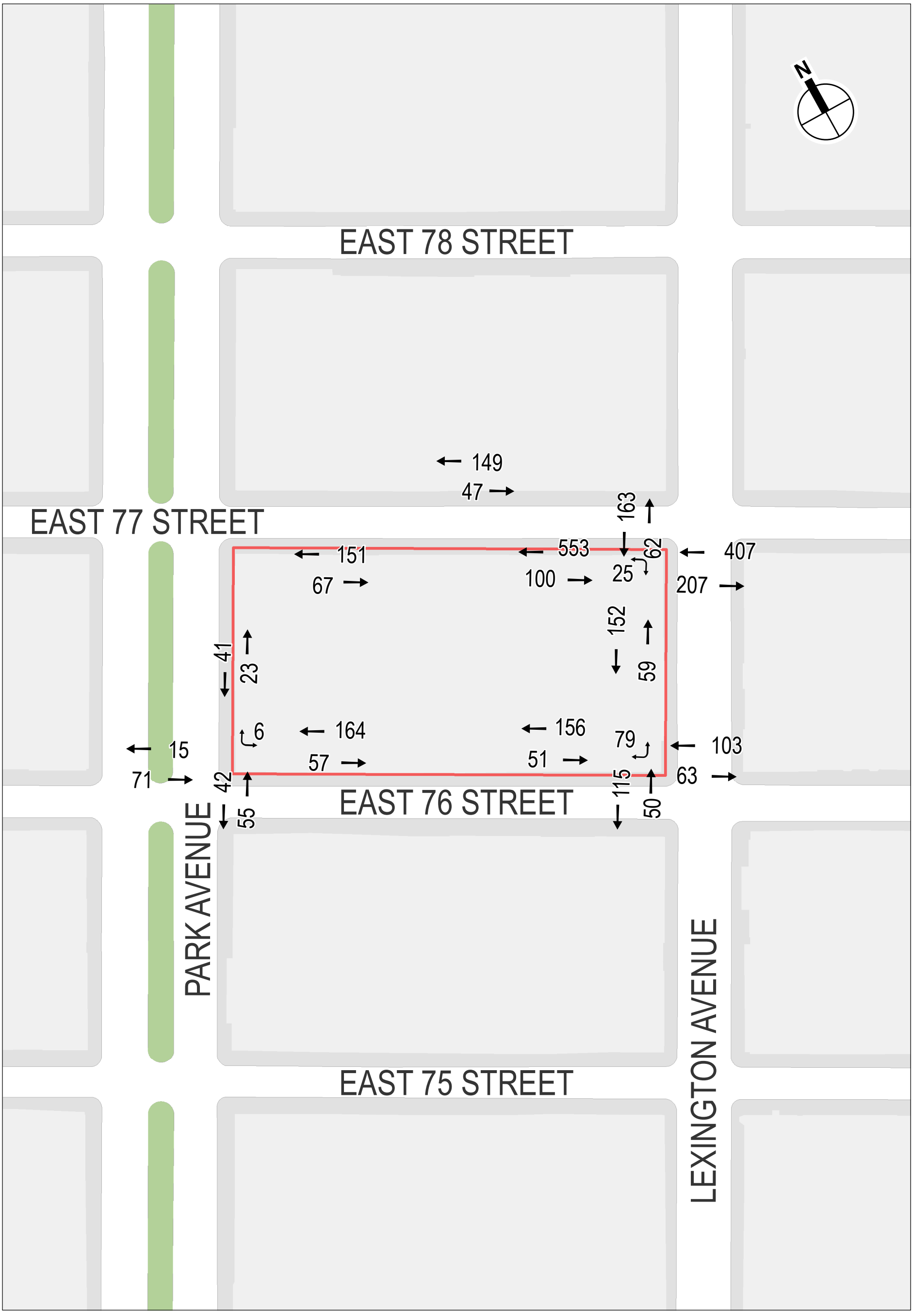



Construction Existing Pedestrian Volumes
Weekday 4:15-5:15 PM Peak Hour

**LENOX HILL HOSPITAL REDEVELOPMENT**

**Figure 16-25**

5.7.24

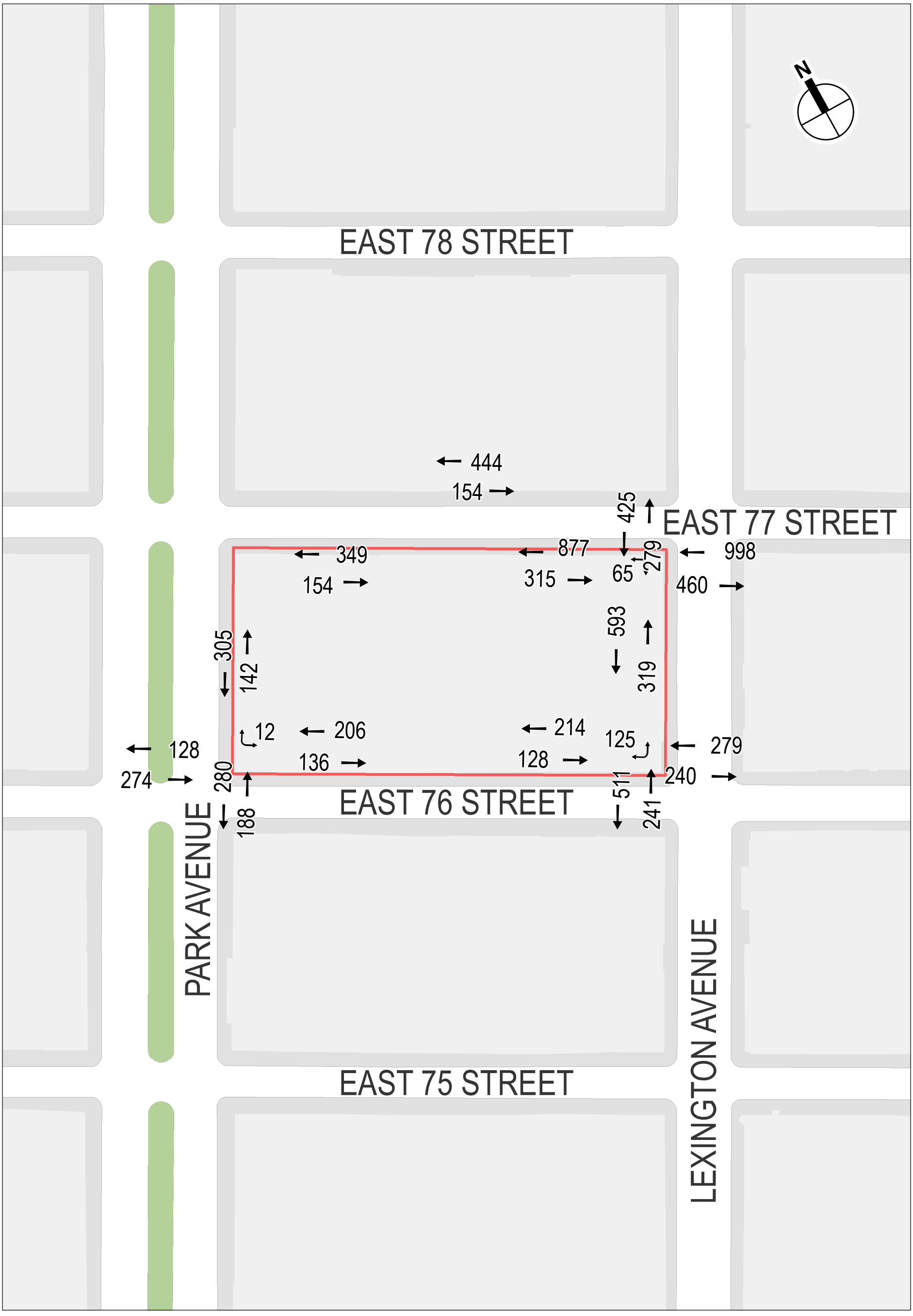



2030 Construction No Action Pedestrian Volumes
Weekday 6-7 AM Peak Hour

**LENOX HILL HOSPITAL REDEVELOPMENT**

**Figure 16-26**

5.7.24

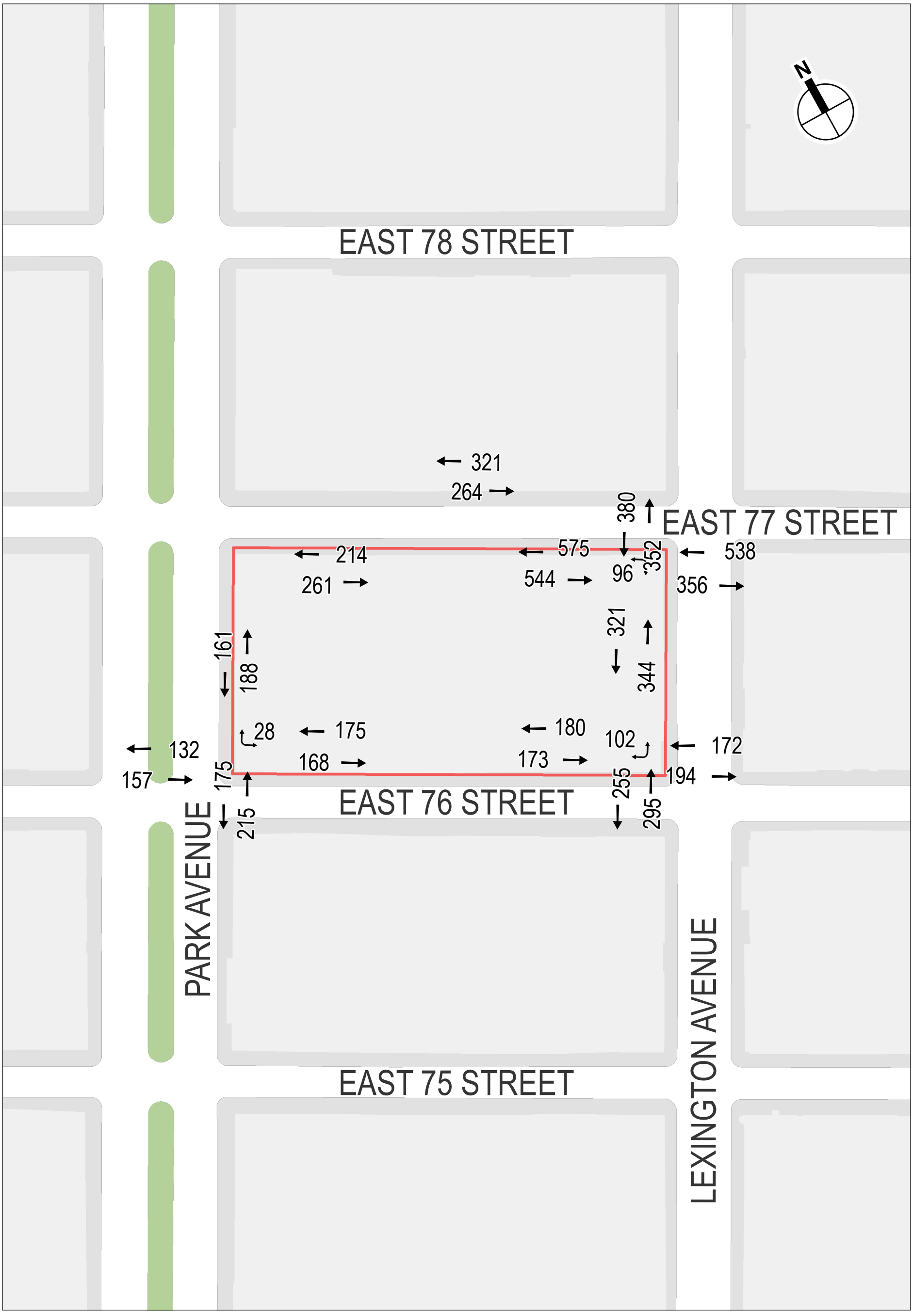



2030 Construction No Action Pedestrian Volumes
Weekday 8-9 AM Peak Hour

**LENOX HILL HOSPITAL REDEVELOPMENT**

**Figure 16-27**

5.7.24

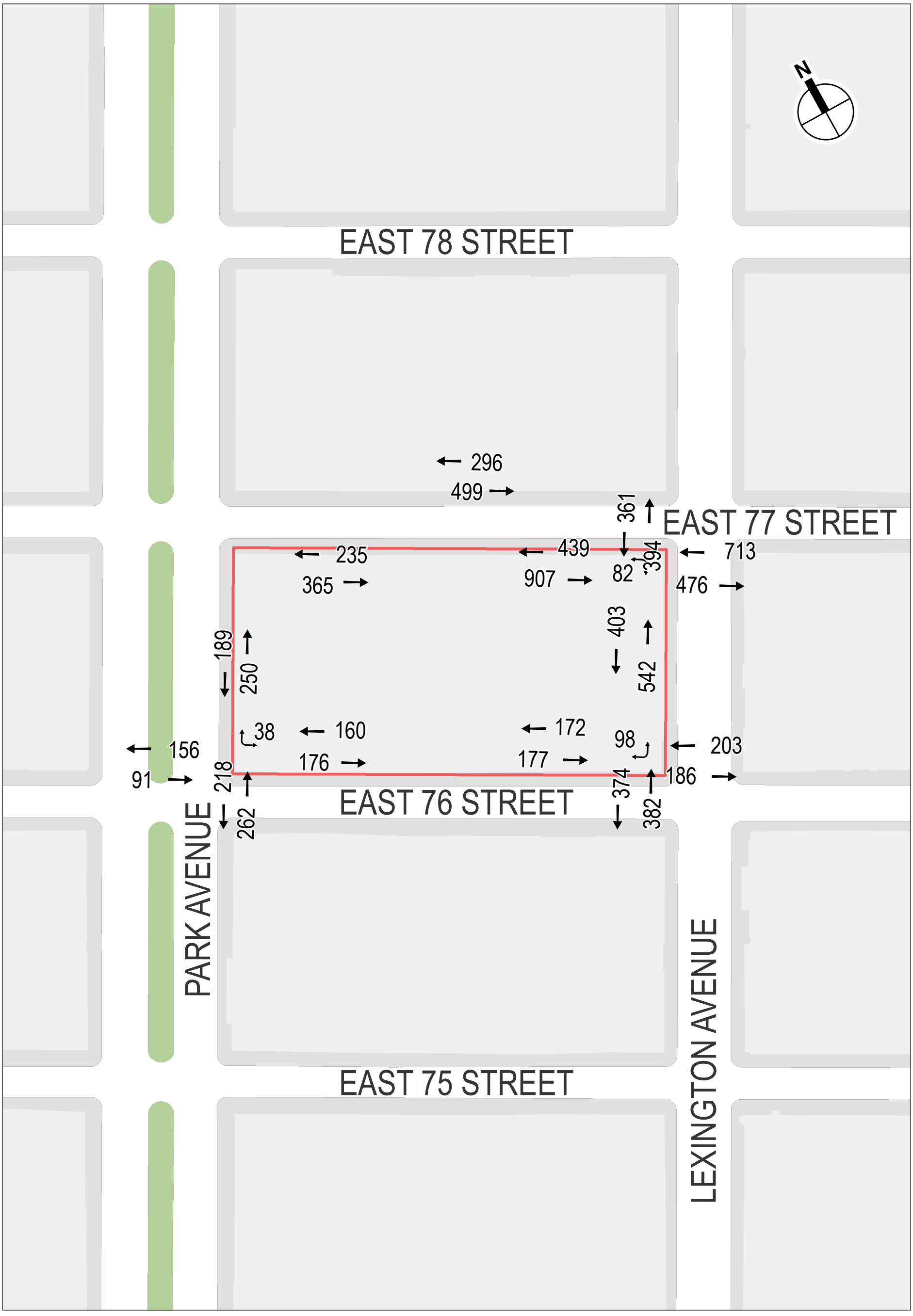



2030 Construction No Action Pedestrian Volumes
Weekday 12:15-1:15 PM Peak Hour

**LENOX HILL HOSPITAL REDEVELOPMENT**

**Figure 16-28**

5.7.24

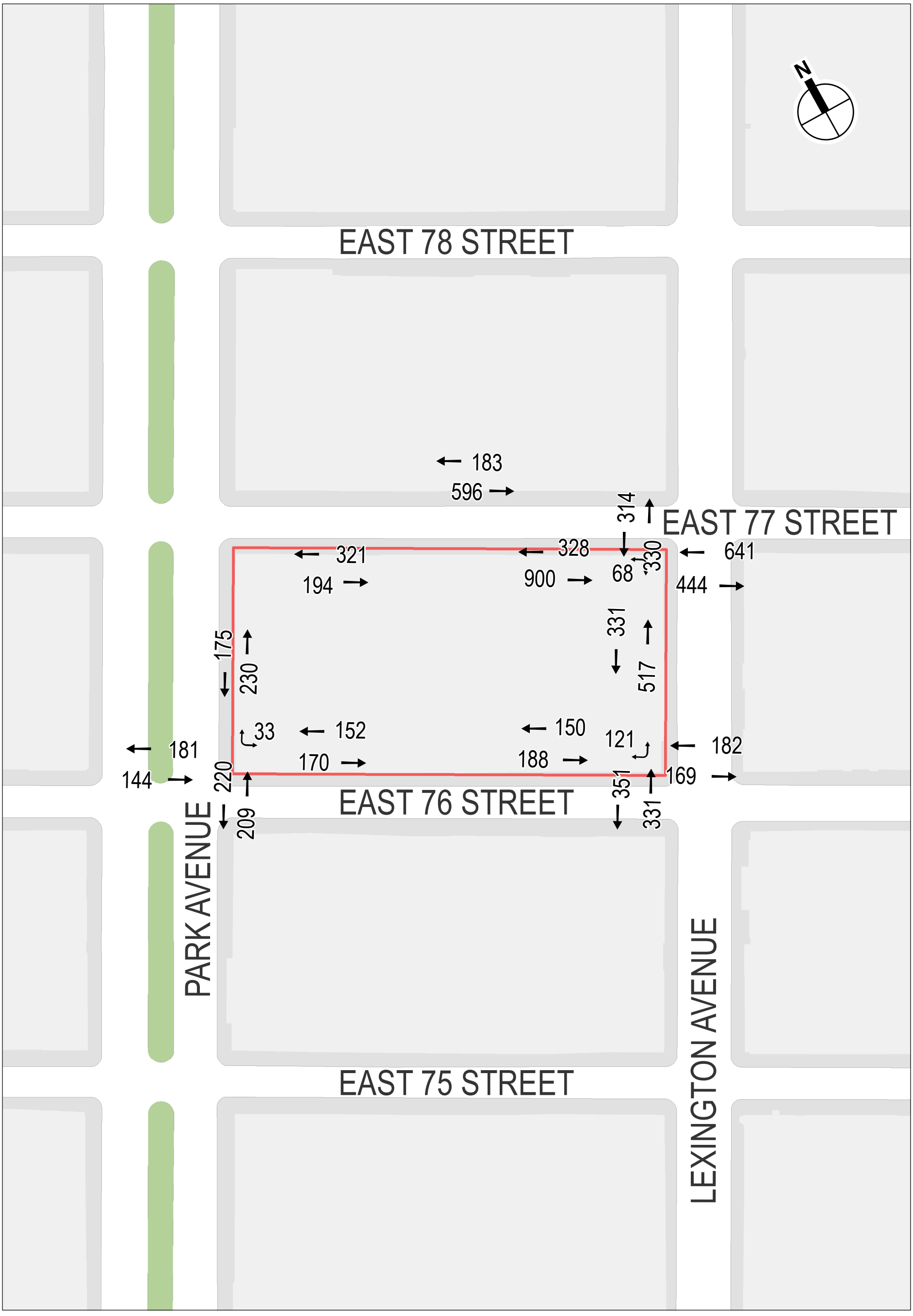



2030 Construction No Action Pedestrian Volumes
Weekday 3-4 PM Peak Hour

**LENOX HILL HOSPITAL REDEVELOPMENT**

**Figure 16-29**

5.7.24

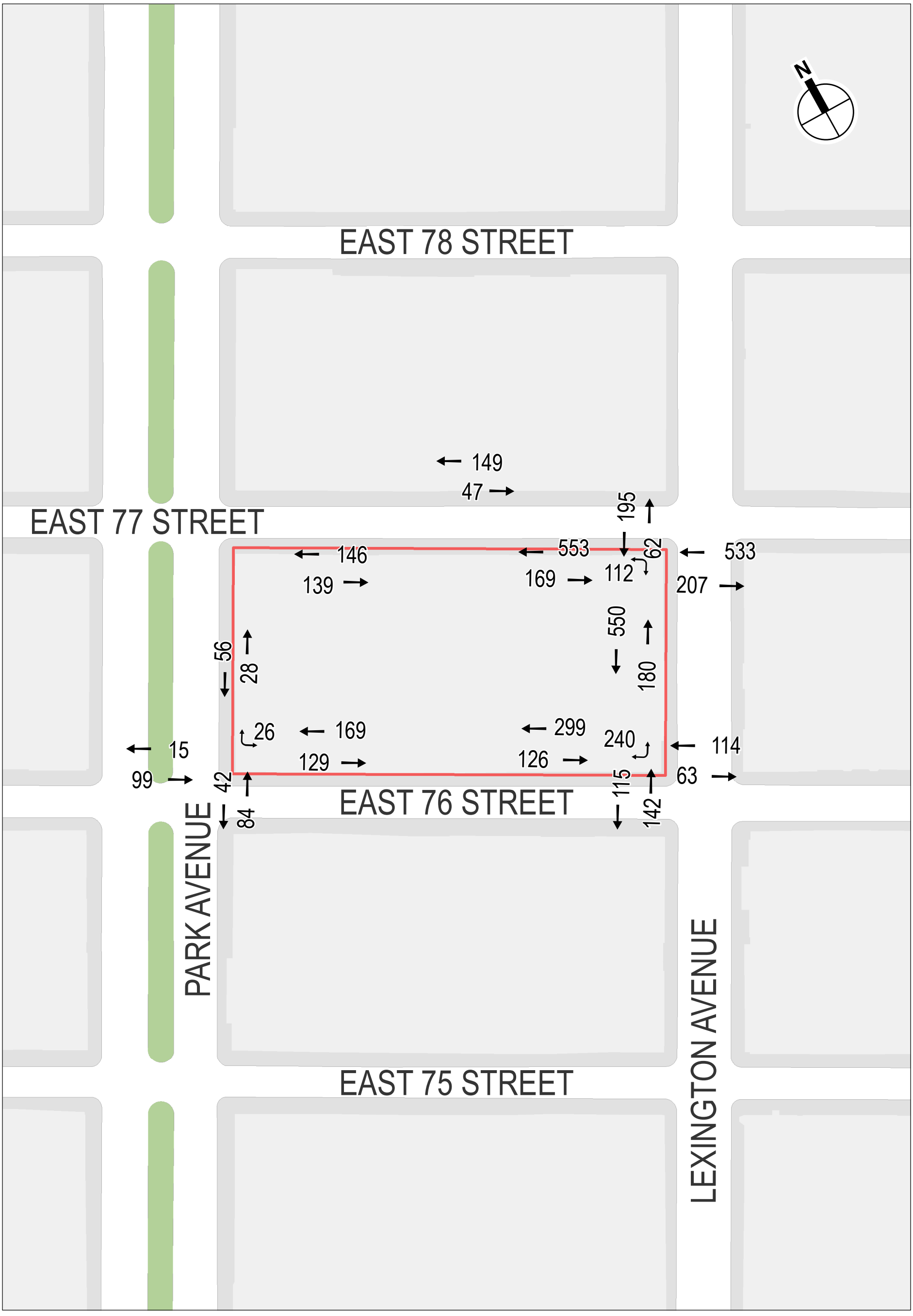



2030 Construction No Action Pedestrian Volumes
Weekday 4:15-5:15 PM Peak Hour

**LENOX HILL HOSPITAL REDEVELOPMENT**

**Figure 16-30**

5.7.24




Project Site

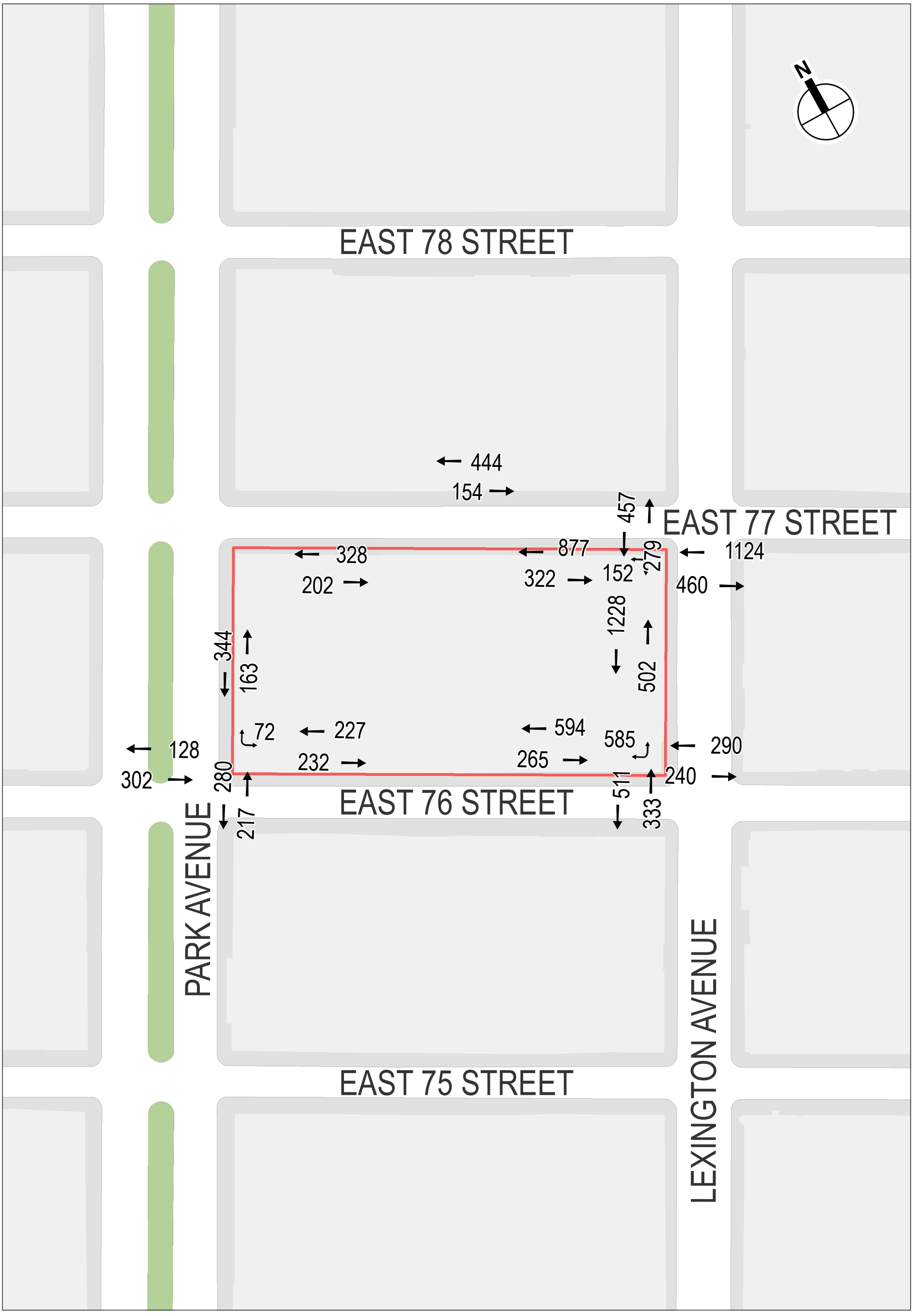
0 200 FEET

2030 Construction With Action Pedestrian Volumes
Weekday 6-7 AM Peak Hour

**LENOX HILL HOSPITAL REDEVELOPMENT**

**Figure 16-31**

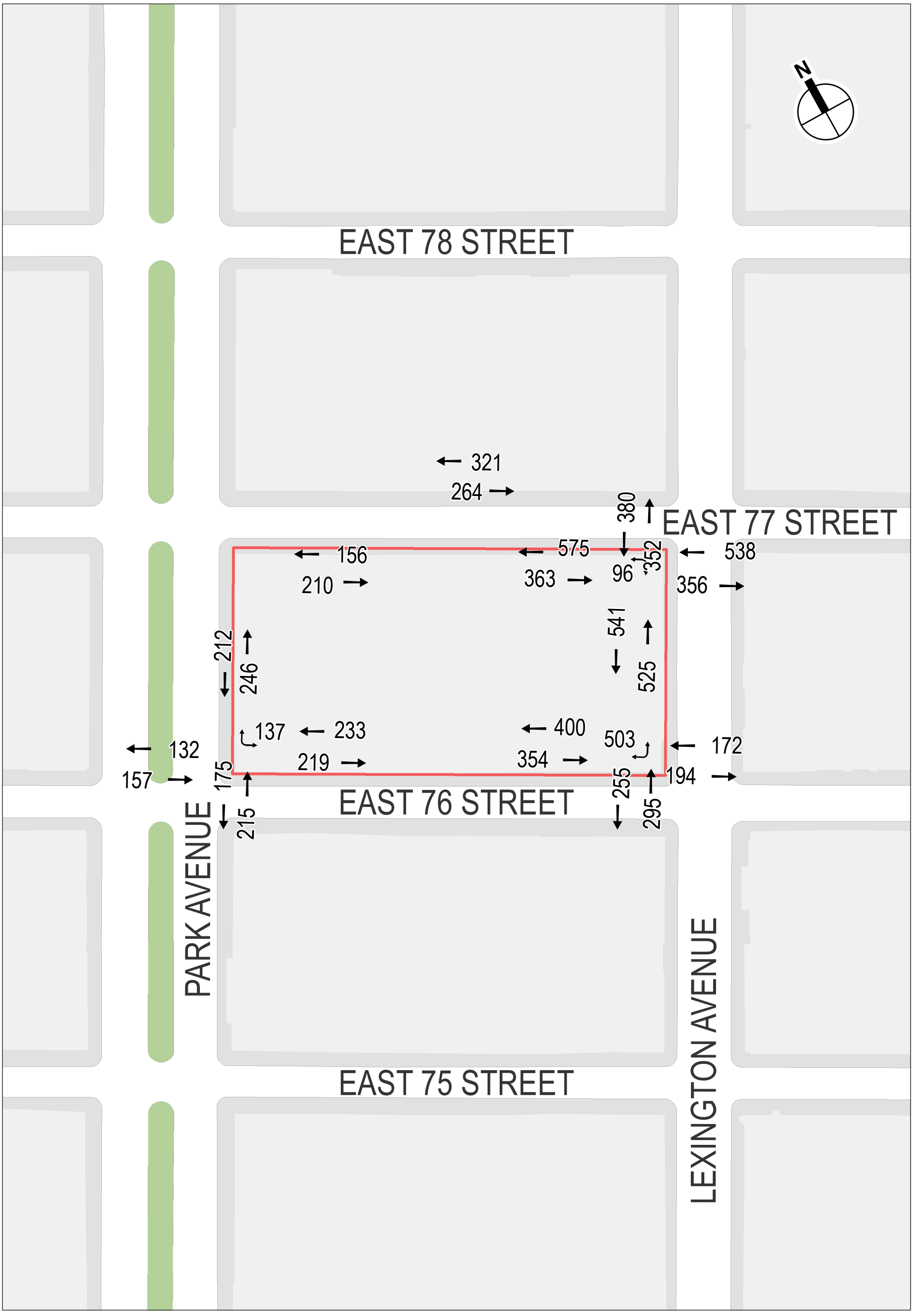
5.7.24




2030 Construction With Action Pedestrian Volumes
Weekday 8-9 AM Peak Hour

**Figure 16-32**

5.8.24

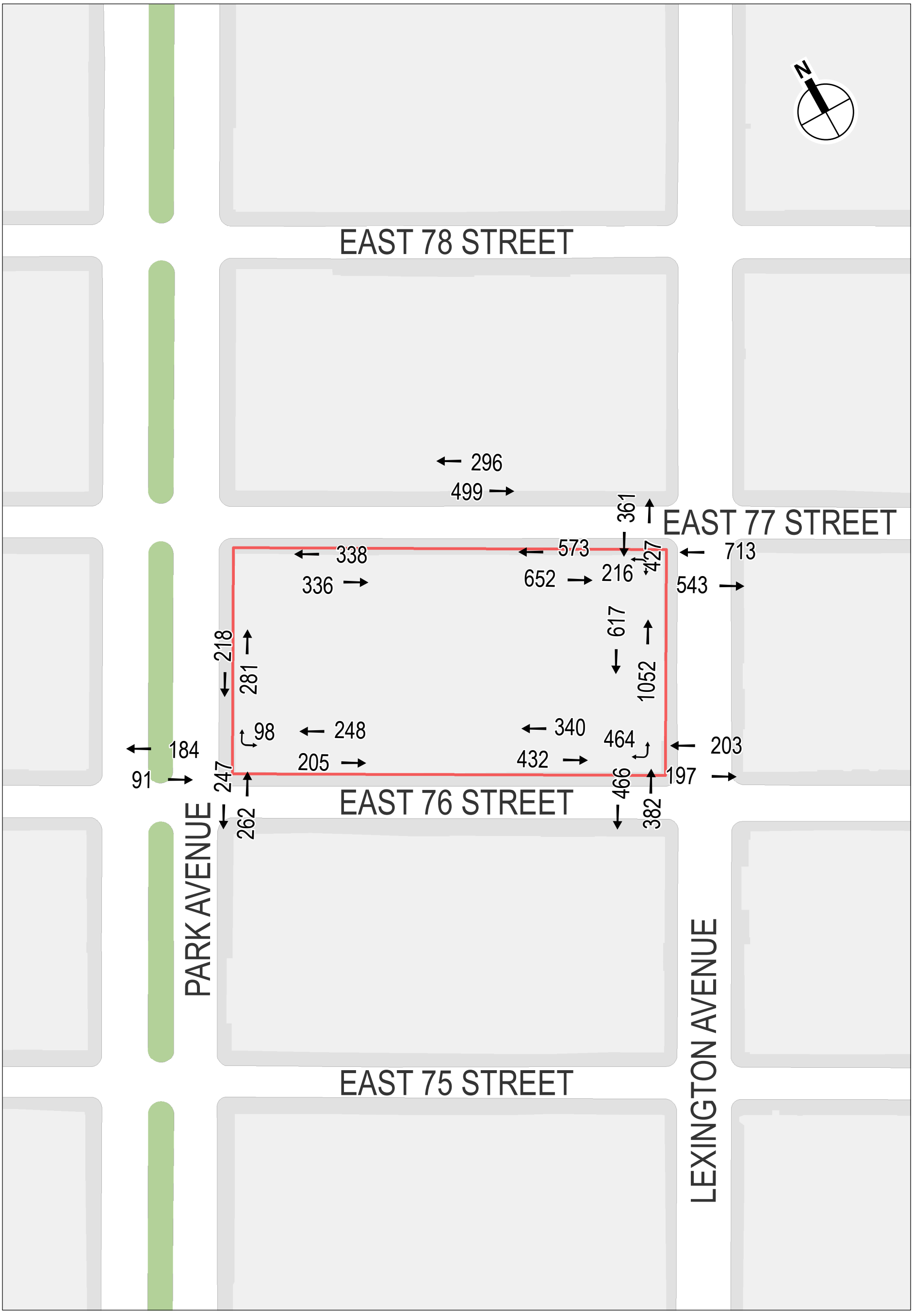



2030 Construction With Action Pedestrian Volumes
Weekday 12:15-1:15 PM Peak Hour

**LENOX HILL HOSPITAL REDEVELOPMENT**

**Figure 16-33**

5.7.24

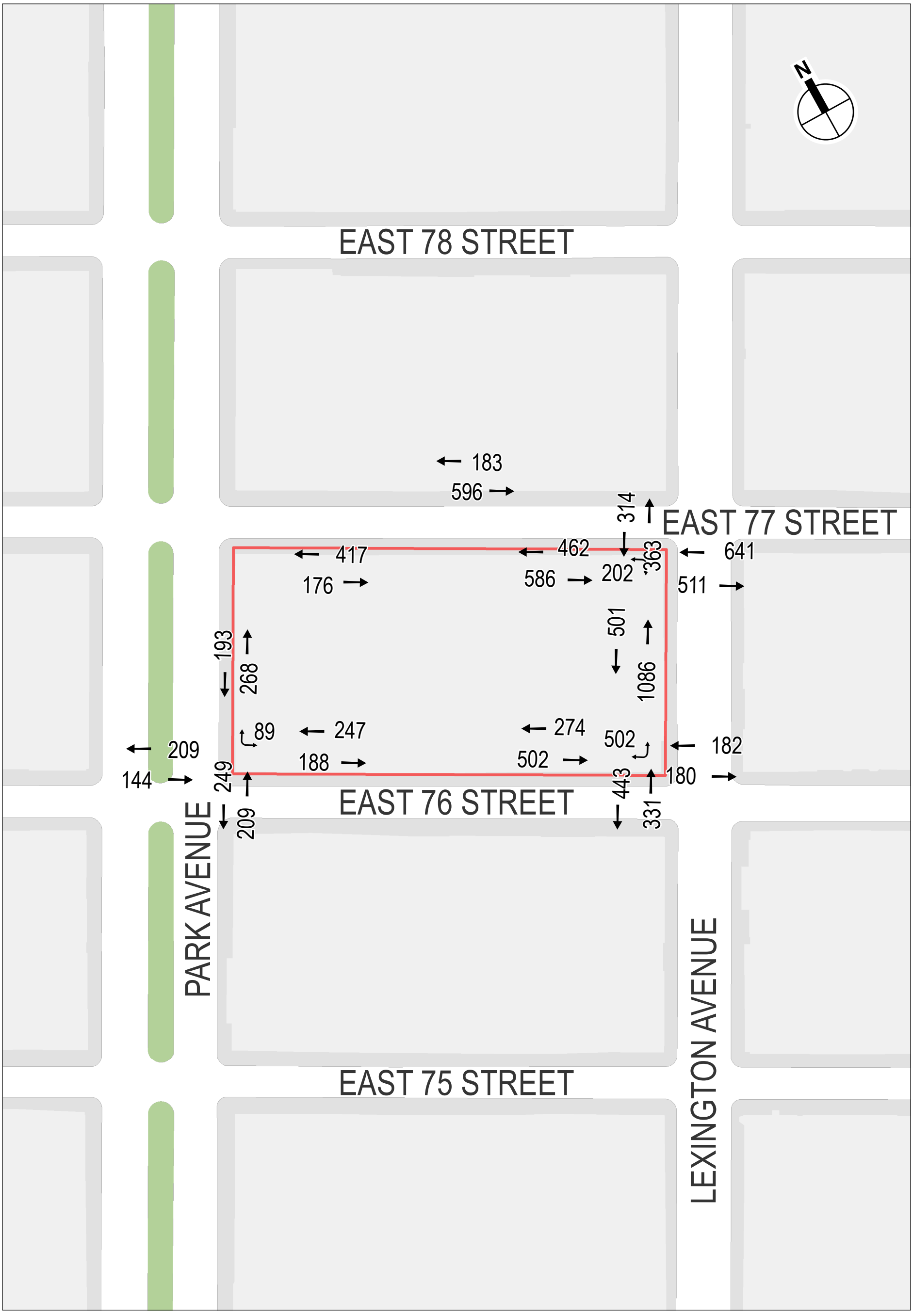



2030 Construction With Action Pedestrian Volumes
Weekday 3-4 PM Peak Hour

**LENOX HILL HOSPITAL REDEVELOPMENT**

**Figure 16-34**

5.8.24




2030 Construction With Action Pedestrian Volumes
Weekday 4:15-5:15 PM Peak Hour
**Figure 16-35**

diverted due to the temporary relocation of the ED walk-in entrance presented in **Figures 16-15 through 16-19**, to the No Action pedestrian volumes.

The adequacy of the study area's sidewalk and corner reservoir capacities in relation to the demand imposed on them is evaluated based on the methodologies presented in the 2010 *HCM*, pursuant to procedures detailed in the *CEQR Technical Manual*.

