A. INTRODUCTION

As described in Chapter 1, "Project Description," the New York City Department of City Planning (DCP), together with the Department of Housing Preservation and Development (HPD), is proposing a series of actions (the "Proposed Actions") to implement land use and zoning recommendations in the East Harlem Neighborhood Plan (EHNP). The intent of the Proposed Actions is to facilitate the development of affordable housing, create new commercial and manufacturing space to support job creation, and preserve existing neighborhood character. The area that is subject to the Proposed Actions is generally bounded by East 104th Street to the south, East 132nd Street to the north, Park Avenue to the west, and Second Avenue to the east (the "Project Area"). A total of 68 projected development sites and 34 potential development sites have been identified in the Project Area on which new buildings could be constructed or existing buildings enlarged and/or converted over an approximately 10-year construction period through 2027. Since potential sites are considered less likely to be developed over the analysis period, they are not considered in this assessment.

Construction activities, as is the case with most any construction projects, could result in temporary disruptions in the surrounding area. For analysis purposes, a reasonable worst-case conceptual construction phasing and schedule for the development anticipated to occur under the EHNP was established to illustrate how development could occur over approximately the next 10 years. The conceptual construction schedule conservatively accounts for overlapping construction activities and simultaneously operating construction equipment, thus capturing the cumulative nature of potential construction impacts which would result at nearby receptors.

According to the 2014 *City Environmental Quality Review (CEQR) Technical Manual*, a development with an overall construction period lasting two years or longer and that is near to sensitive receptors (i.e., residences, open spaces, etc.) should undergo an impact assessment. The projected development sites are estimated to take approximately one to three years to complete, depending on the size of the development. Construction activities could occur at multiple sites with overlapping construction timelines within the same geographic area. Accordingly, an assessment of potential construction impacts was prepared in accordance with the guidelines of the *CEQR Technical Manual*, and is presented in this chapter. The assessment of potential impacts of construction activity focuses on transportation, air quality, noise and vibration, as well as consideration of other technical areas including land use and neighborhood character, socioeconomic conditions, community facilities, open space, historic and cultural resources, and hazardous materials.

PRINCIPAL CONCLUSIONS

Construction of new developments assumed in the RWCDS would result in temporary disruptions in the surrounding area. As described in detail below, construction activities associated with the Proposed Actions would result in temporary significant adverse noise and historic and cultural resources impacts and could potentially result in temporary significant adverse transportation impacts. Additional information for key technical areas is summarized below.

TRANSPORTATION

Construction travel demand is expected to peak in the second quarter of 2021, and the first quarter of 2025 was selected as a reasonable worst-case analysis period for assessing potential cumulative transportation impacts from operational trips from completed portions of the project and construction trips associated with construction activities. Both of these periods are therefore analyzed for potential transportation impacts during construction.

Traffic

During construction, traffic would be generated by construction workers commuting via autos and by trucks making deliveries to Projected Development Sites. In 2021 and 2025, traffic conditions during the 6 to 7 AM and 3 to 4 PM construction peak hours are expected to be generally better than during the analyzed operational peak hours with full build-out of the Proposed Actions in 2027. Consequently, there would be less likelihood of significant adverse traffic impacts during both the 2021 peak construction period and the 2025 cumulative analysis period than with full build-out of the Proposed Actions in 2027. Any significant adverse traffic impacts expected during peak construction activity in 2021 would be most likely to occur at intersections in the immediate proximity of the Projected Development Sites under construction at that time, which would be widely dispersed throughout the Project Area. It is expected that the mitigation measures proposed for 2027 operational traffic impacts would also be effective at mitigating any potential impacts from construction traffic during both the 2021 period for peak construction activity and the 2025 construction and operational cumulative analysis period.

Transit

The construction sites are located in an area that is well served by public transportation, including a total of eight subway stations, 21 bus routes, and one commuter rail station located in the vicinity of the Project Area. In 2021 and 2025, transit conditions during the 6 to 7 AM and 3 to 4 PM construction peak hours are expected to be generally better than transit conditions during the analyzed operational peak hours with full build-out of the Proposed Actions in 2027; incremental demand would be lower during construction, and most construction trips would not occur during the peak hours of commuter demand. Consequently, there would be less likelihood of significant adverse subway and bus transit impacts during both the 2021 peak construction period and the 2025 cumulative analysis period than with full build-out of the Proposed Actions in 2027. It is expected that any mitigation measures identified for 2027 operational transit impacts would also be effective at mitigating any potential impacts from construction subway and bus trips during both the 2021 period for peak construction activity and the 2025 construction and operational cumulative analysis period.

Pedestrians

In 2021, pedestrian trips by construction workers would be widely distributed among the 13 Projected Development Sites that would be under construction in this period and would primarily occur outside of the weekday AM and PM commuter peak periods and weekday midday and Saturday peak periods—times when area pedestrian facilities typically experience their greatest demand. No single sidewalk, corner, or crosswalk is expected to experience 200 or more peak-hour trips, the threshold below which significant adverse pedestrian impacts are considered unlikely to occur based on *CEQR Technical Manual* guidelines. Consequently, significant adverse pedestrian impacts in the 2021 peak construction period are not anticipated.