As shown in **Table 16-15**, based on the *CEQR Technical Manual* sliding scale impact thresholds, all pedestrian elements would operate at favorable LOS A, B, or C, or acceptable LOS D, during all peak hours in the 2030 With Action condition. Therefore, construction of the Proposed Project would not result in any significant adverse pedestrian impacts.

*STREET USER SAFETY EVALUATION*

High crash locations are identified according to the *CEQR Technical Manual* and supplemental guidance from DOT if they meet any of the following criteria: any Vision Zero priority intersection within ¼ mile of the Proposed Project; any intersection along a Vision Zero priority corridor with 3 or more pedestrian/bicyclist crashes in any consecutive 12-month period; and any intersection not on a Vision Zero priority corridor with 5 or more pedestrian/bicyclist crashes in any consecutive 12-month period. The study area for the street user safety evaluation consisted of the 28 intersections identified in **Table 16-16**.

Crash data for the study area intersections has been obtained from DOT for the time period between January 1, 2017 and December 31, 2019. The data obtained quantify the total number of reportable crashes (involving fatality, injury, or more than $1,000 in property damage), fatalities, and injuries during the study period, as well as a yearly breakdown of vehicular crashes with pedestrians and bicycles at each location. During the January 1, 2017 and December 31, 2019 three-year period, a total of 432 reportable and non-reportable crashes, 1 fatality, 136 injuries, and 78 pedestrian/bicyclist-related crashes occurred at the study area intersections. A rolling total of crash data identifies six high crash locations in the 2017 to 2019 period. **Table 16-16** depicts total crash characteristics by intersection during the study period, as well as a breakdown of pedestrian and bicycle crashes by year and location. No intersections that would incur 50 or more incremental peak hour PCE vehicle trips in the safety assessment study area are high crash intersections, except Third Avenue and East 77th Street.

## Table 16-15
## Existing and 2030 No Action and With Action Conditions
## Construction and Typical Peak Hour Pedestrian Level of Service Analysis

| Location | Existing Condition | | 2030 No Action Condition | | 2030 With Action Condition | |
|---|---|---|---|---|---|---|
| | SFP | LOS | SFP | LOS | SFP | LOS |
| **Weekday Construction AM Peak Hour** | | | | | | |
| North sidewalk along East 77th Street between Lexington Avenue and Park Avenue | 319.2 | B | 302.9 | B | 137.4 | B |
| South Sidewalk along East 77th Street between Lexington Avenue and Hospital Entrance | 65.3 | C | 61.7 | C | 39.9 | D |
| West sidewalk along Lexington Avenue between East 77th Street and East 76th Street | 285.7 | B | 276.2 | B | 65.9 | C |
| North sidewalk along East 76th Street between Lexington Avenue and Hospital Entrance | 282.6 | B | 384.6 | B | 106.6 | B |
| South Sidewalk along East 77th Street between Park Avenue and Hospital Entrance | 391.3 | B | 337.4 | B | 87.9 | C |
| East Sidewalk along Park Avenue between East 77th Street and East 76th Street | 1,097.1 | A | 1,080.0 | A | 822.8 | A |
| North Sidewalk along East 76th Street between Park Avenue and Hospital Entrance | 371.8 | B | 314.6 | B | 233.2 | B |
| Lexington Avenue and East 77th Street: Southwest Corner | 83.4 | A | 74.8 | A | 45.4 | B |
| Lexington Avenue and East 76th Street: Northwest Corner | 253.0 | A | 229.1 | A | 51.7 | B |
| Park Avenue and East 76th Street: Northeast Corner | 648.3 | A | 525.2 | A | 381.6 | A |
| **Weekday Typical AM Peak Hour** | | | | | | |
| North sidewalk along East 77th Street between Lexington Avenue and Park Avenue | 119.9 | B | 116.7 | B | 52.4 | C |
| South Sidewalk along East 77th Street between Lexington Avenue and Hospital Entrance | 61.3 | C | 59.0 | C | 42.1 | C |
| West sidewalk along Lexington Avenue between East 77th Street and East 76th Street | 81.8 | C | 80.1 | C | 34.2 | D |
| North sidewalk along East 76th Street between Lexington Avenue and Hospital Entrance | 149.4 | B | 217.9 | B | 48.7 | C |
| South Sidewalk along East 77th Street between Park Avenue and Hospital Entrance | 199.3 | B | 185.8 | B | 59.7 | C |
| East Sidewalk along Park Avenue between East 77th Street and East 76th Street | 186.5 | B | 183.6 | B | 161.8 | B |
| North Sidewalk along East 76th Street between Park Avenue and Hospital Entrance | 255.2 | B | 227.6 | B | 169.4 | B |
| Lexington Avenue and East 77th Street: Southwest Corner | 36.8 | C | 34.3 | C | 22.5 | D |
| Lexington Avenue and East 76th Street: Northwest Corner | 89.9 | A | 85.5 | A | 20.0 | D |
| Park Avenue and East 76th Street: Northeast Corner | 135.0 | A | 127.6 | A | 112.7 | A |
| **Weekday Midday Peak Hour** | | | | | | |
| North sidewalk along East 77th Street between Lexington Avenue and Park Avenue | 110.6 | B | 106.2 | B | 47.5 | C |
| South Sidewalk along East 77th Street between Lexington Avenue and Hospital Entrance | 71.5 | C | 66.8 | C | 57.7 | C |
| West sidewalk along Lexington Avenue between East 77th Street and East 76th Street | 104.4 | B | 100.6 | B | 51.7 | C |
| North sidewalk along East 76th Street between Lexington Avenue and Hospital Entrance | 196.6 | B | 254.0 | B | 67.3 | C |
| South Sidewalk along East 77th Street between Park Avenue and Hospital Entrance | 234.5 | B | 203.4 | B | 90.0 | C |
| East Sidewalk along Park Avenue between East 77th Street and East 76th Street | 291.8 | B | 287.6 | B | 219.1 | B |
| North Sidewalk along East 76th Street between Park Avenue and Hospital Entrance | 309.7 | B | 243.7 | B | 184.9 | B |
| Lexington Avenue and East 77th Street: Southwest Corner | 55.5 | B | 50.2 | B | 37.4 | C |
| Lexington Avenue and East 76th Street: Northwest Corner | 126.6 | A | 114.4 | A | 29.3 | C |
| Park Avenue and East 76th Street: Northeast Corner | 214.7 | A | 189.0 | A | 162.0 | A |
| **Weekday Construction PM Peak Hour** | | | | | | |
| North sidewalk along East 77th Street between Lexington Avenue and Park Avenue | 92.6 | B | 89.9 | C | 40.0 | D |
| South Sidewalk along East 77th Street between Lexington Avenue and Hospital Entrance | 61.1 | C | 53.0 | C | 42.0 | C |
| West sidewalk along Lexington Avenue between East 77th Street and East 76th Street | 83.2 | C | 80.1 | C | 36.9 | D |
| North sidewalk along East 76th Street between Lexington Avenue and Hospital Entrance | 159.4 | B | 213.5 | B | 54.4 | C |
| South Sidewalk along East 77th Street between Park Avenue and Hospital Entrance | 183.3 | B | 166.2 | B | 49.9 | C |
| East Sidewalk along Park Avenue between East 77th Street and East 76th Street | 212.3 | B | 208.9 | B | 183.7 | B |
| North Sidewalk along East 76th Street between Park Avenue and Hospital Entrance | 246.3 | B | 200.8 | B | 148.8 | B |
| Lexington Avenue and East 77th Street: Southwest Corner | 43.6 | B | 40.3 | B | 25.1 | C |
| Lexington Avenue and East 76th Street: Northwest Corner | 99.8 | A | 92.8 | A | 22.7 | D |
| Park Avenue and East 76th Street: Northeast Corner | 177.7 | A | 159.5 | A | 134.9 | A |
| **Weekday Typical PM Peak Hour** | | | | | | |
| North sidewalk along East 77th Street between Lexington Avenue and Park Avenue | 83.3 | C | 80.7 | C | 35.7 | D |
| South Sidewalk along East 77th Street between Lexington Avenue and Hospital Entrance | 64.9 | C | 56.1 | C | 47.6 | C |
| West sidewalk along Lexington Avenue between East 77th Street and East 76th Street | 91.1 | B | 87.5 | C | 38.0 | D |
| North sidewalk along East 76th Street between Lexington Avenue and Hospital Entrance | 175.4 | B | 232.4 | B | 57.1 | C |
| South Sidewalk along East 77th Street between Park Avenue and Hospital Entrance | 173.4 | B | 154.8 | B | 45.2 | C |
| East Sidewalk along Park Avenue between East 77th Street and East 76th Street | 221.8 | B | 218.5 | B | 191.9 | B |
| North Sidewalk along East 76th Street between Park Avenue and Hospital Entrance | 279.0 | B | 225.2 | B | 166.6 | B |
| Lexington Avenue and East 77th Street: Southwest Corner | 51.4 | B | 47.2 | B | 29.8 | C |
| Lexington Avenue and East 76th Street: Northwest Corner | 108.7 | A | 101.7 | A | 23.4 | D |
| Park Avenue and East 76th Street: Northeast Corner | 181.2 | A | 162.3 | A | 138.6 | A |

**Table 16-16**
**Crash Data Summary**

| Intersection | | Study Period | | | | | Crashes by Year | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| North-South | East-West | All Crashes by Year | | | Total | Total | Pedestrian | | | Bicycle | | | Ped + Bike 12 consecutive month maximum |
| Roadway | Roadway | 2017 | 2018 | 2019 | Fatalities | Injuries | 2017 | 2018 | 2019 | 2017 | 2018 | 2019 | |
| Second Avenue | East 74th Street | 5 | 8 | 8 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| **Second Avenue** | **East 75th Street** | **2** | **6** | **6** | **0** | **5** | **0** | **2** | **1** | **1** | **1** | **0** | **3** |
| **Second Avenue** | **East 76th Street** | **5** | **12** | **3** | **0** | **10** | **0** | **3** | **1** | **0** | **0** | **1** | **3** |
| Second Avenue | East 77th Street | 5 | 10 | 13 | 0 | 6 | 2 | 0 | 2 | 0 | 0 | 0 | 2 |
| Second Avenue | East 78th Street | 3 | 1 | 6 | 0 | 5 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| **Third Avenue** | **East 72nd Street** | **6** | **11** | **12** | **0** | **13** | **0** | **4** | **3** | **1** | **2** | **2** | **6** |
| Third Avenue | East 73rd Street | 3 | 6 | 4 | 0 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| Third Avenue | East 74th Street | 2 | 5 | 6 | 0 | 6 | 1 | 1 | 1 | 0 | 0 | 0 | 1 |
| Third Avenue | East 75th Street | 0 | 3 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Third Avenue | East 76th Street | 4 | 4 | 5 | 0 | 4 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| **Third Avenue** | **East 77th Street** | **1** | **6** | **5** | **0** | **4** | **0** | **2** | **1** | **0** | **1** | **0** | **3** |
| **Third Avenue** | **East 78th Street** | **5** | **3** | **1** | **0** | **4** | **3** | **0** | **0** | **0** | **1** | **0** | **3** |
| Third Avenue | East 79th Street | 0 | 10 | 8 | 0 | 4 | 0 | 2 | 1 | 0 | 0 | 0 | 2 |
| Third Avenue | East 80th Street | 3 | 6 | 1 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Third Avenue | East 81st Street | 0 | 3 | 3 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Lexington Avenue | East 72nd Street | 2 | 6 | 6 | 0 | 5 | 0 | 0 | 2 | 0 | 0 | 0 | 2 |
| Lexington Avenue | East 73rd Street | 1 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lexington Avenue | East 74th Street | 4 | 10 | 9 | 0 | 9 | 1 | 1 | 1 | 0 | 0 | 1 | 2 |
| Lexington Avenue | East 75th Street | 1 | 3 | 4 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Lexington Avenue | East 76th Street | 3 | 4 | 2 | 0 | 5 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| Lexington Avenue | East 77th Street | 3 | 7 | 7 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Lexington Avenue | East 78th Street | 2 | 5 | 4 | 0 | 3 | 1 | 1 | 0 | 0 | 0 | 1 | 1 |
| Lexington Avenue | East 79th Street | 4 | 7 | 11 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| Lexington Avenue | East 80th Street | 0 | 2 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lexington Avenue | East 81st Street | 1 | 5 | 6 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Lexington Avenue | East 82nd Street | 3 | 4 | 6 | 0 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| Park Avenue | East 79th Street | 7 | 14 | 9 | 0 | 13 | 1 | 0 | 1 | 1 | 0 | 0 | 2 |
| **Madison Avenue** | **East 79th Street** | **8** | **14** | **21** | **1** | **12** | **0** | **1** | **3** | **0** | **0** | **2** | **5** |

**Source:** DOT January 1, 2017 through December 31, 2019 crash data
**Note:** Bold intersections are high accident locations

*Third Avenue and East 77th Street*

Based on the review of the crash history at the intersection of Third Avenue and East 77th Street, the only high crash intersection in the study area, no prevailing trends with regard to geometric deficiencies are identified as the primary causes of recorded crashes. With respect to geometric deficiencies that could potentially cause safety hazards, the intersection of Third Avenue and East 77th Street is signalized and provides four high visibility crosswalks. In addition, regular pedestrian timers are present on all four crosswalks. In terms of project-generated activity, this intersection would experience incremental peak hour volume increases of approximately 56 or fewer project construction generated PCE vehicle trips during each of the two construction traffic peak hours and approximately 8 or fewer pedestrian trips at any crosswalk during each of the five construction pedestrian analysis peak hours. Although there would not be the potential for significant adverse safety impacts at this location from the Proposed Project, as part of its Vision Zero initiative, the City may explore additional measures for potential implementation at this high

crash location and others in the study area to enhance traffic and pedestrian safety. In October 2022, DOT presented to Manhattan Community Board 8 a proposed Complete Streets and Safety Improvements project to add bus and bike lanes to Third Avenue along with other safety features between East 59th and East 96th Street. This project has been implemented, which will improve safety for pedestrians, bicyclists, and vehicles at the Third Avenue and East 77th Street intersection.

*PARKING*

As described above, the estimated number of workers would be 520 per day during peak construction. It is estimated that approximately 45 percent of construction workers would commute to the Project Site by private autos at an average occupancy of approximately 1.30 persons per vehicle, which would generate a maximum parking demand of 180 parking spaces during peak construction. This parking demand is expected to be fully accommodated by parking facilities within a ¼-mile radius of the Project Site, where approximately 670 public parking spaces would be available during the peak morning parking utilization period. To provide continuous pedestrian walkways past the construction areas and off-street truck staging and delivery areas, construction fences in parking lanes during Stages 1 through 3 would be required on both sides of the streets (see **Figure 16-2**). Up to 10 on-street parking spaces each on the north and south sides of East 76th Street and East 77th Street between Park Avenue and Lexington Avenue may be temporarily unusable from construction MPT elements. Additionally, up to 4 on-street parking spaces on the west side of Lexington Avenue and up to 10 on-street parking spaces on the east side of Lexington Avenue between East 77th Street and East 76th Street may be temporarily unusable from construction MPT elements. However, as previously stated, approximately 670 public parking spaces would be available during the peak morning parking utilization period and the up to approximately 54 total on-street parking spaces that may be temporarily unusable could be accommodated within off-street parking facilities. Therefore, the Proposed Project would not result in any significant adverse parking impacts during construction.

## AIR QUALITY

The construction of the Proposed Project would require the use of both non-road construction equipment and on-road vehicles. Non-road construction equipment includes equipment operating on-site, such as cranes, loaders, and excavators. On-road vehicles include worker vehicles and construction trucks arriving to and departing from the Project Site, as well as vehicles operating on-site.

Emissions from non-road construction equipment and on-road vehicles have the potential to affect air quality, as do emissions from dust-generating construction activities (i.e., truck loading and unloading operations). A quantitative analysis of the overall combined impact of both non-road and on-road sources of construction-related air emissions, including dust emissions, was performed to determine the potential for significant adverse impacts from these sources of air emissions generated during construction of the Proposed Project. Chapter 11, "Air Quality," contains a review of these air pollutants; applicable regulations, standards, and benchmarks; and general methodology for the air quality analyses. Additional details relevant only to the construction air quality analysis methodology are presented in this section. Since the peak air emissions period projected to occur during the overlapping of Stage 1 and Stage 2 construction activities would be the same for both Envelope 1 and Envelope 2, the analyses presented below would be the same for Envelope 1 and Envelope 2.

*EMISSIONS REDUCTION MEASURES*

Construction activity in general, and large-scale construction in particular, has the potential to adversely affect air quality as a result of diesel emissions. Measures would be taken to reduce pollutant emissions during construction of the Proposed Project in accordance with applicable laws, regulations, and building codes. These include the use of clean fuel, dust suppression measures, idling restrictions, and diesel equipment reduction:

- *Clean Fuel*. ULSD fuel would be used exclusively for all diesel engines throughout the Project Site.
- *Dust Control.* To minimize dust emissions from construction activities, a dust control plan including a robust watering program would be required. For example, all trucks hauling loose material would be equipped with tight-fitting tailgates and their loads securely covered prior to leaving the Project Site, and water sprays would be used for all demolition, excavation, and transfer of soils so that materials would be dampened as necessary to avoid the release of dust into the air. Stockpiled soils or debris would be watered, stabilized with a chemical suppressing agent, or covered. All measures required by DEP's *Construction Dust Rules* regulating construction-related dust emissions would be implemented.
- *Idling Restriction.* In addition to adhering to the local law restricting unnecessary idling on roadways, on-site vehicle idle time would be restricted to three minutes for all equipment and vehicles not using their engines to operate a loading, unloading, or processing device (e.g., concrete mixing trucks) or for the proper operation of the engine.
- *Diesel Equipment Reduction*. In accordance with the NYC Noise Control Code, as discussed below under "Noise," electrically powered equipment would be preferred over diesel-powered and gasoline-powered versions of that equipment to the extent practicable. Equipment that would use grid power in lieu of diesel engines includes hoists and small equipment (such as welders).

In addition, the following measures, which would be included in the PCREs, would be implemented to further reduce air pollutant emissions during construction of the Proposed Project:

- *Utilization of Newer Equipment.* EPA's Tier 1 through 4 standards for non-road diesel engines regulate the emission of criteria pollutants from new engines, including PM ($PM_{10}$ and $PM_{2.5}$), CO, nitrogen oxide ($NO_x$), and hydrocarbons (HC). All diesel-powered non-road construction equipment 50 horsepower (hp) or greater would meet at least the Tier 3[1] emissions standard.
- *Best Available Tailpipe Reduction Technologies*. Non-road diesel engines with a power rating of 50 hp or greater and controlled truck fleets (i.e., truck fleets under long-term contract), including but not limited to concrete mixing and pumping trucks, would utilize the best available tailpipe (BAT) technology for reducing diesel particulate matter (DPM) emissions. Diesel particulate filters (DPFs) have been identified as being the tailpipe technology currently proven to have the highest reduction capability. Construction contracts would specify that all

[1] The first federal regulations for new non-road diesel engines were adopted by EPA into regulation in a 1998 Final Rulemaking. The 1998 regulation introduces Tier 1 emissions standards for all equipment 50 hp and greater and phases in the increasingly stringent Tier 2 and Tier 3 standards for equipment manufactured in 2000 through 2008. In 2004, EPA introduced Tier 4 emissions standards with a phased-in period of 2008 to 2015. The Tier 1 through 4 standards regulate the EPA criteria pollutants, including PM, HC, $NO_x$ and CO. Prior to 1998, emissions from non-road diesel engines were unregulated. These engines are typically referred to as Tier 0.

diesel non-road engines rated at 50 hp or greater would utilize DPFs, either installed by the original equipment manufacturer or retrofitted. Retrofitted DPFs must be verified by EPA or the California Air Resources Board. Active DPFs or other technologies proven to achieve an equivalent reduction may also be used. The use of DPFs for diesel engines meeting the Tier 3 emissions standard achieves similar emission reductions as the newer Tier 4 particulate matter emission standard.

Overall, this emissions reduction program is expected to substantially reduce diesel emissions. In particular, ULSD and construction equipment rated Tier 3 or higher is now readily available and DPFs are commonly found on construction equipment used in NYC.

*ON-SITE CONSTRUCTION ACTIVITY ASSESSMENT`*

*Analysis Periods*

$PM_{2.5}$ was selected for determining the worst-case periods for all pollutants analyzed because the ratio of predicted $PM_{2.5}$ incremental concentrations to impact criteria was anticipated to be higher than for other pollutants. Therefore, initial estimates of $PM_{2.5}$ emissions throughout the construction years were used for determining the worst-case periods for analysis of all pollutants of concern (PM, CO, $NO_2$). Generally, emission patterns of $PM_{10}$ and $NO_2$ would follow $PM_{2.5}$ emissions since they are related to diesel engines by horsepower. CO emissions may have a somewhat different pattern but would also be anticipated to be highest during periods when the most activity would occur.

Based on the resulting multi-year profiles of annual average and peak day average emissions of $PM_{2.5}$, December 2027 and the 12-month period from March 2027 to February 2028 were identified as the Proposed Project's worst-case short-term and annual construction periods, respectively, since the highest project-wide $PM_{2.5}$ emissions were predicted in these periods. During these times, foundation and structural activities associated with the Proposed Project are anticipated to occur.

Dispersion of the relevant air pollutants from the Project Site during these periods was analyzed. Broader conclusions regarding potential concentrations during non-peak periods are discussed qualitatively, based on the reasonable worst-case analysis period results.

*Engine Emissions*

The sizes, types, and number of units of construction equipment were estimated based on the construction activity schedule developed for the Proposed Project. Emission rates for $NO_{x,}$ CO, $PM_{10}$, and $PM_{2.5}$ from truck engines were developed using the EPA Motor Vehicle Emission Simulator (MOVES3) emission model. Emission factors for $NO_x$, CO, $PM_{10}$, and $PM_{2.5}$ from on-site construction engines were developed using the NONROAD emission module included in the MOVES3 emission model. For the Proposed Project, the emission factor calculations took into account any emissions reduction measures that would be required, as described above, under "Emissions Reduction Measures."

*On-Site Dust Emissions*

In addition to engine emissions, dust emissions from construction operations were calculated based on EPA procedures delineated in AP-42 Table 13.2.3-1. Since construction is required to follow DEP's *Construction Dust Rules* regarding construction-related dust emissions, a 50 percent reduction in particulate emissions from fugitive dust was conservatively assumed in the

calculation (dust control methods, such as wet suppression, would often provide at least a 50 percent reduction in particulate emissions).

*Dispersion Modeling*

Potential impacts from the construction sources associated with the Proposed Project were evaluated using a refined dispersion model, the EPA/ American Meteorological Society (AMS) AERMOD. AERMOD is a state-of-the-art dispersion model, applicable to rural and urban areas, flat and complex terrain, surface and elevated releases, and multiple sources (including point, area, and volume sources). AERMOD is a steady-state plume model that incorporates current concepts about flow and dispersion in complex terrain and includes updated treatments of the boundary layer theory, understanding of turbulence and dispersion, and handling of terrain interactions.

*Source Simulation*

For short-term model scenarios (predicting concentration averages for periods of 24 hours or less), all stationary sources—such as compressors and generators, which are expected to operate in a single location—were simulated as point sources. Other engines, such as excavators and loaders, which would move around the site on any given day, were simulated as area sources. All sources would move around the site throughout the year and were therefore simulated as area sources in the annual analyses.

*Meteorological Data*

The meteorological data set consists of five consecutive years of meteorological data: surface data collected at the LaGuardia Airport National Weather Service Station (2015 to 2019), and concurrent upper air data collected at Brookhaven, New York. The meteorological data provide hour-by-hour wind speeds and directions, stability states, and temperature inversion elevation over the five-year period. These data were processed using the EPA AERMET program to develop data in a format that can be readily processed by the AERMOD model. The land uses around the site where meteorological surface data were available were classified using categories defined in digital United States Geological Survey (USGS) maps.

*Background Concentrations*

To estimate the maximum expected total pollutant concentrations, the calculated impacts from the emission sources must be added to a background value that accounts for existing pollutant concentrations from other sources. The background levels were based on concentrations monitored at the nearest DEC ambient air monitoring stations. **Table 16-17** shows the existing background levels based on concentrations monitored at the nearest DEC ambient air monitoring stations, along with the NAAQS. Data from 2017 to 2019 is proposed for use due to uncertainties in the representativeness of background concentrations in 2020 and 2021 related to the effects of COVID-19.

**Table 16-17**
**Representative Monitored Ambient Air Quality Data**

| Pollutant | Location | Units | Averaging Period | Concentration | NAAQS |
|---|---|---|---|---|---|
| CO | City College of New York | ppm | 1-hour | 2.52 | 35 |
| | | | 8-hour | 1.2 | 9 |
| $PM_{10}$ | IS 52 | $\mu g/m^3$ | 24-hour | 36 | 150 |
| $PM_{2.5}$ | JHS 45 | $\mu g/m^3$ | Annual(1) | 7.6 | 12 |
| | | | 24-hour(2) | 18.3 | 35 |
| $NO_2$ | IS 52 | $\mu g/m^3$ | Annual(3) | 32.8 | 100 |

**Notes:**
ppm—parts per million; $\mu g/m^3$—micrograms per cubic meter
(1) The annual value is based on a three-year average (2017–2019) of annual concentrations.
(2) The 24-hour value is based on the three-year average of the 98th percentile of 24-hour average concentrations.
(3) The annual value is based on the highest annual concentration over the most recent three years (2017–2019).
**Source:** DEC, New York State Ambient Air Quality Data.

*Receptor Locations*

Receptors were placed at residential and other sensitive uses at both ground level and elevated locations, as well as at adjacent sidewalk locations and publicly accessible open spaces.

*ON-ROAD SOURCES*

Since emissions from on-site construction equipment and on-road construction-related vehicles may contribute to concentration increments concurrently, on-road emissions adjacent to the Project Site were included with on-site emissions in the dispersion analysis (in addition to on-site truck and non-road engine activity) to address all local project-related emissions cumulatively.

*On-Road Vehicle Emissions*

Vehicular engine emission factors were computed using the EPA mobile source emissions model MOVES3. This emissions model is capable of calculating engine emission factors for various vehicle types, based on the fuel type (gasoline, diesel, or natural gas), meteorological conditions, vehicle speeds, vehicle age, roadway type and grade, number of starts per day, engine soak time, inspection and maintenance programs, and various other factors that influence emissions. The inputs and use of MOVES incorporate the most current resources available from DEC.[2]

*On-Road Dust Emissions*

$PM_{2.5}$ emission rates were determined with road dust to account for their impacts. Road dust emission factors were calculated according to the latest procedure delineated by EPA.[3] In the analyses, an average weight of 20 tons and 2.6 tons was assumed for construction trucks and worker vehicles, respectively.

[2] DEC, Redesignation Request and Maintenance Plan for the 1997 Annual and 2006 24-Hour $PM_{2.5}$ NAAQS Appendix D – New York State On-Road Motor Vehicle Emission Budget MOVES Technical Support Documentation, June 2013.

[3] EPA, Compilations of Air Pollutant Emission Factors AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources, Ch. 13.2.1, NC, http://www.epa.gov/ttn/chief/ap42, January 2011.

*CONSTRUCTION AIR QUALITY ANALYSIS RESULTS*

Maximum predicted concentrations during the representative worst-case construction periods for the Proposed Project are presented in **Table 16-18**. To estimate the maximum total pollutant concentrations, the modeled concentrations from the Proposed Project were added to a background value that accounts for existing pollutant concentrations from other nearby sources. As shown in **Table 16-18**, the maximum predicted total concentrations of all pollutants are below the applicable NAAQS. Emissions from the other less intensive construction periods would be less than the emissions during the modeled worst-case periods; therefore, the resulting concentrations from the non-peak periods are expected to be less than the concentrations presented in **Table 16-18**. Therefore, construction of the Proposed Project would not result in significant adverse air quality impacts due to construction sources.

**Table 16-18**
**Maximum Pollutant Concentrations – Proposed Project**

| Pollutant | Averaging Period | Units | Maximum Modeled Impact | Background Concentration[1] | Total Concentration | *De minimis* | NAAQS |
|---|---|---|---|---|---|---|---|
| $NO_2$ | Annual | µg/m$^3$ | 6.5 | 32.8 | 39.3 | - | 100 |
| CO | 1-hour | ppm | 8.3 | 2.52 | 10.8 | - | 35 |
| | 8-hour | ppm | 4.4 | 1.2 | 5.6 | - | 9 |
| $PM_{10}$ | 24-hour | µg/m$^3$ | 15.2 | 36 | 51.2 | - | 150 |
| $PM_{2.5}$ | 24-hour | µg/m$^3$ | 2.3 | 18.3 | 20.6 | 8.4[2] | 35 |
| | Annual—Local | µg/m$^3$ | 0.296 | 7.6 | 7.9 | 0.3 | 12 |
| | Annual—Neighborhood | µg/m$^3$ | 0.004 | 7.6 | 7.6 | 0.1 | |

**Notes:** N/A—Not Applicable; ppm—parts per million; µg/m$^3$—micrograms per cubic meter
[1] The background levels are based on the most representative concentrations monitored at DEC ambient air monitoring stations (see Table 16-17).
[2] $PM_{2.5}$ *de minimis* criterion—24-hour average, not to exceed more than half the difference between the background concentration and the 24-hour standard of 35 µg/m$^3$.

## NOISE

Construction of the Proposed Project has the potential to result in noise impacts generated by the operation of construction equipment on the construction site and construction-related vehicles traveling to and from the construction work area on adjacent roadways. The potential for noise impacts due to the construction of the Proposed Project with Envelope 1 and Envelope 2 is discussed below.

*SOUND LEVEL DESCRIPTORS*

Chapter 13, "Noise," defines the sound level descriptors. The 1-hour equivalent sound level ($L_{eq(1)}$) is the noise descriptor recommended for use in the *CEQR Technical Manual* for vehicular traffic and construction noise impact evaluation and is used to provide an indication of highest expected sound levels. The 1-hour $L_{10}$ is the noise descriptor used in the *CEQR Technical Manual* noise exposure guidelines. Thus, the maximum $L_{eq(1)}$ and maximum $L_{10(1)}$ were selected as the noise descriptors used in the construction noise impact evaluation.

*CONSTRUCTION ANALYSIS FUNDAMENTALS*

Construction activities increase noise levels as a result of (1) the operation of construction equipment on site; and (2) the movement of construction-related vehicles (i.e., worker trips, and

material and equipment trips) on the roadways to and from the construction site. The combined effect of each of these noise sources was evaluated.

Noise from the on-site operation of construction equipment at a specific receptor location near a construction site is generally calculated by computing the sum of the noise produced by all pieces of equipment operating at the construction site. For each piece of equipment, the noise level at a receptor location is a function of the following:

- The noise emission level of the equipment;
- A usage factor, which accounts for the percentage of time the equipment is operating at full power;
- The distance between the piece of equipment and the receptor;
- Topography and ground effects; and
- Shielding.

Similarly, noise levels due to construction-related traffic are a function of the following:

- The noise emission levels of the type of vehicle (e.g., auto, light-duty truck, heavy-duty truck, bus, etc.);
- Volume of vehicular traffic on each roadway segment;
- Vehicular speed;
- The distance between the roadway and the receptor;
- Topography and ground effects; and
- Shielding.

*CONSTRUCTION NOISE ANALYSIS METHODOLOGY*

A detailed modeling analysis was conducted to quantify the potential noise effects of construction of the Proposed Project with Envelope 1 or Envelope 2 at noise receptors (e.g., residences, schools, etc.) near the Project Site.

The construction noise methodology followed these steps.

1. *Selected analysis hours for construction mobile source noise analysis.* The 6:00 AM to 7:00 AM hour was selected as the analysis hour because this would be when the highest number of construction worker auto and construction truck trips to and from the construction site would simultaneously occur.
2. *Conducted construction mobile source noise analysis.* At each of the roadway segments analyzed for construction traffic, the construction worker vehicle and construction truck trips during the analysis hour were converted to Noise PCEs and compared with the existing level of Noise PCEs to determine the potential increase in noise levels due to construction-generated trips.
3. *Selected analysis hours for cumulative on-site equipment and construction truck noise analysis.* The 7:00 AM to 8:00 AM hour was selected as the analysis hour because this would be when the highest number of truck trips to and from the construction site would overlap with on-site equipment operation.
4. *Selected receptor locations for cumulative on-site equipment and construction truck noise analysis.* Selected receptors represent open space, residential, or other noise-sensitive uses

potentially affected by the construction associated with the Proposed Project during operation of on-site construction equipment and/or along routes taken to and from the Project Site by construction trucks. Project elements (i.e., buildings) that would be completed and occupied while construction for the Proposed Project is still ongoing were included in the analysis as receptors.

5. *Established existing noise levels at selected receptors*. Measured noise levels from the operational noise analysis were relied upon for the construction noise analysis as well. A CadnaA model representing the existing conditions (including existing building geometry and existing condition traffic levels) was calibrated based on the measured existing noise levels and associated traffic counts and used to calculate baseline noise levels at the other noise receptor locations included in the analysis.
6. *Established worst-case noise analysis periods under the anticipated construction schedule.* The worst-case noise analysis periods are the periods during the construction schedule that are expected to have the greatest potential to result in construction noise effects. The selected time periods are described below in the "Analysis Periods" section.
7. *Calculated construction noise levels for each analysis period at each receptor location.* Given the on-site equipment and construction truck trips expected during each of the analysis periods, and the location of the equipment, which was based on construction logistics diagrams and construction truck and worker vehicle trip assignments, a CadnaA model file for each analysis period was created. All models included each of the construction noise sources during the analysis period and hour, calculation points representing multiple locations on various façades and floors of the associated receptors previously identified, and the noise control measures that would be used on the construction sites.
8. *Determined total noise levels and noise level increments during construction.* For each analysis period and each noise receptor, the calculated level of construction noise was logarithmically added to the existing noise level to determine the cumulative total noise level. The existing noise level at each receptor was then subtracted from the cumulative noise level in each analysis period to determine the noise level increments.
9. *Compared construction noise increments with impact criteria.* For each analysis period and each noise receptor, the predicted noise increments from construction were compared with CEQR noise impact thresholds and additional incremental noise impact criteria, as described below.
10. *Estimated interior noise levels.* At receptors representing interior locations where noise increments due to construction were predicted to exceed incremental construction noise impact thresholds, window/wall attenuation would be estimated based on field observations. Predicted construction noise levels and estimated window/wall attenuation would be used to estimate interior noise levels.
11. *Established construction noise duration.* For each receptor, the noise level increments and interior noise levels in each analysis period were evaluated to determine the duration during construction that the receptor would experience exceedances of impact criteria.
12. *Identified potential construction noise impacts.* At each receptor where exceedances of construction noise impact criteria were predicted, a determination was made as to whether the Proposed Project would have the potential to result in temporary significant adverse construction noise impacts.

*Construction Mobile Source Analysis*

A Noise PCE screening analysis was conducted for noise levels from construction mobile sources. At intersections adjacent to the construction work areas that represent noise-sensitive uses, the construction worker vehicle and construction truck trips during the analysis hour were converted to Noise PCEs and compared to the existing level of Noise PCEs to determine whether there would be a potential doubling that would result in an exceedance of *CEQR Technical Manual* construction noise screening thresholds (i.e., a 3 "A" weighted decibel [dBA][4] increase in noise levels). Construction truck trips that would occur during the construction workday (i.e., after the 6:00 AM to 7:00 AM analysis hour) were included in the modeling of construction noise, as discussed below.

*NOISE RECEPTOR SITES*

A noise-sensitive receptor is defined in Chapter 19, "Noise," Section 114 of the *CEQR Technical Manual* and includes indoor receptors such as residences, hotels, healthcare facilities, nursing homes, schools, commercial offices, houses of worship, court houses, public meeting facilities, museums, libraries, and theaters. Outdoor sensitive receptors include parks, outdoor theaters, golf courses, zoos, campgrounds, and beaches.

Within the study area, multiple receptor locations close to the construction areas were selected for the construction noise analysis to represent buildings or noise-sensitive open space locations that have the potential to experience elevated noise as a result of construction. These receptors were located adjacent to planned areas of activity or streets where construction trucks would pass. At some buildings, multiple façades were analyzed as receptors. At high-rise buildings, noise receptors at multiple elevations were analyzed. Receptors at street level were used to represent open space locations. The receptor sites selected for detailed analysis represent locations where maximum project effects due to construction noise would be expected.

Within the study area, 257 receptor locations were selected for the construction noise analysis. **Table 16-19** lists the noise measurement sites (i.e., sites M1 to M4) as well as the noise receptor sites (i.e., sites 1 to 257) and the associated land use at these sites. Noise receptor locations are shown in **Figure 16-36**.

*Construction Noise Modeling*

Noise effects from construction activities were evaluated using the CadnaA model, a computerized model developed by DataKustik for noise prediction and assessment, that can be used for the analysis of a wide variety of noise sources, including stationary sources (e.g., construction equipment, industrial equipment, power generation equipment), transportation sources (e.g., roads, highways, railroad lines, busways, airports), and other specialized sources (e.g., sporting facilities). The model takes into account the reference sound pressure levels of the noise sources at 50 feet, attenuation with distance, ground contours, reflections from barriers and structures, attenuation due to shielding, etc. The CadnaA model is based on the acoustic propagation standards promulgated in International Standard ISO 9613-2. This standard is currently under review for adoption by the American National Standards Institute (ANSI) as an American

[4] In order to establish a uniform noise measurement that simulates people's perception of loudness and annoyance, the decibel measurement is weighted to account for those frequencies most audible to the human ear. This is known as the A-weighted sound level, or "dBA," and it is the descriptor of noise levels most often used for community noise.




Construction Noise Receptor Locations

**LENOX HILL HOSPITAL REDEVELOPMENT**

**Figure 16-36**

Standard. The CadnaA model is a state-of-the-art tool for noise analysis and is approved for construction noise level prediction by the *CEQR Technical Manual*.

Geographic input data used with the CadnaA model included site work areas, adjacent building footprints and heights, locations of streets, and locations of sensitive receptors. For each analysis period, the approximate geographic location and operational characteristics—including equipment usage rates (percentage of time operating at full power) for each piece of construction equipment operating at the Project Site, as well as noise control measures—were input to the model.

Construction equipment source strength was determined by the $L_{max}$ levels (i.e., the maximum instantaneous sound pressure level, or the highest single reading over a measurement period) presented in Table 22-1 of the *CEQR Technical Manual*. For construction equipment not included in this table, other reference sources, manufacturer specifications, or field measured noise levels were used.

Reflections and shielding by barriers erected on the construction site and shielding from adjacent buildings were accounted for in the model. In addition, construction-related vehicles were assigned to the adjacent roadways. The model produced A-weighted $L_{eq(1)}$ noise levels at each receptor location for each analysis period, as well as the contribution from each noise source. The $L_{10(1)}$ noise levels were conservatively estimated by adding 3 dBA to the $L_{eq(1)}$ noise levels, as is standard practice.[5]

**Table 16-19**
**Noise Receptors by Location and Land Use**

| Receptor | Location | Block / Lot | Associated Land Use |
|---|---|---|---|
| M1 | East 77th Street between Park Avenue and Lexington Avenue | N/A | N/A |
| M2 | Lexington Avenue between East 76th and East 77th Streets | N/A | N/A |
| M3 | East 76th Street between Park Avenue and Lexington Avenue | N/A | N/A |
| M4 | Park Avenue between East 76th and East 77th Streets | N/A | N/A |
| 1 | 800 Park Avenue | Block 1389 / Lot 36 | Residential |
| 2–4 | 812 Park Avenue | Block 1389 / Lot 38 | Residential |
| 5 | 38 East 75th Street | Block 1389 / Lot 45 | Residential |
| 6, 7 | 945 Madison Avenue | Block 1389 / Lot 50 | Public Facilities and Institutions |
| 8–11 | 955 Madison Avenue | Block 1390 / Lot 23 | Residential |
| 12 | 45 East 75th Street | Block 1390 / Lot 28 | Public Facilities and Institutions |
| 13–16 | 820 Park Avenue | Block 1390 / Lot 35 | Residential |
| 17–21 | 830 Park Avenue | Block 1390 / Lot 37 | Residential |
| 22 | 57 East 75th Street | Block 1390 / Lot 132 | Residential |
| 23, 24 | 971 Madison Avenue | Block 1390 / Lot 7501 | Residential with Commercial Below |
| 25, 26 | 32 East 76th Street | Block 1390 / Lot 7502 | Residential with Commercial Below |
| 27–30 | 981 Madison Avenue | Block 1391 / Lot 21 | Hotels |
| 31 | 55 East 76th Street | Block 1391 / Lot 29 | Residential |
| 32 | 65 East 76th Street | Block 1391 / Lot 31 | Residential with Commercial Below |
| 33–36 | 840 Park Avenue | Block 1391 / Lot 34 | Residential with Commercial Below |
| 37–41 | 850 Park Avenue | Block 1391 / Lot 40 | Residential with Commercial Below |
| 42, 43 | 70 East 77th Street | Block 1391 / Lot 45 | Residential with Commercial Below |
| 44 | 64 East 77th Street | Block 1391 / Lot 49 | Residential |
| 45–47 | 987 Madison Avenue | Block 1391 / Lot 54 | Residential with Commercial Below |
| 48 | 57 East 77th Street | Block 1392 / Lot 26 | Residential |

[5] Federal Highway Administration Roadway Construction Noise Model User's Guide, Page 15. http://www.fhwa.dot.gov/environment/noise/construction_noise/rcnm/rcnm.pdf

**Table 16-19 (cont'd)**
**Noise Receptors by Location and Land Use**

| Receptor | Location | Block / Lot | Associated Land Use |
|---|---|---|---|
| 49 | 61 East 77th Street | Block 1392 / Lot 28 | Public Facilities and Institutions |
| 50, 51 | 71 East 77th Street | Block 1392 / Lot 30 | Residential with Commercial Below |
| 52, 53 | 77 East 77th Street | Block 1392 / Lot 34 | Residential |
| 54–56 | 860 Park Avenue | Block 1392 / Lot 36 | Residential |
| 57–59 | 876 Park Avenue | Block 1392 / Lot 40 | Residential |
| 60, 61 | 56 East 78th Street | Block 1392 / Lot 44 | Public Facilities and Institutions |
| 62, 63 | 52 East 78th Street | Block 1392 / Lot 46 | Residential |
| 64 | 50 East 78th Street | Block 1392 / Lot 47 | Residential with Commercial Below |
| 65-68 | 1009 Madison Avenue | Block 1392 / Lot 7501 | Residential |
| 69 | 59 East 78th Street | Block 1393 / Lot 30 | Residential |
| 70–74 | 888 Park Avenue | Block 1393 / Lot 33 | Residential |
| 75, 76 | 898 Park Avenue | Block 1393 / Lot 38 | Residential |
| 77 | 74 East 79th Street | Block 1393 / Lot 40 | Residential |
| 78 | 66 East 79th Street | Block 1393 / Lot 43 | Residential with Commercial Below |
| 79 | 58 East 79th Street | Block 1393 / Lot 46 | Commercial and Office Buildings |
| 80, 81 | 50 East 79th Street | Block 1393 / Lot 52 | Residential with Commercial Below |
| 82 | 799 Park Avenue | Block 1409 / Lot 1 | Residential |
| 83 | 121 East 74th Street | Block 1409 / Lot 9 | Residential |
| 84 | 1033 Lexington Avenue | Block 1409 / Lot 21 | Residential with Commercial Below |
| 85 | 177 East 74th Street | Block 1409 / Lot 33 | Residential with Commercial Below |
| 86, 87 | 1296 Third Avenue | Block 1409 / Lot 40 | Residential with Commercial Below |
| 88, 89 | 1055 Lexington Avenue | Block 1409 / Lot 52 | Residential with Commercial Below |
| 90 | 120 East 75th Street | Block 1409 / Lot 61 | Residential |
| 91 | 112 East 75th Street | Block 1409 / Lot 68 | Public Facilities and Institutions |
| 92, 93 | 815 Park Avenue | Block 1409 / Lot 69 | Residential |
| 94, 95 | 1040 Lexington Avenue | Block 1409 / Lot 7502 | Residential with Commercial Below |
| 96, 97 | 1036 Lexington Avenue | Block 1409 / Lot 7503 | Residential with Commercial Below |
| 98, 99 | 103 East 75th Street | Block 1410 / Lot 5 | Residential |
| 100–102 | 1056 Lexington Avenue | Block 1410 / Lot 14 | Residential with Commercial Below |
| 103, 104 | 177 East 75th Street | Block 1410 / Lot 33 | Residential with Commercial Below |
| 105 | 184 East 76th Street | Block 1410 / Lot 42 | Public Facilities and Institutions |
| 106-109 | 1067 Lexington Avenue | Block 1410 / Lot 53 | Public Facilities and Institutions |
| 110–112 | 122 East 76th Street | Block 1410 / Lot 64 | Residential with Commercial Below |
| 113, 114 | 118 East 76th Street | Block 1410 / Lot 65 | Residential |
| 115, 116 | 110 East 76th Street | Block 1410 / Lot 68 | Residential |
| 117–120 | 829 Park Avenue | Block 1410 / Lot 69 | Residential |
| 121–123 | 1068 Lexington Avenue | Block 1410 / Lot 7501 | Residential with Commercial Below |
| 124–127 | 1065 Lexington Avenue | Block 1410 / Lot 7502 | Residential with Commercial Below |
| 128, 129 | 188 East 76th Street | Block 1410 / Lot 7503 | Residential with Commercial Below |
| 130, 131 | 823 Park Avenue | Block 1410 / Lot 7504 | Residential |
| 132–134 | 151 East 76th Street | Block 1411 / Lot 23 | Residential |
| 135, 136 | 191 East 76th Street | Block 1411 / Lot 31 | Residential with Commercial Below |
| 137–140 | 1334 Third Avenue | Block 1411 / Lot 40 | Residential with Commercial Below |
| 141–144 | 1091 Lexington Avenue | Block 1411 / Lot 53 | Residential with Commercial Below |
| 145, 146 | 145 East 76th Street | Block 1411 / Lot 7501 | Residential |
| 147–150 | 170 East 77th Street | Block 1411 / Lot 7502 | Residential with Commercial Below |
| 151–155 | 865 Park Avenue | Block 1412 / Lot 1 | Residential |
| 156–159 | 103 East 77th Street | Block 1412 / Lot 5 | Public Facilities and Institutions |
| 160–164 | 117 East 77th Street | Block 1412 / Lot 12 | Residential |
| 165, 166 | 1104 Lexington Avenue | Block 1412 / Lot 16 | Residential with Commercial Below |
| 167, 168 | 1101 Lexington Avenue | Block 1412 / Lot 22 | Residential with Commercial Below |
| 169–171 | 153 East 77th Street | Block 1412 / Lot 23 | Residential with Commercial Below |
| 172, 173 | 167 East 77th Street | Block 1412 / Lot 29 | Residential |
| 174, 175 | 164 East 78th Street | Block 1412 / Lot 46 | Residential |

**Table 16-19 (cont'd)**
**Noise Receptors by Location and Land Use**

| Receptor | Location | Block / Lot | Associated Land Use |
|---|---|---|---|
| 176 | 156 East 78th Street | Block 1412 / Lot 49 | Residential |
| 177–179 | 138 East 78th Street | Block 1412 / Lot 57 | Residential with Commercial Below |
| 180–183 | Allen-Stevenson School – 132 East 78th Street | Block 1412 / Lot 58 | School |
| 184, 185 | 120 East 78th Street | Block 1412 / Lot 63 | Residential |
| 186, 187 | 114 East 78th Street | Block 1412 / Lot 65 | Residential with Commercial Below |
| 188, 189 | 106 East 78th Street | Block 1412 / Lot 68 | Residential with Commercial Below |
| 190–196 | 875 Park Avenue | Block 1412 / Lot 71 | Residential with Commercial Below |
| 197, 198 | 1109 Lexington Avenue | Block 1412 / Lot 120 | Residential with Commercial Below |
| 199 | 158 East 78th Street | Block 1412 / Lot 148 | Residential |
| 200, 201 | 170 East 78th Street | Block 1412 / Lot 7501 | Residential with Commercial Below |
| 202–205 | 188 East 78th Street | Block 1412 / Lot 7502 | Residential with Commercial Below |
| 206, 207 | 177 East 77th Street | Block 1412 / Lot 7503 | Residential |
| 208–210 | 150 East 78th Street | Block 1412 / Lot 7504 | Residential with Commercial Below |
| 211–214 | 883 Park Avenue | Block 1413 / Lot 1 | Residential with Commercial Below |
| 215 | 111 East 78th Street | Block 1413 / Lot 8 | Residential |
| 216 | 121 East 78th Street | Block 1413 / Lot 111 | Residential |
| 217, 218 | 1120 Lexington Avenue | Block 1413 / Lot 16 | Residential with Commercial Below |
| 219, 220 | 1125 Lexington Avenue | Block 1413 / Lot 20 | Residential with Commercial Below |
| 221, 222 | 167 East 78th Street | Block 1413 / Lot 27 | Residential |
| 223, 224 | 180 East 79th Street | Block 1413 / Lot 40 | Residential with Commercial Below |
| 225 | 168 East 79th Street | Block 1413 / Lot 45 | Residential |
| 226 | 156 East 79th Street | Block 1413 / Lot 50 | Residential with Commercial Below |
| 227 | 136 East 79th Street | Block 1413 / Lot 57 | Residential |
| 228 | 120 East 79th Street | Block 1413 / Lot 64 | Residential |
| 229, 230 | 893 Park Avenue | Block 1413 / Lot 71 | Residential with Commercial Below |
| 231 | 124 East 79th Street | Block 1413 / Lot 7501 | Residential |
| 232 | 179 East 78th Street | Block 1413 / Lot 7502 | Residential |
| 233–235 | 153 East 78th Street | Block 1413 / Lot 7503 | Residential |
| 236, 237 | 201 East 77th Street | Block 1432 / Lot 1 | Residential |
| 238 | 1359 Third Avenue | Block 1432 / Lot 45 | Residential |
| 239 | 205 East 78th Street | Block 1433 / Lot 7501 | Residential with Commercial Below |
| 240 | 73 East 79th Street | Block 1491 / Lot 30 | Residential |
| 241 | 900 Park Avenue | Block 1491 / Lot 7501 | Residential with Commercial Below |
| 242 | 903 Park Avenue | Block 1508 / Lot 1 | Residential |
| 243 | 135 East 79th Street | Block 1508 / Lot 7501 | Residential with Commercial Below |
| 244 | 109 East 79th Street | Block 1508 / Lot 7503 | Residential |
| 245–256 | Lenox Hill Hospital | Block 1411 / Lot 1 | Public Facilities and Institutions |
| 257 | Proposed Project – Projected Development Site 1a | Block 1412 / Lot 10 | Public Facilities and Institutions |

*Determination of Non-Construction Noise Levels*

Noise generated by construction activities (calculated using the CadnaA model as described above) was added to baseline (i.e., non-construction) noise levels, including noise generated by non-construction traffic on adjacent roadways, to determine the total noise levels at each receptor location. Baseline noise levels were calculated using the CadnaA model using existing condition traffic data. The existing conditions CadnaA model included the noise measurement locations described in Chapter 13, "Noise," for the purpose of validating the calculated existing condition noise level modeling.

*ANALYSIS TIME PERIOD SELECTION*

The construction noise analysis estimated construction noise levels based on projected activity and equipment usage, as well as the level of construction traffic for various stages of construction of the Proposed Project.

Based on the anticipated construction schedule and preliminary construction estimates developed for the Proposed Project with Envelope 1 and Envelope 2, specific time periods during construction were selected for detailed analysis. The periods were selected to capture each major construction stage (e.g., demolition work, excavation/foundation work, superstructure work) at the buildings to be constructed, including major overlaps of construction stages. These would be the time periods with the potential to result in the maximum incremental construction noise at nearby receptors. Each analysis time period conservatively represented 1 to 13 months of time based on the duration of activities that would be underway during the time period. During some portions of the construction schedule in which only interior work would be occurring, as shown in **Figures 16-1a and 16-1b** (e.g., Stage 2 and 3 interior fit-out), an exterior hoist would still have the potential to generate noise, and these phases have consequently been included in the construction noise analysis periods. The portion of Stage 4 occurring after completion of Stage 3 (i.e., after month 92 of construction), which is entirely interior renovations, does not include any exterior noise-generating equipment and is therefore not shown in the analysis periods.

The 14 time periods selected for the detailed construction noise analysis are shown in **Table 16-20**.

**Table 16-20**
**Summary of Construction Noise Analysis Periods**

| Envelope 1 Analysis Period | Envelope 1 Construction Activities | Envelope 2 Analysis Period | Envelope 2 Construction Activities |
|---|---|---|---|
| Months 1–9 | Stage 1 – Demolition<br>Stage 2 – Demolition | Months 1–9 | Stage 1 – Demolition<br>Stage 2 – Demolition |
| Months 10–12 | Stage 1 – Foundations<br>Stage 2 – Demolition | Months 10–12 | Stage 1 – Foundations<br>Stage 2 – Demolition |
| Months 13–16 | Stage 1 – Foundations<br>Stage 2 – Foundations | Months 13–16 | Stage 1 – Foundations<br>Stage 2 – Foundations |
| Months 17–26 | Stage 1 – Superstructure, Façade, Interior Fit-Out<br>Stage 2 – Foundations | Months 17–26 | Stage 1 – Superstructure, Façade, Interior Fit-Out<br>Stage 2 – Foundations |
| Months 27–34 | Stage 1 – Interior Fit-Out<br>Stage 2 – Superstructure | Months 27–34 | Stage 1 – Interior Fit-Out<br>Stage 2 – Superstructure |
| Months 35–38 | Stage 1 – Sitework and Interior Fit-Out<br>Stage 2 – Superstructure, Façade, Interior Fit-Out | Months 35–38 | Stage 1 – Sitework and Interior Fit-Out<br>Stage 2 – Superstructure, Façade, Interior Fit-Out |
| Months 39–45 | Stage 2 – Superstructure, Façade, Interior Fit-Out | Months 39–45 | Stage 2 – Superstructure, Façade, Interior Fit-Out |
| Months 46–57 | Stage 2 – Façade, Interior Fit-Out | Months 46–57 | Stage 2 – Façade, Interior Fit-Out |
| Months 58–63 | Stage 2 – Interior Fit-Out<br>Stage 3 – Demolition | Months 58–63 | Stage 2 – Interior Fit-Out<br>Stage 3 – Demolition |
| Months 64 and 65 | Stage 2 – Sitework, Interior Fit-Out<br>Stage 3 – Foundations | Months 64 and 65 | Stage 2 – Sitework, Interior Fit-Out<br>Stage 3 – Foundations |
| Months 66–70 | Stage 3 – Foundations | Months 66–71 | Stage 3 – Foundations |
| Months 71–75 | Stage 3 – Superstructure, Façade, Interior Fit-Out | Months 72–77 | Stage 3 – Superstructure, Façade, Interior Fit-Out |
| Months 76–86 | Stage 3 – Façade, Interior Fit-Out | Months 78–86 | Stage 3 – Superstructure, Façade, Interior Fit-Out |
| Months 87 and 88 | Stage 3 – Sitework, Interior Fit-Out | Months 87–99 | Stage 3 – Sitework, Interior Fit-Out |

**Note:** Stage 1 is the term used on the construction schedule to describe construction on Projected Development Site 1a.

*CONSTRUCTION NOISE IMPACT CRITERIA*

Chapter 22 of the *CEQR Technical Manual* breaks construction duration into "short-term" and "long-term" and states that construction noise is not likely to require analysis unless it "affects a sensitive receptor over a long period of time." Consequently, the construction noise analysis considers the potential for construction of a project to create high noise levels (the "intensity"), whether construction noise would occur for an extended period of time (the "duration"), and the locations where construction has the potential to increase noise ("receptors") in evaluating potential construction noise effects.

The noise impact criteria described in Chapter 19, Section 410 of the *CEQR Technical Manual* serve as a screening-level threshold for potential construction noise impacts. If construction of a proposed

project would not result in any exceedances of these criteria at a given receptor, then that receptor would not have the potential to experience a construction noise impact.

If noise levels during construction would exceed the screening thresholds at a given receptor, the specific intensity and duration of construction noise level increases would be considered further to determine the potential for temporary significant adverse impacts. Noise level increases that would be considered "objectionable" (i.e., equal to or greater than 15 dBA) lasting 12 consecutive months or more and noise level increases considered "very objectionable" (i.e., equal to or greater than 20 dBA)[6] lasting three consecutive months or more could be considered significant adverse impacts.

For receptors representing interior spaces (i.e., not open space) where construction of the Proposed Project is predicted to result in objectionable noise level increments lasting 12 consecutive months or more or very objectionable noise level increments lasting three consecutive months or more, and where the façade attenuation can be determined based on readily available information, interior noise levels may also be considered in the determination of impact significance. Portions of the construction period during which predicted interior noise levels would be in the acceptable range (i.e., not greater than 45 dBA for residential and community facility uses or not greater than 50 dBA for commercial office uses) would not be counted toward the consecutive duration of construction noise impact as described above.

*EVALUATION OF CONSTRUCTION NOISE LEVELS*

The predicted exterior noise level increments during construction of the Proposed Project at the analyzed receptor sites were compared with the construction noise impact thresholds described above. At the noise-sensitive receptors that experienced exceedances of these thresholds during the analysis periods as determined above, the duration of exceedance of each impact threshold was determined. The significance of exceedances was determined based on the predicted magnitude and duration of the construction noise at these locations according to the criteria described above. Based on the incremental noise level increase, overall exterior noise levels for each analysis period were also determined.

*NOISE REDUCTION MEASURES*

Construction of the Proposed Project would be required to follow the requirements of the NYC Noise Control Code (also known as Chapter 24 of the *Administrative Code of the City of New York,* or Local Law 113) for construction noise control measures. Specific noise control measures would be incorporated in noise mitigation plan(s) required under the NYC Noise Control Code. These measures would include a variety of source and path controls.

In terms of source controls (i.e., reducing noise levels at the source or during the most sensitive time periods), the following measures, included under NYC regulations, would be implemented:

- Equipment that meets the sound level standards specified in Subchapter 5 of the NYC Noise Control Code and Table 22-1 of the *CEQR Technical Manual* would be utilized from the start

[6] Definition of "objectionable" and "very objectionable" noise level increases based on Table B from the "New York State Department of Environmental Conservation Assessing and Mitigating Noise Impacts" policy manual, revised February 2001.

of construction. **Table 16-21** shows the noise levels for typical construction equipment that would be used for construction of the Proposed Project.

- As early in the construction period as logistics allow, diesel- or gas-powered equipment would be replaced with electrical-powered equipment (such as welders, water pumps, bench saws, and table saws [i.e., early electrification]) to the extent feasible and practicable. Where electrical equipment cannot be used, diesel or gas-powered generators and pumps would be located within buildings to the extent feasible and practicable.
- The construction site would be configured to minimize back-up alarm noise. In addition, no trucks would be allowed to idle more than three minutes at the construction site based upon Title 24, Chapter 1, Subchapter 7, Section 24-163 of the NYC Administrative Code.
- Contractors and subcontractors would be required to properly maintain their equipment and mufflers.

In addition, the source controls listed below would be implemented as PCREs beyond NYC regulations for the construction of the Proposed Project:

- As shown in **Table 16-21**, equipment such as compressors and impact wrenches would be required to meet the mandated noise levels to be used for construction of the Proposed Project.
- Pile installation and foundation elements would be constructed by drilling rather than impact driving.
- In lieu of a generator, power during Stage 3 construction would be drawn from the existing Con Edison grid.

In terms of path controls (e.g., placement of equipment, implementation of barriers or enclosures between equipment and sensitive receptors), the following measures, under NYC regulations, would be implemented:

- Noisy equipment, such as cranes, concrete pumps, concrete trucks, and delivery trucks, would be located away from and shielded from sensitive receptor locations to the extent practicable given site limitations (i.e., receptors on multiple sides).
- Noise barriers constructed from plywood or other materials would be utilized to provide shielding (e.g., the construction site would have a minimum 8-foot-tall barrier around the perimeter).
- Path noise control measures (i.e., portable noise barriers, panels, enclosures, and acoustical tents) would be implemented for certain equipment as necessary to remain consistent with **Table 16-21**. The details to construct portable noise barriers, enclosures, tents, etc. are shown in DEP's *Rules for Citywide Construction Noise Mitigation.*[7]

[7] As found at http://www.nyc.gov/html/dep/pdf/noise_constr_rule.pdf

**Table 16-21**
**Construction Equipment Noise Emissions in dBA**

| Equipment List | Typical $L_{max}$ Noise Level at 50 feet[1] |
|---|---|
| Auger Drill Rig | 85 |
| Backhoe | 80 |
| Bar Bender | 80 |
| Compactor (ground) | 80 |
| Compressor | 75[2] |
| Concrete Mixer Truck | 85 |
| Concrete Pump Truck | 82 |
| Concrete Trowel | 70[3] |
| Concrete Vibrator | 76[4] |
| Crane | 85 |
| Excavator | 85 |
| Front End Loader | 80 |
| Generator | 82 |
| Hoist | 75 |
| Impact Wrench | 76[2] |
| Jackhammer | 85 |
| Pavement Scarafier | 85 |
| Paver | 85 |
| Pumps | 77 |
| Roller | 85 |
| Saw | 76 |
| Vibratory Concrete Mixer | 80 |
| Welder / Torch | 73 |

**Notes:**
[1] Rules for Citywide Construction Noise Mitigation, Chapter 28, DEP, 2007, except where noted.
[2] Project Commitment.
[3] Previous project equipment noise certification.
[4] Federal Transit Administration (FTA), Report No. 0123 September 2018, Table 7-1 Construction Equipment Noise Emission Levels.

In addition, the path controls listed below would be implemented as PCREs beyond NYC regulations for the construction of the Proposed Project:

- Throughout the construction period, concrete operations would be located within the construction barrier.
- During Stage 2 and Stage 3 of construction, noise barriers along East 76th Street would be 12 feet tall and cantilevered towards the work area, and 8 feet tall along any remaining perimeter.

*CONSTRUCTION NOISE ANALYSIS RESULTS*

*Envelope 1 and Envelope 2 Construction Mobile Sources (6:00 AM to 7:00 AM)*

With Envelope 1 or Envelope 2, construction worker vehicles and trucks traveling on roadways prior to the start of the construction workday would have the potential to generate noise at receptors along the routes used to access the construction sites. Using the methodology described above, construction worker vehicles and trucks traveling to and from the construction site between 6:00 AM and 7:00 AM were estimated. Since the maximum volume of construction-generated vehicular traffic would occur during a point in the construction schedule that is the same with Envelope 1 or Envelope 2, the construction mobile source analysis is the same for both envelopes.

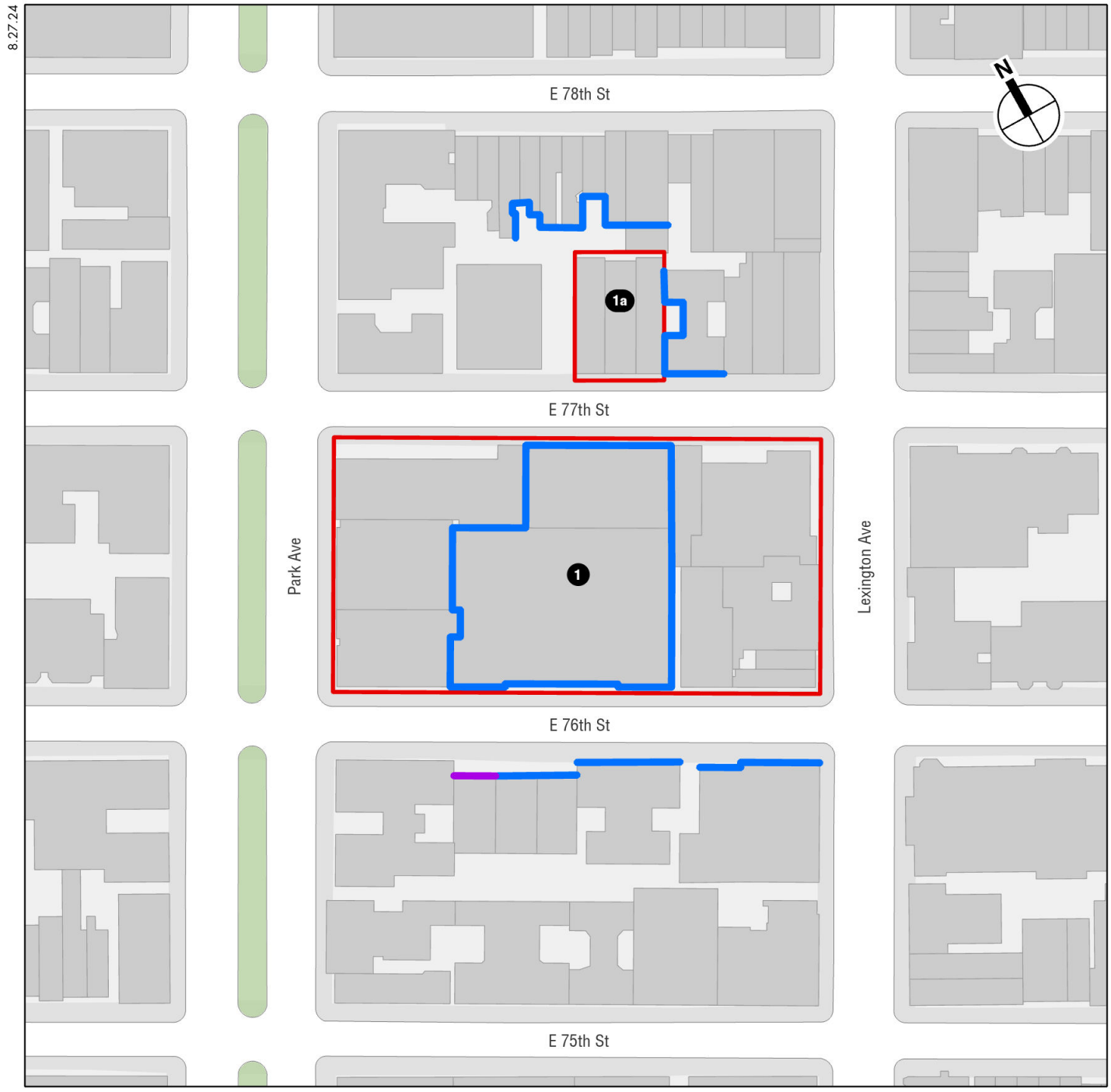
Noise resulting from vehicular activity associated with construction of the Proposed Project with Envelope 1 or Envelope 2 would not result in a significant increase in noise levels (i.e., would not result in a doubling of Noise PCEs, which would be necessary to produce a 3 dBA noise level increase) on any roadways other than East 76th Street between Park and Third Avenues, and would therefore not rise to the level of a significant adverse impact. At East 76th Street between Park and Third Avenues, construction traffic was estimated to result in an up to approximately 6 dBA noise level increase, with total $L_{10}$ noise levels in the mid 70s dBA (i.e., in the "marginally unacceptable" category according to *CEQR Technical Manual* noise exposure guidance). These noise level projections associated with construction worker and truck deliveries are conservative in that they reflect the maximum vehicle volumes that would occur throughout the entire construction period, whereas periods of construction activity that result in fewer workers and truck deliveries would result in smaller noise level increments from vehicular traffic. While vehicular activity associated with construction of the Proposed Project would have the potential to result in noise level increases that slightly exceed the CEQR construction noise screening thresholds and that would be noticeable at receptors along this roadway segment, the maximum noise level increases would not be considered "objectionable" or "very objectionable" (i.e., would not reach or exceed 15 dBA or 20 dBA, respectively). Consequently, while noise due to construction traffic at these receptors may be perceptible at times, it would not rise to the level of a significant adverse impact according to the impact criteria described above.

Construction vehicles traveling to and from the construction site during the construction workday are included in the detailed construction noise analyses described below.

*Envelope 1 Cumulative On-Site and Mobile Construction Noise Sources*

Using the methodology described and considering the noise abatement measures specified above, a cumulative noise analysis was performed to determine the $L_{eq(1)}$ noise levels that would be expected at each of the 257 noise receptor locations during each of the 14 selected construction periods resulting from construction with Envelope 1. The full results of the detailed construction noise analysis are shown in **Appendix E**.

The results of the detailed construction noise analysis with Envelope 1 at locations where "objectionable" and "very objectionable" noise level increases would occur are summarized in **Table 16-22**. Locations at which significant adverse construction noise impacts would occur with Envelope 1 are shown in **Figure 16-37**.




Construction Noise Impacts under Envelope 1 and Envelope 2

**Table 16-22**
**Envelope 1 Construction Noise Analysis Results in dBA**

| Receptor | Address | Existing $L_{10}$ | Max Total $L_{10}$ | Max Change in $L_{10}$ | Maximum Consecutive Duration (months) | |
|---|---|---|---|---|---|---|
| | | | | | "Objectionable" Increase | "Very Objectionable" Increase |
| 111 | 122 East 76th Street | 66.2 | 81.5 | 15.3 | 3 | 0 |
| 112 | 122 East 76th Street | 67.0 | 87.1 | 20.8 | 18 | 6 |
| 113 | 118 East 76th Street | 66.2 | 87.2 | 21.0 | 18 | 6 |
| 115 | 110 East 76th Street | 66.2 | 85.8 | 19.6 | 8 | 0 |
| 117 | 829 Park Avenue | 67.9 | 82.0 | 15.7 | 6 | 0 |
| 121 | 1068 Lexington Avenue | 68.2 | 84.9 | 17.6 | 12 | 0 |
| 122 | 1068 Lexington Avenue | 66.2 | 82.2 | 16.0 | 6 | 0 |
| 141 | 1091 Lexington Avenue | 73.1 | 85.4 | 15.1 | 9 | 0 |
| 145 | 145 East 76th Street | 73.5 | 85.1 | 15.0 | 9 | 0 |
| 156 | 103 East 77th Street | 66.2 | 85.6 | 19.3 | 10 | 0 |
| 159 | 103 East 77th Street | 66.2 | 85.1 | 18.8 | 10 | 0 |
| 160 | 117 East 77th Street | 66.2 | 86.4 | 20.2 | 26 | 4 |
| 162 | 117 East 77th Street | 66.2 | 82.1 | 15.9 | 4 | 0 |
| 163 | 117 East 77th Street | 66.2 | 87.0 | 20.8 | 26 | 9 |
| 164 | 117 East 77th Street | 66.2 | 86.9 | 20.7 | 26 | 9 |
| 165 | 1104 Lexington Avenue | 69.4 | 83.1 | 15.0 | 3 | 0 |
| 180 | Allen-Stevenson School – 132 East 78th Street | 67.0 | 82.8 | 16.0 | 10 | 0 |
| 183 | Allen-Stevenson School – 132 East 78th Street | 66.2 | 82.3 | 16.1 | 9 | 0 |
| 185 | 120 East 78th Street | 66.2 | 86.5 | 20.3 | 26 | 4 |
| 187 | 114 East 78th Street | 66.2 | 83.6 | 17.4 | 16 | 0 |
| 245 | Lenox Hill Hospital | 66.2 | 85.9 | 19.7 | 12 | 0 |
| 246 | Lenox Hill Hospital | 66.2 | 85.3 | 19.0 | 26 | 0 |
| 250 | Lenox Hill Hospital | 66.4 | 86.0 | 19.8 | 18 | 0 |
| 251 | Lenox Hill Hospital | 66.2 | 91.2 | 25.0 | 18 | 18 |
| 252 | Lenox Hill Hospital | 66.2 | 91.7 | 25.5 | 18 | 18 |
| 253 | Lenox Hill Hospital | 66.2 | 91.2 | 25.0 | 18 | 18 |
| 254 | Lenox Hill Hospital | 66.2 | 85.2 | 18.9 | 8 | 0 |
| 255 | Lenox Hill Hospital | 66.2 | 84.7 | 18.4 | 34 | 0 |
| 256 | Lenox Hill Hospital | 66.2 | 86.7 | 20.5 | 34 | 14 |

The noise levels shown in **Table 16-22** are maximum $L_{10(1)}$ noise levels; however, noise levels resulting from construction typically fluctuate throughout the day and from day to day during each construction phase and would not be sustained at these maximum values. Additionally, noise levels expected to result from the construction of the Proposed Project would be comparable to those from typical construction sites in NYC involving a new building with concrete slab floors and foundation. Similarly, potential disruptions to adjacent residences and other receptors from elevated noise levels generated by construction would be expected to be comparable to those that would occur immediately adjacent to a typical NYC construction site during the portions of the construction period when the loudest activities would occur.

At some receptors, construction of the Proposed Project would result in increments that would be considered "objectionable" (i.e., 15 dBA or greater) or "very objectionable" (i.e., 20 dBA or greater). The potential for temporary significant adverse impacts at these receptors was determined by evaluating the duration of these increments and the interior noise level, as described below.

*Residential and Medical Office Receptors at 122 East 76th Street*

Receptors 110 through 112 represent the mixed residential and medical office building located at 122 East 76th Street, across East 76th Street from Projected Development Site 1. Existing noise levels at these receptors are in the mid-60s dBA, which would be considered "marginally acceptable" according to *CEQR Technical Manual* noise exposure criteria.

At receptors 110 and 111, which represent the southern and eastern façades of the building, construction is predicted to result in noise levels up to the low 80s dBA, resulting in maximum noise level increases of up to approximately 15 dBA during the most noise-intensive stages of construction (i.e., the overlap of Stage 1 foundations and Stage 2 demolition), with a worst-case duration of approximately 3 consecutive months. Over the course of the construction period, "objectionable" increases are predicted to occur for up to approximately 3 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "clearly unacceptable" category. Based on the prediction of no "very objectionable" noise level increases and less than 12 consecutive months of "objectionable" noise level increases, while construction noise at these receptors may be perceptible at times, it would not rise to the level of a significant adverse impact according to the impact criteria described above.

At receptor 112, which represents the northern façade of the building directly across East 76th Street from the proposed Stage 2 and Stage 3 construction work areas, construction is predicted to result in noise levels up to the high 80s dBA, resulting in noise level increases up to approximately 21 dBA during the most noise-intensive stages of construction (i.e., the overlap of Stage 2 interior construction and Stage 3 demolition), which would occur for up to approximately 6 consecutive months. Over the course of the construction period, "very objectionable" increases are predicted to occur at this façade for up to approximately 6 consecutive months, while "objectionable" increases are predicted to occur for up to approximately 18 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "clearly unacceptable" category.

The façade of 122 East 76th Street would be expected to provide approximately 30 dBA of window/wall attenuation at units that have insulated glass windows and through-window air conditioning or 28 dBA of window/wall attenuation at units with insulated glass windows and no alternate means of ventilation. Consequently, maximum interior $L_{10}$ noise levels during construction would be up to approximately 57 dBA at noise-sensitive spaces with air conditioning and approximately 59 dBA at noise-sensitive spaces without alternate means of ventilation, approximately 12 dBA and 14 dBA greater than the interior noise level threshold of 45 dBA considered acceptable for residential or community facility use by CEQR noise exposure guidance, respectively.

Based on the prediction of "very objectionable" noise level increases lasting up to approximately 6 consecutive months and/or "objectionable" noise level increases lasting up to approximately 18 consecutive months, along with interior noise levels exceeding the acceptable limits, construction noise would result in a temporary significant adverse impact at the northern façade of 122 East 76th Street represented by receptor 112. This receptor is discussed further in Chapter 18, "Mitigation."

*Residential Receptors at 114-118 East 76th Street*

Receptors 113 and 114 represent the residential buildings located at 114-118 East 76th Street, across East 76th Street from Projected Development Site 1. Existing noise levels at these receptors

are in the mid-60s dBA, which would be considered "marginally acceptable" according to *CEQR Technical Manual* noise exposure criteria.

At receptor 114, which represents the southern façade of these buildings, construction is predicted to result in noise levels up to the low 70s dBA, resulting in maximum noise level increases up to approximately 6 dBA throughout construction. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "marginally acceptable" category. At this receptor, construction would not result in "objectionable" or "very objectionable" noise level increases. Consequently, while construction noise at this receptor may be perceptible at times, it would not rise to the level of a significant adverse impact according to the impact criteria described above.

At receptor 113, which represents the northern façade of these buildings directly across East 76th Street from the proposed Stage 3 construction work area, construction is predicted to result in noise levels up to the high 80s dBA, resulting in noise level increases up to approximately 21 dBA during the most noise-intensive stages of construction (i.e., the overlap of Stage 2 interior construction and Stage 3 demolition), which would occur for up to approximately 6 consecutive months. Over the course of the construction period, "very objectionable" increases are predicted to occur at this façade for up to approximately 6 consecutive months, while "objectionable" increases are predicted to occur for up to approximately 18 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "clearly unacceptable" category.

The façades of 114-118 East 76th Street, at units that have insulated glass windows and central air conditioning, would be expected to provide approximately 32 dBA of window/wall attenuation. Consequently, interior $L_{10}$ noise levels would be up to approximately 55 dBA at noise-sensitive spaces with insulated glass windows and central air conditioning, approximately 10 dBA greater than the interior noise level threshold of 45 dBA considered acceptable for residential or community facility use by CEQR noise exposure guidance.

Based on the prediction of "very objectionable" noise level increases lasting up to approximately 6 consecutive months and/or "objectionable" noise level increases lasting up to approximately 18 consecutive months, as well as interior noise levels exceeding the acceptable limits, construction noise would result in a temporary significant adverse impact at the northern façade of 114-118 East 76th Street represented by receptor 113. This receptor is discussed further in Chapter 18, "Mitigation."

*Residential Receptors at 1068 Lexington Avenue*

Receptors 121 through 123 represent the residential building located at 1068 Lexington Avenue, across East 76th Street from Projected Development Site 1. Existing noise levels at these receptors are in the mid-60s to low 70s dBA, which would be considered "marginally acceptable" to "marginally unacceptable" according to *CEQR Technical Manual* noise exposure criteria.

At receptors 122 and 123, which represent the eastern, western, and southern façades of the building, construction is predicted to result in noise levels up to the low 80s dBA, resulting in noise level increases up to approximately 16 dBA during the most noise-intensive stages of construction (i.e., the overlap of Stage 2 interior construction and Stage 3 demolition), which would occur for up to approximately 6 consecutive months. Over the course of the construction period, "objectionable" increases are predicted to occur at these façades for no more than approximately 6 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these façades would be in the "clearly unacceptable"

category. Based on the prediction of no "very objectionable" noise level increases and less than 12 consecutive months of "objectionable" noise level increases, while construction noise at these receptors may be perceptible at times, it would not rise to the level of a significant adverse impact according to the impact criteria described above.

At receptor 121, which represents the northern façade of the building directly across East 76th Street from the proposed Stage 2 construction work area, construction is predicted to result in noise levels up to the mid-80s dBA, resulting in noise level increases up to approximately 18 dBA during the most noise-intensive stages of construction (i.e., the overlap of Stage 1 demolition and foundations with Stage 2 demolition), with a worst-case duration of approximately 12 consecutive months. Over the course of the construction period, "objectionable" increases are predicted to occur for up to approximately 12 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "clearly unacceptable" category.

The façade of 1068 Lexington Avenue would be expected to provide approximately 28 dBA of window/wall attenuation at units that have monolithic glass windows and through-wall or through-window air conditioning or 25 dBA of window/wall attenuation at units that have monolithic glass windows and no alternate means of ventilation. Consequently, maximum interior $L_{10}$ noise levels during construction would be up to approximately 57 dBA at noise-sensitive spaces with air conditioning and approximately 60 dBA at noise-sensitive spaces without alternate means of ventilation, approximately 12 dBA and 15 dBA greater than the interior noise level threshold of 45 dBA considered acceptable for residential or community facility use by CEQR noise exposure guidance, respectively.

Based on the prediction of "objectionable" noise level increases lasting up to approximately 12 consecutive months and interior noise levels exceeding the acceptable limits, construction noise would result in a temporary significant adverse impact at the northern façade of 1068 Lexington Avenue represented by receptor 121. This receptor is discussed further in Chapter 18, "Mitigation."

*Residential Receptors at 117 East 77th Street*

Receptors 160 through 164 represent the residential building immediately east of Projected Development Site 1a at 117 East 77th Street. Existing noise levels at this receptor are in the mid-60s dBA, which would be considered "marginally acceptable" according to *CEQR Technical Manual* noise exposure criteria.

At receptors 161 and 162, which represent the northern and eastern façades of the building, construction is predicted to result in noise levels up to the low 80s dBA, resulting in noise level increases up to approximately 16 dBA during the most noise-intensive stages of construction (i.e., the overlap of Stage 1 sitework and Stage 2 superstructure), which would occur for up to approximately 4 consecutive months. Over the course of the construction period, "objectionable" increases are predicted to occur at these façades for no more than approximately 4 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these façades would be in the "clearly unacceptable" category. Based on the prediction of no "very objectionable" noise level increases and less than 12 consecutive months of "objectionable" noise level increases, while construction noise at these receptors may be perceptible at times, it would not rise to the level of a significant adverse impact according to the impact criteria described above.

At receptor 160, which represents the southern façade of the building, construction is predicted to result in noise levels up to the mid-80s dBA, resulting in noise level increases up to approximately 20 dBA during the most noise-intensive stages of construction (i.e., the overlap of Stage 1 sitework and Stage 2 superstructure), which would occur for approximately 4 consecutive months. Over the course of the construction period, "very objectionable" increases are predicted to occur at this façade for up to approximately 4 consecutive months, while "objectionable" increases are predicted to occur for up to approximately 26 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "clearly unacceptable" category.

At receptors 163 and 164, which represent the western façade of the building directly overlooking Stage 1 construction, construction is predicted to result in noise levels up to the mid-80s dBA, resulting in noise level increases up to approximately 21 dBA during the most noise-intensive stages of construction (i.e., the overlap of Stage 1 and Stage 2 demolition), which would occur for approximately 9 consecutive months. Over the course of the construction period, "very objectionable" increases are predicted to occur at this façade for up to approximately 9 consecutive months, while "objectionable" increases are predicted to occur for up to approximately 26 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "clearly unacceptable" category.

The façade of 117 East 77th Street would be expected to provide approximately 28 dBA of window/wall attenuation at units that have monolithic glass windows and through-window air conditioning or 25 dBA of window/wall attenuation at units that have monolithic glass windows and no alternate means of ventilation. Consequently, maximum interior $L_{10}$ noise levels during construction would be up to approximately 59 dBA at noise-sensitive spaces with air conditioning and approximately 62 dBA at noise-sensitive spaces without alternate means of ventilation, approximately 14 dBA and 17 dBA greater than the interior noise level threshold of 45 dBA considered acceptable for residential or community facility use by CEQR noise exposure guidance, respectively.

Based on the prediction of "very objectionable" noise level increases lasting up to approximately 9 consecutive months and/or "objectionable" noise level increases lasting up to approximately 26 consecutive months, as well as interior noise levels exceeding the acceptable limits, construction noise would result in a temporary significant adverse impact at the southern and western façades of 117 East 77th Street represented by receptors 160, 163, and 164. These receptors are discussed further in Chapter 18, "Mitigation."

*Residential Receptors at 110-122 East 78th Street*

Receptors 184 through 187 represent the residential buildings located north of Projected Development Site 1a at 110-122 East 78th Street. Existing noise levels at these receptors are in the mid-60s dBA, which would be considered "marginally acceptable" according to *CEQR Technical Manual* noise exposure criteria.

At receptors 184 and 186, which represent the northern façades of these buildings, construction is predicted to result in noise levels up to the high 60s dBA, resulting in maximum noise level increases up to approximately 2 dBA throughout construction. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these façades would be in the "marginally acceptable" category. At these receptors, construction would not result in "objectionable" or "very objectionable" noise level increases. Consequently, while construction noise at these receptors may be perceptible at times, it would not rise to the level of a significant adverse impact according to the impact criteria described above.

At receptors 185 and 187, which represent the southern façades of these buildings directly overlooking the proposed Stage 1 construction work area, construction is predicted to result in noise levels up to the mid-80s dBA, resulting in noise level increases up to approximately 20 dBA during the most noise-intensive stages of construction (i.e., the overlap of Stage 1 sitework and Stage 2 superstructure), which would occur for up to approximately 4 consecutive months. Over the course of the construction period, "very objectionable" increases are predicted to occur at these façades for up to approximately 4 consecutive months, while "objectionable" increases are predicted to occur for up to approximately 26 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these façades would be in the "clearly unacceptable" category.

The façade of 122 East 78th Street would be expected to provide approximately 32 dBA of window/wall attenuation at units that have insulated glass windows and central air conditioning. Consequently, maximum interior $L_{10}$ noise levels during construction would be up to approximately 55 dBA at noise-sensitive spaces with insulated glass windows and central air conditioning, approximately 10 dBA greater than the interior noise level threshold of 45 dBA considered acceptable for residential or community facility use by CEQR noise exposure guidance.

Based on the prediction of "very objectionable" noise level increases lasting up to approximately 4 consecutive months and/or "objectionable" noise level increases lasting up to approximately 26 consecutive months, as well as interior noise levels exceeding the acceptable limits, construction noise would result in a temporary significant adverse impact at the southern façades of 110-122 East 78th Street represented by receptors 185 and 187. These receptors are discussed further in Chapter 18, "Mitigation."

*Hospital Receptors at Lenox Hill Hospital*

Receptors 245 through 256 represent the portion of LHH at 855 Park Avenue, which would continue to operate while construction occurs on other portions of the building. Existing noise levels at these receptors are in the mid-60s to low 70s dBA, which would be considered "marginally acceptable" to "marginally unacceptable" according to *CEQR Technical Manual* noise exposure criteria.

At receptors 247 through 249, which represent portions of the northern, western, and southern façades of the hospital not directly facing the proposed construction work areas, construction is predicted to result in noise levels up to the low 80s dBA throughout construction, resulting in maximum noise level increases up to approximately 14 dBA during the most noise-intensive stages of construction (i.e., the overlap of Stage 2 interior construction and Stage 3 demolition), which would occur for up to approximately 6 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "clearly unacceptable" category. At these receptors, construction would not result in "objectionable" or "very objectionable" noise level increases. Consequently, while construction noise at these receptors may be perceptible at times, it would not rise to the level of a significant adverse impact according to the impact criteria described above.

At receptor 254, which represents the southern façade of the Einhorn building and the future Stage 2 building upon its completion, construction is predicted to result in noise levels up to the mid-80s dBA, resulting in noise level increases up to approximately 19 dBA during the most noise-intensive stages of construction (i.e., the overlap of Stage 2 interior construction and Stage 3 demolition), which would occur for up to approximately 6 consecutive months. Over the course of the construction period, "objectionable" increases are predicted to occur at this façade for up to

approximately 8 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "clearly unacceptable" category. Based on the prediction of no "very objectionable" noise level increases and less than 12 consecutive months of "objectionable" noise level increases, while construction noise at these receptors may be perceptible at times, it would not rise to the level of a significant adverse impact according to the impact criteria described above.

At receptor 245, which represents the northern façade of the existing William Black Hall of Nursing and the future Stage 2 building upon its completion, construction is predicted to result in noise levels up to the mid-80s dBA, resulting in noise level increases just short of 20 dBA during the most noise-intensive stages of construction (i.e., the overlap of Stage 1 sitework and Stage 2 superstructure), which would occur for up to approximately 4 consecutive months. Over the course of the construction period, "objectionable" increases are predicted to occur for up to approximately 12 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "clearly unacceptable" category.

At receptor 246, which represents the northern façade of the building directly across from Projected Development Site 1a, construction is predicted to result in noise levels up to the mid-80s dBA, resulting in noise level increases up to approximately 19 dBA during the most noise-intensive stages of construction (i.e., the overlap of Stage 1 and Stage 2 demolition, as well as the overlap of Stage 1 sitework and Stage 2 superstructure), with a worst-case duration of approximately 9 consecutive months. Over the course of the construction period, "objectionable" increases are predicted to occur for up to approximately 26 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "clearly unacceptable" category.

At receptor 250, which represents the southern façade of the building directly west of Stage 3 construction, construction is predicted to result in noise levels up to the mid-80s dBA, resulting in noise level increases just short of 20 dBA during the most noise-intensive stages of construction (i.e., the overlap of Stage 2 interior construction and Stage 3 demolition), which would occur for approximately 6 consecutive months. Over the course of the construction period, "objectionable" increases are predicted to occur for up to approximately 18 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "clearly unacceptable" category.

At receptors 251 through 253, which represent the southern façade directly overlooking Stage 3 construction, construction is predicted to result in noise levels up to the low 90s dBA, resulting in noise level increases up to approximately 26 dBA during the most noise-intensive stages of construction (i.e., Stage 3 demolition), which would occur for approximately 6 consecutive months. Over the course of the construction period, both "objectionable" increases and "very objectionable" increases are predicted to occur at this façade for up to approximately 18 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "clearly unacceptable" category.

At receptors 255 and 256, which represent the eastern façade directly overlooking Stage 2 construction, construction is predicted to result in noise levels up to the mid-80s dBA, resulting in noise level increases up to approximately 21 dBA during the most noise-intensive stages of construction (i.e., Stage 2 foundation and Stage 2 superstructure), which would occur for approximately 14 consecutive months. Over the course of the construction period, "very objectionable" increases are predicted to occur at this façade for up to approximately 14 consecutive months, while "objectionable" increases are predicted to occur for up to

approximately 34 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "clearly unacceptable" category.

The façades of the hospital buildings would be expected to provide approximately 32 dBA of window/wall attenuation in areas that have insulated glass windows and central air conditioning. Consequently, maximum interior $L_{10}$ noise levels during construction would be up to approximately 60 dBA at noise-sensitive spaces with insulated glass windows and central air conditioning, approximately 15 dBA greater than the interior noise level threshold of 45 dBA considered acceptable for community facility use by CEQR noise exposure guidance.

Based on the prediction of "very objectionable" noise level increases lasting up to approximately 18 consecutive months and/or "objectionable" noise level increases lasting up to approximately 34 consecutive months, as well as interior noise levels exceeding the acceptable limits, construction noise would result in a temporary significant adverse impact at the portions of LHH represented by receptors 245, 246, 250 through 253, 255, and 256. These receptors are discussed further in Chapter 18, "Mitigation."

*Other Receptors Experiencing "Objectionable" Increases*

At receptors 115, 117, 141, 145, 156, 159, 165, 180, and 183, construction of the Proposed Project would result in noise level increases that would be perceptible to noticeable and at times "objectionable." However, at these receptors, "objectionable" noise level increases would occur for periods of fewer than 12 consecutive months. Consequently, while construction noise at these receptors would be perceptible, it would not rise to the level of a significant adverse impact according to the impact criteria described above.

*Other Nearby Receptors*

At the remaining receptors, construction of the Proposed Project would, for some portion of the construction period, result in noise level increases that would be perceptible to noticeable. However, at these receptors, maximum noise level increases would not result in "objectionable" or "very objectionable" noise level increases. Consequently, while construction noise at these receptors may be perceptible at times, it would not rise to the level of a significant adverse impact according to the impact criteria described above.

*Envelope 2 Cumulative On-Site and Mobile Construction Noise Sources*

Analysis of potential noise effects from construction under Envelope 2 was conducted according to the same methodology and using the same receptor locations as the analysis described above for Envelope 1. The results of the detailed construction noise analysis with Envelope 2 at locations where "objectionable" and "very objectionable" noise level increases would occur are summarized in **Table 16-23**.

**Table 16-23**
**Envelope 2 Construction Noise Analysis Results in dBA**

| Receptor | Address | Existing $L_{10}$ | Max Total $L_{10}$ | Max Change in $L_{10}$ | Maximum Consecutive Duration (months) | |
|---|---|---|---|---|---|---|
| | | | | | "Objectionable" Increase | "Very Objectionable" Increase |
| 111 | 122 East 76th Street | 66.2 | 81.4 | 15.2 | 9 | 0 |
| 112 | 122 East 76th Street | 67.0 | 87.1 | 20.8 | 42 | 6 |
| 113 | 118 East 76th Street | 66.2 | 87.3 | 21.1 | 42 | 6 |
| 115 | 110 East 76th Street | 66.2 | 86.0 | 19.8 | 28 | 0 |
| 117 | 829 Park Avenue | 67.9 | 82.1 | 15.8 | 6 | 0 |
| 121 | 1068 Lexington Avenue | 68.2 | 84.7 | 17.4 | 12 | 0 |
| 122 | 1068 Lexington Avenue | 66.2 | 82.3 | 16.1 | 6 | 0 |
| 141 | 1091 Lexington Avenue | 73.1 | 85.4 | 15.0 | 9 | 0 |
| 156 | 103 East 77th Street | 66.2 | 85.6 | 19.3 | 10 | 0 |
| 159 | 103 East 77th Street | 66.2 | 84.6 | 18.3 | 10 | 0 |
| 160 | 117 East 77th Street | 66.2 | 86.5 | 20.3 | 26 | 4 |
| 162 | 117 East 77th Street | 66.2 | 82.1 | 15.9 | 4 | 0 |
| 163 | 117 East 77th Street | 66.2 | 86.9 | 20.7 | 26 | 9 |
| 164 | 117 East 77th Street | 66.2 | 86.9 | 20.7 | 26 | 9 |
| 180 | Allen-Stevenson School – 132 East 78th Street | 67.0 | 82.9 | 16.2 | 10 | 0 |
| 183 | Allen-Stevenson School – 132 East 78th Street | 66.2 | 82.3 | 16.1 | 9 | 0 |
| 185 | 120 East 78th Street | 66.2 | 86.5 | 20.3 | 26 | 4 |
| 187 | 114 East 78th Street | 66.2 | 83.6 | 17.4 | 16 | 0 |
| 245 | Lenox Hill Hospital | 66.2 | 86.0 | 19.8 | 10 | 0 |
| 246 | Lenox Hill Hospital | 66.2 | 85.3 | 19.0 | 26 | 0 |
| 250 | Lenox Hill Hospital | 66.4 | 86.0 | 19.8 | 42 | 0 |
| 251 | Lenox Hill Hospital | 66.2 | 91.2 | 25.0 | 29 | 29 |
| 252 | Lenox Hill Hospital | 66.2 | 91.7 | 25.5 | 29 | 29 |
| 254 | Lenox Hill Hospital | 66.2 | 85.3 | 19.0 | 28 | 0 |

*Residential and Medical Office Receptors at 122 East 76th Street*

Receptors 110 through 112 represent the mixed residential and medical office building located at 122 East 76th Street, across East 76th Street from Projected Development Site 1. Existing noise levels at these receptors are in the mid-60s dBA, which would be considered "marginally acceptable" according to *CEQR Technical Manual* noise exposure criteria.

At receptors 110 and 111, which represent the southern and eastern façades of the building, construction is predicted to result in noise levels up to the low 80s dBA, resulting in maximum noise level increases up to approximately 16 dBA during the most noise-intensive stages of construction (i.e., the overlap of Stage 1 foundations and Stage 2 demolition), with a worst-case duration of approximately 3 consecutive months. Over the course of the construction period, "objectionable" increases are predicted to occur for up to approximately 9 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "clearly unacceptable" category. Based on the prediction of no "very objectionable" noise level increases and less than 12 consecutive months of "objectionable" noise level increases, while construction noise at these receptors may be perceptible at times, it would not rise to the level of a significant adverse impact according to the impact criteria described above.

At receptor 112, which represents the northern façade of the building directly across East 76th Street from the proposed Stage 2 and Stage 3 construction work areas, construction is predicted to result in noise levels up to the high 80s dBA, resulting in noise level increases up to approximately 21 dBA during the most noise-intensive stages of construction (i.e., the overlap of Stage 2 interior construction and Stage 3 demolition), which would occur for up to approximately 6 consecutive months. Over the course of the construction period, "very objectionable" increases are predicted to occur at this façade for up to approximately 6 consecutive months, while "objectionable" increases are predicted to occur for up to approximately 42 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "clearly unacceptable" category.

The façade of 122 East 76th Street would be expected to provide approximately 30 dBA of window/wall attenuation at units that have insulated glass windows and through-window air conditioning or 28 dBA of window/wall attenuation at units with insulated glass windows and no alternate means of ventilation. Consequently, maximum interior $L_{10}$ noise levels during construction would be up to approximately 57 dBA at noise-sensitive spaces with air conditioning and approximately 59 dBA at noise-sensitive spaces without alternate means of ventilation, approximately 12 dBA and 14 dBA greater than the interior noise level threshold of 45 dBA considered acceptable for residential or community facility use by CEQR noise exposure guidance, respectively.

Based on the prediction of "very objectionable" noise level increases lasting up to approximately 6 consecutive months and/or "objectionable" noise level increases lasting up to approximately 42 consecutive months, as well as interior noise levels exceeding the acceptable limits, construction noise would result in a temporary significant adverse impact at the northern façade of 122 East 76th Street represented by receptor 112. This receptor is discussed further in Chapter 18, "Mitigation."

*Residential Receptors at 110-118 East 76th Street*

Receptors 113 through 116 represent the residential buildings located at 110-118 East 76th Street, across East 76th Street from Projected Development Site 1. Existing noise levels at these receptors are in the mid-60s dBA, which would be considered "marginally acceptable" according to *CEQR Technical Manual* noise exposure criteria.

At receptors 114 and 116, which represent the southern façade of these buildings, construction is predicted to result in noise levels up to the high 60s dBA, resulting in maximum noise level increases up to approximately 3 dBA throughout construction. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "marginally acceptable" category. At this receptor, construction would not result in "objectionable" or "very objectionable" noise level increases. Consequently, while construction noise at these receptors may be perceptible at times, it would not rise to the level of a significant adverse impact according to the impact criteria described above.

At receptors 113 and 115, which represent the northern façades of these buildings directly across East 76th Street from the proposed Stage 3 construction work area, construction is predicted to result in noise levels up to the high 80s dBA, resulting in noise level increases up to approximately 21 dBA during the most noise-intensive stages of construction (i.e., the overlap of Stage 2 interior construction and Stage 3 demolition), which would occur for up to approximately 6 consecutive months. Over the course of the construction period, "very objectionable" increases are predicted to occur at these façades for up to approximately 6 consecutive months, while "objectionable" increases are predicted to occur for up to approximately 42 consecutive months. According to

*CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these façades would be in the "clearly unacceptable" category.

The façades of 110-118 East 76th Street, at units that have insulated glass windows and central air conditioning, would be expected to provide approximately 32 dBA of window/wall attenuation. Consequently, interior $L_{10}$ noise levels would be up to approximately 55 dBA at noise-sensitive spaces with insulated glass windows and central air conditioning, approximately 10 dBA greater than the interior noise level threshold of 45 dBA considered acceptable for residential or community facility use by CEQR noise exposure guidance.

Based on the prediction of "very objectionable" noise level increases lasting up to approximately 6 consecutive months and/or "objectionable" noise level increases lasting up to approximately 42 consecutive months, as well as interior noise levels exceeding the acceptable limits, construction noise would result in a temporary significant adverse impact at the northern façade of 110-118 East 76th Street represented by receptors 113 and 115. These receptors are discussed further in Chapter 18, "Mitigation."

*Residential Receptors at 1068 Lexington Avenue*

Receptors 121 through 123 represent the residential building located at 1068 Lexington Avenue, across East 76th Street from Projected Development Site 1. Existing noise levels at these receptors are in the mid-60s to low 70s dBA, which would be considered "marginally acceptable" to "marginally unacceptable" according to *CEQR Technical Manual* noise exposure criteria.

At receptors 122 and 123, which represent the eastern, western, and southern façades of the building, construction is predicted to result in noise levels up to the low 80s dBA, resulting in noise level increases up to approximately 16 dBA during the most noise-intensive stages of construction (i.e., the overlap of Stage 2 interior construction and Stage 3 demolition), which would occur for up to approximately 6 consecutive months. Over the course of the construction period, "objectionable" increases are predicted to occur at these façades for no more than approximately 6 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these façades would be in the "clearly unacceptable" category. Based on the prediction of no "very objectionable" noise level increases and less than 12 consecutive months of "objectionable" noise level increases, while construction noise at these receptors may be perceptible at times, it would not rise to the level of a significant adverse impact according to the impact criteria described above.

At receptor 121, which represents the northern façade of the building directly across East 76th Street from the proposed Stage 2 construction work area, construction is predicted to result in noise levels up to the mid-80s dBA, resulting in noise level increases up to approximately 17 dBA during the most noise-intensive stages of construction (i.e., the overlap of Stage 1 demolition and foundations with Stage 2 demolition), with a worst-case duration of approximately 12 consecutive months. Over the course of the construction period, "objectionable" increases are predicted to occur for up to approximately 12 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "clearly unacceptable" category.

The façade of 1068 Lexington Avenue would be expected to provide approximately 28 dBA of window/wall attenuation at units that have monolithic glass windows and through-wall or through-window air conditioning or 25 dBA of window/wall attenuation at units that have monolithic glass windows and no alternate means of ventilation. Consequently, maximum interior $L_{10}$ noise levels during construction would be up to approximately 57 dBA at noise-sensitive spaces with air

conditioning and approximately 60 dBA at noise-sensitive spaces without alternate means of ventilation, approximately 12 dBA and 15 dBA greater than the interior noise level threshold of 45 dBA considered acceptable for residential or community facility use by CEQR noise exposure guidance, respectively.

Based on the prediction of "objectionable" noise level increases lasting up to approximately 12 consecutive months and interior noise levels exceeding the acceptable limits, construction noise would result in a temporary significant adverse impact at the northern façade of 1068 Lexington Avenue represented by receptor 121. This receptor is discussed further in Chapter 18, "Mitigation."

*Residential Receptors at 117 East 77th Street*

Receptors 160 through 164 represent the residential building immediately east of Projected Development Site 1a at 117 East 77th Street. Existing noise levels at this receptor are in the mid-60s dBA, which would be considered "marginally acceptable" according to *CEQR Technical Manual* noise exposure criteria.

At receptors 161 and 162, which represent the northern and eastern façades of the building, construction is predicted to result in noise levels up to the low 80s dBA, resulting in noise level increases up to approximately 16 dBA during the most noise-intensive stages of construction (i.e., the overlap of Stage 1 sitework and Stage 2 superstructure), which would occur for up to approximately 4 consecutive months. Over the course of the construction period, "objectionable" increases are predicted to occur at these façades for no more than approximately 4 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these façades would be in the "clearly unacceptable" category. Based on the prediction of no "very objectionable" noise level increases and less than 12 consecutive months of "objectionable" noise level increases, while construction noise at these receptors may be perceptible at times, it would not rise to the level of a significant adverse impact according to the impact criteria described above.

At receptor 160, which represents the southern façade of the building, construction is predicted to result in noise levels up to the mid-80s dBA, resulting in noise level increases up to approximately 20 dBA during the most noise-intensive stages of construction (i.e., the overlap of Stage 1 sitework and Stage 2 superstructure), which would occur for approximately 4 consecutive months. Over the course of the construction period, "very objectionable" increases are predicted to occur at this façade for up to approximately 4 consecutive months, while "objectionable" increases are predicted to occur for up to approximately 26 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "clearly unacceptable" category.

At receptors 163 and 164, which represent the western façade of the building directly overlooking Stage 1 construction, construction is predicted to result in noise levels up to the mid-80s dBA, resulting in noise level increases up to approximately 21 dBA during the most noise-intensive stages of construction (i.e., the overlap of Stage 1 and Stage 2 demolition), which would occur for approximately 9 consecutive months. Over the course of the construction period, "very objectionable" increases are predicted to occur at this façade for up to approximately 9 consecutive months, while "objectionable" increases are predicted to occur for up to approximately 26 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "clearly unacceptable" category.

The façade of 117 East 77th Street would be expected to provide approximately 28 dBA of window/wall attenuation at units that have monolithic glass windows and through-window air conditioning or 25 dBA of window/wall attenuation at units that have monolithic glass windows and no alternate means of ventilation. Consequently, maximum interior $L_{10}$ noise levels during construction would be up to approximately 59 dBA at noise-sensitive spaces with air conditioning and approximately 62 dBA at noise-sensitive spaces without alternate means of ventilation, approximately 14 dBA and 17 dBA greater than the interior noise level threshold of 45 dBA considered acceptable for residential or community facility use by CEQR noise exposure guidance, respectively.

Based on the prediction of "very objectionable" noise level increases lasting up to approximately 9 consecutive months and/or "objectionable" noise level increases lasting up to approximately 26 consecutive months, as well as interior noise levels exceeding the acceptable limits, construction noise would result in a temporary significant adverse impact at the southern and western façades of 117 East 77th Street represented by receptors 160, 163, and 164. These receptors are discussed further in Chapter 18, "Mitigation."

*Residential Receptors at 110-122 East 78th Street*

Receptors 184 through 187 represent the residential buildings located north of Projected Development Site 1a at 110-122 East 78th Street. Existing noise levels at these receptors are in the mid-60s dBA, which would be considered "marginally acceptable" according to *CEQR Technical Manual* noise exposure criteria.

At receptors 184 and 186, which represent the northern façades of these buildings, construction is predicted to result in noise levels up to the high 60s dBA, resulting in maximum noise level increases up to approximately 2 dBA throughout construction. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these façades would be in the "marginally acceptable" category. At these receptors, construction would not result in "objectionable" or "very objectionable" noise level increases. Consequently, while construction noise at these receptors may be perceptible at times, it would not rise to the level of a significant adverse impact according to the impact criteria described above.

At receptors 185 and 187, which represent the southern façades of these buildings directly overlooking the proposed Stage 1 construction work area, construction is predicted to result in noise levels up to the mid-80s dBA, resulting in noise level increases up to approximately 20 dBA during the most noise-intensive stages of construction (i.e., the overlap of Stage 1 sitework and Stage 2 superstructure), which would occur for up to approximately 4 consecutive months. Over the course of the construction period, "very objectionable" increases are predicted to occur at these façades for up to approximately 4 consecutive months, while "objectionable" increases are predicted to occur for up to approximately 26 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these façades would be in the "clearly unacceptable" category.

The façade of 122 East 78th Street would be expected to provide approximately 32 dBA of window/wall attenuation at units that have insulated glass windows and central air conditioning. Consequently, maximum interior $L_{10}$ noise levels during construction would be up to approximately 55 dBA at noise-sensitive spaces with insulated glass windows and central air conditioning, approximately 10 dBA greater than the interior noise level threshold of 45 dBA considered acceptable for residential or community facility use by CEQR noise exposure guidance.

Based on the prediction of "very objectionable" noise level increases lasting up to approximately 4 consecutive months and/or "objectionable" noise level increases lasting up to approximately 26 consecutive months, as well as interior noise levels exceeding the acceptable limits, construction noise would result in a temporary significant adverse impact at the southern façades of 110-122 East 78th Street represented by receptors 185 and 187. These receptors are discussed further in Chapter 18, "Mitigation."

*Hospital Receptors at Lenox Hill Hospital*

Receptors 245 through 256 represent the portion of LHH at 855 Park Avenue, which would continue to operate while construction occurs on other portions of the building. Existing noise levels at these receptors are in the mid-60s to low 70s dBA, which would be considered "marginally acceptable" to "marginally unacceptable" according to *CEQR Technical Manual* noise exposure criteria.

At receptors 247 through 249, which represent portions of the northern, western, and southern façades of the hospital not directly facing the proposed construction work areas, construction is predicted to result in noise levels up to the low 80s dBA throughout construction, resulting in maximum noise level increases up to approximately 14 dBA during the most noise-intensive stages of construction (i.e., the overlap of Stage 2 interior construction and Stage 3 demolition), which would occur for up to approximately 6 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "clearly unacceptable" category. At these receptors, construction would not result in "objectionable" or "very objectionable" noise level increases. Consequently, while construction noise at these receptors may be perceptible at times, it would not rise to the level of a significant adverse impact according to the impact criteria described above.

At receptor 253, which represents the slightly northern portion of the western façade of the proposed Stage 2 building after it is completed and occupied, construction is predicted to result in noise levels up to the mid-70s dBA, resulting in maximum noise level increases up to approximately 5 dBA. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "marginally unacceptable" category. At this receptor, construction would not result in "objectionable" or "very objectionable" noise level increases. Consequently, while construction noise at this receptor may be perceptible at times, it would not rise to the level of a significant adverse impact according to the impact criteria described above.

At receptor 254, which represents the southern façade of the Einhorn building and the future Stage 2 building upon its completion, construction is predicted to result in noise levels up to the mid-80s dBA, resulting in noise level increases up to approximately 19 dBA during the most noise-intensive stages of construction (i.e., Stage 3 sitework), which would occur for up to approximately 13 consecutive months. Over the course of the construction period, "objectionable" increases are predicted to occur at this façade for up to approximately 28 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "clearly unacceptable" category. Over the course of the construction period, "objectionable" increases are predicted to occur at this façade for up to approximately 28 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "clearly unacceptable" category.

At receptor 245, which represents the northern façade of the existing William Black Hall of Nursing and the future Stage 2 building upon its completion, construction is predicted to result in noise levels up to the mid-80s dBA, resulting in noise level increases just short of 20 dBA during

the most noise-intensive stages of construction (i.e., the overlap of Stage 1 sitework and Stage 2 superstructure), which would occur for up to approximately 4 consecutive months. Over the course of the construction period, "objectionable" increases are predicted to occur for up to approximately 10 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "clearly unacceptable" category.

At receptor 246, which represents the northern façade of the building directly across from Projected Development Site 1a, construction is predicted to result in noise levels up to the mid-80s dBA, resulting in noise level increases up to approximately 19 dBA during the most noise-intensive stages of construction (i.e., the overlap of Stage 1 and Stage 2 demolition, as well as the overlap of Stage 1 sitework and Stage 2 superstructure), with a worst-case duration of approximately 9 consecutive months. Over the course of the construction period, "objectionable" increases are predicted to occur for up to approximately 26 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "clearly unacceptable" category.

At receptor 250, which represents the southern façade of the building directly west of Stage 3 construction, construction is predicted to result in noise levels up to the mid-80s dBA, resulting in noise level increases just short of 20 dBA during the most noise-intensive stages of construction (i.e., the overlap of Stage 2 interior construction and Stage 3 demolition), which would occur for approximately 6 consecutive months. Over the course of the construction period, "objectionable" increases are predicted to occur for up to approximately 42 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "clearly unacceptable" category.

At receptors 251 and 252, which represent the southern façade directly overlooking Stage 3 construction, construction is predicted to result in noise levels up to the low 90s dBA, resulting in noise level increases up to approximately 25 dBA during the most noise-intensive stages of construction (i.e., Stage 3 demolition), which would occur for approximately 6 consecutive months. Over the course of the construction period, both "objectionable" increases and "very objectionable" increases are predicted to occur at this façade for up to approximately 29 consecutive months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this façade would be in the "clearly unacceptable" category.

The façades of the hospital buildings would be expected to provide approximately 32 dBA of window/wall attenuation in areas that have insulated glass windows and central air conditioning. Consequently, maximum interior $L_{10}$ noise levels during construction would be up to approximately 60 dBA at noise-sensitive spaces with insulated glass windows and central air conditioning, approximately 15 dBA greater than the interior noise level threshold of 45 dBA considered acceptable for community facility use by CEQR noise exposure guidance.

Based on the prediction of "very objectionable" noise level increases lasting up to approximately 29 consecutive months and/or "objectionable" noise level increases lasting up to approximately 42 consecutive months, as well as interior noise levels exceeding the acceptable limits, construction noise would result in a temporary significant adverse impact at the portions of LHH represented by receptors 246, 250 through 252, and 254. These receptors are discussed further in Chapter 18, "Mitigation."

*Other Receptors Experiencing "Objectionable" Increases*

At receptors 117, 141, 156, 159, 180, and 183, construction of the Proposed Project would result in noise level increases that would be perceptible to noticeable and at times "objectionable."

However, at these receptors, "objectionable" noise level increases would occur for periods of fewer than 12 consecutive months. Consequently, while construction noise at these receptors would be perceptible, it would not rise to the level of a significant adverse impact according to the impact criteria described above.

*Other Nearby Receptors*

At the remaining receptors, construction of the Proposed Project would, for some portion of the construction period, result in noise level increases that would be perceptible to noticeable. However, at these receptors, maximum noise level increases would not result in "objectionable" or "very objectionable" noise level increases. Consequently, while construction noise at these receptors may be perceptible at times, it would not rise to the level of a significant adverse impact according to the impact criteria described above.

The maximum noise levels and noise level increments for the Envelope 2 construction noise analysis are within approximately 1 dBA of the maximum levels and increments shown in **Table 16-22** for Envelope 1. However, due to the longer duration of some construction tasks under the Envelope 2 schedule (specifically, the additional year of superstructure, sitework, and interior fit-out for Stage 3 construction), the duration of "objectionable" and "very objectionable" increments would be longer for Envelope 2 at some receptors than those predicted for Envelope 1. In most cases, this merely extends the duration of the predicted significant adverse construction noise impacts described above for Envelope 1; however, for receptor 115, which represents the 110 East 76th Street north façade, the extension of duration of "objectionable" noise level increments under Envelope 2 would result in temporary significant adverse impacts that were not predicted to occur with Envelope 1. Additionally, for receptor 254, which represents a portion of Stage 2 of the Proposed Project, the extension of "objectionable" noise level increments under Envelope 2 would result in temporary significant adverse impacts that were not predicted to occur with Envelope 1. These receptors are discussed further in Chapter 18, "Mitigation."

Additionally, there are some hospital locations that would experience temporary significant adverse construction noise impacts under Envelope 1 only, because they represent spaces that would be demolished as part of Stage 2 during construction of Envelope 2 or spaces introduced by Stage 2 construction that would be completed and occupied during remaining construction under Envelope 1 such that they would experience construction noise for a sufficient duration to result in a significant adverse impact, but would not come online until later under the Envelope 2 construction schedule and therefore experience construction noise for a much shorter duration, which does not rise to the level of a significant adverse impact.

The differences in analysis results between Envelope 1 and 2, including the locations and durations of temporary significant adverse construction noise impacts, are shown in **Table 16-24**. Further, the locations of predicted temporary significant adverse construction noise impacts are shown in **Figure 16-37**.

**Table 16-24**
**Construction Noise Analysis Results—**
**Comparison between Envelope 1 and Envelope 2**

| Receptor | Location | Duration of Temporary Significant Adverse Construction Noise Impact under Envelope 1 (Months) | Duration of Temporary Significant Adverse Construction Noise Impact under Envelope 2 (Months) |
|---|---|---|---|
| 112 | 122 East 76th Street North Façade | 18 | 42 |
| 113 | 118 East 76th Street | 18 | 42 |
| 115 | 110 East 76th Street | No impact | 28 |
| 121 | 1068 Lexington Avenue | 12 | 12 |
| 160 | 117 East 77th Street South Façade | 26 | 26 |
| 163 | 117 East 77th Street Non-setback West Façade | 26 | 26 |
| 164 | 117 East 77th Street Setback West Façade | 26 | 26 |
| 185 | 120 East 78th Street | 26 | 26 |
| 187 | 114 East 78th Street | 16 | 16 |
| 245 | Lenox Hill Hospital | 12 | No Impact |
| 246 | Lenox Hill Hospital | 26 | 26 |
| 250 | Lenox Hill Hospital | 18 | 42 |
| 251 | Lenox Hill Hospital | 18 | 29 |
| 252 | Lenox Hill Hospital | 18 | 29 |
| 253 | Lenox Hill Hospital | 18 | No Impact |
| 254 | Lenox Hill Hospital | No impact | 28 |
| 255 | Lenox Hill Hospital | 34 | No impact |
| 256 | Lenox Hill Hospital | 34 | No impact |

*CONSTRUCTION NOISE CONCLUSIONS*

Construction of the Proposed Project with either Envelope 1 or Envelope 2 would have the potential to result in temporary significant adverse impacts related to noise. At some receptors, construction of the Proposed Project would result in increments that would be considered objectionable (i.e., 15 dBA or greater) or very objectionable (i.e., 20 dBA or greater). The potential for temporary significant adverse impacts at these receptors was determined by evaluating the duration of these increments and whether CEQR interior noise level thresholds would be exceeded or not. While construction of the Proposed Project would typically occur during weekday daytime hours and not produce noise during nighttime hours when residences are most sensitive to noise, the detailed analysis of construction noise determined that construction of the Proposed Project has the potential to result in temporary significant adverse impacts at 16 receptors surrounding the proposed construction work area. Noise levels due to construction with Envelope 2 could exceed the impact criteria at 14 receptors, most but not all of which are the same receptors as with Envelope 1. As described above, construction would comply with NYC Noise Control Code regulations as well as commit to the use of lower noise emission limits for select pieces of equipment, additional shielding for Stage 2 concrete operations and along East 76th Street, use of existing Con Edison power in lieu of a generator during Stage 3 construction, and other additional noise control measures beyond the minimum required by code. Per NYC Noise Control Code regulations, the Proposed Project would be required to prepare a Construction Noise Mitigation Plan. Further noise reduction measures are discussed in Chapter 18, "Mitigation."

## VIBRATION

Construction activities have the potential to result in vibration levels that may cause structural or architectural damage, and/or annoyance or interference with vibration-sensitive activities. Vibratory levels at a receiver are a function of the source strength (which is dependent upon the construction equipment and methods utilized), the distance between the equipment and the receiver, the characteristics of the transmitting medium, and the receiver building construction. Construction equipment operation causes ground vibrations which spread and decrease in strength with distance. Vehicular traffic, even in locations close to major roadways, typically does not result in perceptible vibration levels unless there are discontinuities in the roadway surface. With the exception of the case of fragile and possibly historically significant structures or buildings, construction activities generally do not reach the levels that can cause architectural or structural damage but can achieve levels that may be perceptible and annoying in buildings very close to a construction site. An assessment has been prepared to quantify potential vibration impacts of construction activities on structures and residences near the Project Site. The same analysis applies to Envelope 1 and Envelope 2.

*Construction Vibration Criteria*

For purposes of assessing potential structural or architectural damage at historic buildings, the determination of a significant adverse impact was based on the vibration impact criterion used by LPC of a PPV of 0.50 in/sec, as specified in the DOB Technical Policy and Procedure Notices (TPPN) #10/88. For non-fragile buildings, vibration levels between 0.5 in/sec and 2.0 in/sec would typically not be expected to result in any structural or architectural damage.

For purposes of evaluating potential annoyance or interference with vibration-sensitive activities, vibration levels greater than 65 VdB would have the potential to result in significant adverse impacts if they were to occur for a prolonged period of time.

*ANALYSIS METHODOLOGY*

For purposes of assessing potential structural or architectural damage, the following formula was used:

$$PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$$

where: $PPV_{equip}$ is the peak particle velocity in in/sec of the equipment at the receiver location;

$PPV_{ref}$ is the reference vibration level in in/sec at 25 feet; and

D is the distance from the equipment to the received location in feet.

For purposes of assessing potential annoyance or interference with vibration sensitive activities, the following formula was used:

$$L_v(D) = L_v(ref) - 30\log(D/25)$$

where: $L_v(D)$ is the vibration level in VdB of the equipment at the receiver location;

$L_v(ref)$ is the reference vibration level in VdB at 25 feet; and

D is the distance from the equipment to the receiver location in feet.

**Table 16-25** shows vibration source levels for typical construction equipment.

**Table 16-25**
**Vibration Source Levels for Construction Equipment**

| Equipment | $PPV_{ref}$ (in/sec) | Approximate $L_v$ (ref) (VdB) |
|---|---|---|
| Vibratory Roller | 0.21 | 94 |
| Caisson Drilling | 0.089 | 87 |
| Loaded Trucks | 0.076 | 86 |
| Jackhammer | 0.035 | 79 |
| **Source:** FTA Transit Noise and Vibration Impact Assessment (September 2018). | | |

The source vibration levels shown in **Table 16-25** were projected to nearby receptors to estimate the levels of construction vibration that would occur near the Project Site.

*CONSTRUCTION VIBRATION ANALYSIS RESULTS*

The buildings of most concern with regards to the potential for structural or architectural damage due to vibration are the existing buildings and structures adjacent to construction work areas, as well as existing architectural resources that are part of the Upper East Side Historic District within 90 feet of the construction work areas (see **Appendix B**). Because the Project Site is immediately adjacent to the Upper East Side Historic District, construction of the Projected Development Sites is subject to LPC review and approval. To avoid adverse physical impacts on architectural resources close enough to project construction (i.e., within 90 feet), the Proposed Project would develop and implement a CPP in consultation with the LPC. The CPP would include a requirement for monitoring to determine the amount of vibration at the subject structures during the construction period, as well as a prohibition on vibration exceeding the acceptable threshold (i.e., 0.5 in/sec). If construction were to result in vibration exceeding this threshold, the CPP would require construction means and methods to be altered to avoid producing such exceedances.

For construction at the Project Site, vibration levels within 15 feet may result in PPV levels between 0.50 and 2.0 in/sec during worst-case vibration-intensive construction activity associated with the Proposed Project (i.e., the use of a vibratory roller during sitework), which is generally considered acceptable for a non-historic building or structure. Additionally, as described above and in the "Historic and Cultural Resources" section below, the structures adjacent to these work areas would be covered by a CPP requiring vibration monitoring and that construction means and methods be designed to avoid producing vibration levels greater than 0.5 in/sec. Additional receptors farther away from the Project Site would experience less vibration than those listed above, and would not be expected to cause structural or architectural damage.

In terms of potential vibration levels that would be perceptible and annoying, the piece of equipment that would have the most potential for producing levels that exceed the 65 VdB limit is also the vibratory roller. It would have the potential to produce perceptible vibration levels (i.e., vibration levels exceeding 65 VdB) at receptor locations within approximately 250 feet, depending on soil conditions. However, the operation would only occur for limited periods of time at a particular location and therefore would not result in any significant adverse impacts.

Consequently, significant adverse vibration impacts would not result from construction of the Proposed Project with either Envelope 1 or Envelope 2.

## OTHER TECHNICAL AREAS

*LAND USE AND NEIGHBORHOOD CHARACTER*

As is typical with construction projects, during periods of peak activity under both Envelope 1 and Envelope 2, there would be some disruption to the nearby area. Construction trucks and construction workers would come to the area, and trucks and other vehicles would back up, load, and unload. These disruptions would be most pronounced in areas immediately adjacent to the Project Site but would have more limited effects on land uses in the larger study area, as most construction activities would take place within the Project Site or within portions of sidewalks and parking lanes along Lexington Avenue, East 76th Street, or East 77th Street immediately adjacent to the Project Site. Overall, construction activities at the Project Site would be evident to the local community. However, throughout the construction period, measures would be implemented to control air quality, noise, and vibration within the Project Site, including the erection of construction barriers. The barriers would reduce potentially undesirable views of construction areas, buffer noise emitted from construction activities, and protect the safety of pedestrians and bicyclists. Therefore, the construction would not result in significant or long-term adverse impacts on local land use patterns or the character of the broader neighborhood.

*SOCIOECONOMIC CONDITIONS*

Construction of the Proposed Project under both Envelope 1 and Envelope 2 would not block or restrict access to any facilities in the area, affect the operations of any nearby businesses, or obstruct major thoroughfares used by customers or businesses. Construction would create direct benefits resulting from expenditures on labor, materials, and services, and indirect benefits created by expenditures by material suppliers, construction workers, and other employees involved in the construction activity. Construction would also contribute to increased tax revenues for the city and state, including those from personal income taxes. Therefore, construction activities associated with the Proposed Project would not result in any significant adverse impacts on socioeconomic conditions.

*COMMUNITY FACILITIES*

As described in Chapter 1, "Project Description," the Applicant proposes to construct a 21st century, state-of-the-art hospital complex with 475 single-bedded patient rooms, new and improved operating suites, and an expanded ED on Projected Development Site 1.

For both Envelope 1 and Envelope 2, no other community facilities (i.e., public or publicly funded schools, libraries, early childhood programs, healthcare facilities, or fire and police stations) would be directly affected by construction activities. The construction area would be surrounded by construction barriers that would limit the effects of construction on nearby facilities. Measures outlined in the MPT plan to be implemented for the Proposed Project would ensure that lane closures and sidewalk closures are kept to a minimum and that adequate pedestrian access is maintained. Construction workers would not place any burden on public schools, libraries, or early childhood programs. New York City Police Department (NYPD) and FDNY emergency services and response times would not be materially affected by construction.

LHH would remain open and serving the community during construction. However, since several existing buildings would be demolished, and certain hospital operations/facilities would be relocated within the existing hospital complex as work advances, this analysis considers potential changes or impacts to the healthcare facilities during construction. Additional details by

construction stage, which are expected to be similar for both Envelope 1 and Envelope 2 except where noted, are provided below.

*Stage 1*

Stage 1 of would consist of the demolition of the three buildings at 111-115 East 77th Street, construction of the new service building, and tunneling under the street to the main hospital on the south side of East 77th Street, none of which would involve any patient facilities, not even in the Lachman building where the connection would be made.

*Stage 2*

Stage 2 would include demolition of the townhouses, the Einhorn and Achelis buildings, and the William Black Hall of Nursing to clear the site for the new building fronting on Lexington Avenue; demolition of these buildings would not directly involve any patient services. However, during the excavation, foundations work, and erection of the superstructure, four Intensive Care Units (48 beds) in the East building would be relocated to the Wollman or Uris buildings and up to 15 inpatient beds would be moved from the Lachman building (adjacent to the William Black Hall of Nursing) to the Wollman or Uris buildings. During demolition of the Einhorn building, a temporary ED walk-in entrance may be moved to East 76th Street through the Main building. However, the entrance for patients arriving by ambulance would remain on East 77th Street. As work on the base of the new building advances, the structure of the East building would be incorporated into the podium under Envelope 1 and would be fully demolished under Envelope 2.

Completion of the podium of the new building during Stage 2 would provide new diagnostic and treatment services (including ORs, imaging, and a portion of the ED), and new single-bedded inpatient rooms would occupy the podium. At ground level, the new primary public entrance, the public lobby, and the ED walk-in entrance would be located on Lexington Avenue, while the new staff entrance would be located on East 77th Street. The new entrance to the East 77th Street subway station would be located at the corner of East 77th Street and Lexington Avenue. The new primary public entrance and the new subway entrance would improve transit access for patients and visitors. The new ambulance bay on East 77th Street would be completed and begin to improve the transfer of patients to LHH. Completion of the upper floors of the new building would add single-bedded inpatient rooms as well as support space and mechanical space.

*Stage 3*

During Stage 3 of construction, the south portion of the Main building would be demolished. Twenty-two beds in the West building overlooking the work area would be relocated away from the demolition and construction activities. The neonatal intensive care unit (NICU) would be temporarily relocated to the podium of the new building during this stage of construction. At ground level, completion of this stage of construction would provide for an expanded receiving and materials management area, including four diagonal docks that would allow larger trucks to dock inside the building.

*Stage 4*

Stage 4 would consist of renovations to the Uris, West, and Wollman buildings and the creation of the Mother-Baby Hospital with a new entrance on Park Avenue and a new lobby. In addition, a new emergency stairway would be added to the south face of Wollman. The Mother-Baby Hospital would bring together related functions (including the NICU) currently located in various areas of the hospital. During this stage, construction would be largely limited to interior

renovations, with the exception of the new entrance and the emergency stairway. Stage 4 would involve some internal relocations, as do most hospital renovation projects. Any remaining double-bedded rooms would be converted to single-bedded rooms. With the new building fronting on Lexington Avenue in use, Stage 4 renovations would be less intrusive to hospital operations and healthcare services.

*Conclusion*

As discussed in detail above, although there would be temporary disruption to existing services during construction, LHH would remain open and serving the community during construction. Therefore, construction activities associated with the Proposed Project for both Envelope 1 and Envelope 2 would not result in any significant adverse impacts on the hospital operations or healthcare services.

*HISTORIC AND CULTURAL RESOURCES*

Historic and cultural resources include both archaeological and architectural resources. An assessment of potential impacts on archaeological and architectural resources is provided in Chapter 6, "Historic and Cultural Resources." In comments dated January 27, 2022, LPC determined that it has no archaeological concerns for Projected Development Site 1 or Projected Development Site 1a (see **Appendix B**); therefore, no further archaeological analysis is warranted. As described in Chapter 6, "Historic and Cultural Resources," because the Proposed Project for both Envelope 1 and Envelope 2 would be constructed within 90 feet of historic architectural resources—including 14 buildings within the Upper East Side Historic District (listed on the State and National Registers of Historic Places [S/NR], designated as a New York City Historic District [NYCHD]) and the St. Jean Baptiste Church (S/NR, New York City Landmark [NYCL]), the Applicant would prepare and implement a CPP prior to the start of construction activities at the Project Site. With the preparation and implementation of a CPP for these historic architectural resources, the Proposed Project would not be expected to result in any direct impacts to architectural resources in the study area.

*HAZARDOUS MATERIALS*

A detailed assessment of the potential risks related to the construction of the Proposed Project with respect to hazardous materials is described in Chapter 8, "Hazardous Materials." The Proposed Project for both Envelope 1 and Envelope 2 would entail demolition of portions of the existing hospital, followed by excavation for new construction and renovations of existing structures to allow the enlargement and modernization of the existing hospital complex and the creation of a purpose-built hospital complex to address critical infrastructure challenges and space needs. To avoid any potential for hazardous materials exposure, all federal, state, and local requirements and regulations would be followed, including:

- Conducting a Subsurface (Phase II) Investigation, including the collection and analysis of soil (and potentially groundwater and soil gas) samples. The Sampling Protocol for this testing would incorporate a Health and Safety Plan (HASP) that would be submitted to DEP for review and approval. Following DEP approval, the Phase II Investigation would be conducted in accordance with the approved workplan. The results of the investigation would be summarized in a Remedial Investigation Report and submitted to DEP for review and approval.

- Based on the findings of the Phase II Investigation, developing a Remedial Action Plan (RAP)/Construction Health and Safety Plan (CHASP) in conjunction with DEP for implementation during soil disturbing activities. The RAP/CHASP would specify procedures for identifying and managing any anticipated or unanticipated contaminated soil and/or underground storage tanks (including procedures for stockpiling and off-site transportation and disposal) and appropriate health and safety procedures, including the need for dust control. The RAP would also include any necessary requirements for the new buildings vapor controls and for the quality of any imported soil used in landscaped areas.
- Prior to demolition, conducting a comprehensive asbestos survey of the existing building and removing and disposing of any asbestos-containing materials (ACM) in accordance with all applicable requirements.
- Disposing of suspect mercury-containing or suspect polychlorinated biphenyl (PCB)-containing equipment in accordance with applicable regulatory requirements.
- Performing any demolition activities with the potential to disturb lead-based paint (LBP)-containing materials in accordance with the applicable regulatory requirements.
- Prior to any building renovation or demolition activities, removing and disposing of all remaining chemical, medical/biological, and radioactive materials in accordance with all applicable regulations.
- Closing and removing all on-site petroleum storage tanks prior to redevelopment in accordance with applicable requirements.
- Transportation of material leaving the site for off-site disposal would be in accordance with all applicable requirements covering licensing of haulers and trucks, placarding, truck routes, manifesting, etc.
- If dewatering activities are required, performing such in accordance with local requirements for discharge to sanitary/combined sewers. Pretreatment would be performed if necessary to meet the DEP requirements.

With the implementation of these procedures, no significant adverse impacts related to hazardous materials would result from the Proposed Project.

*WATER AND SEWER INFRASTRUCTURE*

Infrastructure activities at the Project Site for both Envelope 1 and Envelope 2 would include utility connections to existing water, sewer, electric, gas, and telecommunications. In addition, as described above, the Proposed Project would include the construction of a utility tunnel to connect the proposed six-story building on Projected Development Site 1a to the main hospital complex. These activities would be coordinated with DEP, Con Edison, and/or the appropriate private utility company to ensure that service to customers in nearby areas is not disrupted. All utility lines would be located either in the streetbed or within the below-grade space. Residents and workers in nearby buildings are not expected to experience substantial disruptions to water supply or wastewater removal. Any disruption to service that may occur when new equipment (e.g., a transformer, or a sewer or water line) is put into operation is expected to be very short-term (i.e., hours). Therefore, the construction of the Proposed Project's infrastructure improvements would not cause any significant adverse impacts to nearby users of these services. ✷