In 2025, pedestrian conditions during the 6 to 7 AM and 3 to 4 PM construction peak hours are expected to be generally better than during the analyzed operational peak hours with full build-out of the Proposed Actions in 2027. The Proposed Actions' significant adverse sidewalk impact would therefore be less likely to occur during this construction period than with full build-out of the Proposed Actions in 2027. It is expected that the proposed mitigation measure identified for the 2027 operational pedestrian impact would also be effective at mitigating any potential impact from construction pedestrian trips during the 2025 construction period.

Parking

Construction worker parking demand would be equivalent to approximately 54 spaces in the 2021 (second quarter) peak construction period and 38 spaces during the 2025 (first quarter) analysis period for cumulative construction and operational travel demand. While this demand would potentially contribute to a parking shortfall in the midday within ¼ mile of projected development sites, it would not be considered a significant adverse parking impact under *CEQR Technical Manual* criteria given the availability of alternative modes of transportation near the Project Area.

AIR QUALITY

Measures would be taken to reduce pollutant emissions during construction in accordance with all applicable laws, regulations, and building codes as well as New York City Local Law 77. These include dust suppression measures, idling restriction, and the use of ultra-low sulfur diesel (ULSD) fuel and best available tailpipe reduction technologies. With the implementation of these emission reduction measures, the dispersion modeling analysis of construction-related air emissions for both on-site 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 Air Quality Ambient Standards (NAAQS), respectively. Therefore, construction under the Proposed Actions would not result in significant adverse air quality impacts due to construction sources.

NOISE AND VIBRATION

Noise

Based on the construction predicted to occur at each development site during each of the selected analysis periods, each receptor is expected to experience an exceedance of the *CEQR Technical Manual* noise impact threshold. One peak construction period per year was analyzed, from 2018 to 2027. Receptors where noise level increases are predicted to exceed the noise impact threshold criteria for two or more consecutive years were identified.

The noise analysis results show that the predicted noise levels could exceed the *CEQR Technical Manual* impact criteria throughout the rezoning area. This analysis is based on a conceptual site plan and construction schedule. It is possible that the actual construction may be of less magnitude, or that construction on multiple projected development sites may not overlap, in which case construction noise would be less intense than the analysis predicts.

Vibration

The buildings of most concern with regard to the potential for structural or architectural damage due to vibration would be historic buildings, Metro-North Railroad structures and other structures immediately adjacent to the projected development sites. Since these historic buildings and structures would be within 90 feet of the projected development sites, vibration monitoring would be required per New York City Department of Buildings (DOB) Technical Policy and Procedure Notices (TPPN) #10/88 regulations, and PPV during construction would be prohibited from exceeding the 0.50 inches/second threshold.

For non-historic buildings and other structures immediately adjacent to projected development sites, vibration levels within 25 feet may result in peak particle velocity (PPV) levels between 0.50 and 2.0 in/sec, which is generally considered acceptable for a non-historic building or structure.

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 also the pile driver. 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, there is no potential for significant adverse vibration impacts under the Proposed Actions

HISTORIC AND CULTURAL RESOURCES

A detailed assessment of potential impacts on historic and cultural resources, including both archaeological and architectural resources, is described in Chapter 7, "Historic and Cultural Resources." The Proposed Actions would result in significant adverse construction-related impacts to four eligible historic resources. In addition, construction activity at two development sites located on the south side of East 128th Street (east of Park Avenue) have the potential to result in significant adverse archaeology impacts associated with burial remains.

B. GOVERNMENTAL COORDINATION AND OVERSIGHT

Construction oversight involves several city, state, and federal agencies. **Table 20-1** lists the primary involved agencies and their areas of responsibility. For projects in New York City, primary construction oversight lies with DOB, which oversees compliance with the New York City Building Code. The areas of oversight include installation and operation of equipment such as cranes, sidewalk bridges, safety netting, and scaffolding. In addition, DOB enforces safety regulations to protect workers and the general public during construction. The New York City Department of Parks & Recreation (NYC Parks) is responsible for the oversight, enforcement, and permitting of the replacement of street trees that are lost due to construction. The New York City Department of Environmental Protection (DEP) enforces the *New York City Noise Code*, reviews and approves any needed Remedial Action Plan (RAP) and associated Construction Health and Safety Plan (CHASP), water and sewer connections, as well as any necessary abatement of hazardous materials. The New York City Fire Department (FDNY) has primary oversight of compliance with the *New York City Fire Code* and the installation of tanks containing flammable materials. The New York City Department of Transportation (DOT)'s 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 subway access and, if necessary, bus stop relocations. NYCT also regulates vibrations that might affect the subway system. The

Landmarks Preservation Commission (LPC approves the historic and cultural resources analysis, the Construction Protection Plan (CPP), and monitoring measures established to prevent damage to historic structures. New York City maintains a 24-hour-a-day telephone hotline (311) so that construction concerns can be registered with the City.

Table 20-1
Summary of Primary Agency Construction Oversight

Agency	Areas of Responsibility
New York City	
Department of Buildings	Building Code, site safety, and public protection
Department of Parks & Recreation	Street trees
Department of Environmental Protection	Noise Code, RAPs/CHASPs, water and sewer connections, hazardous materials
Fire Department	Compliance with Fire Code, fuel tank installation
Department of Transportation	Lane and sidewalk closures
New York City Transit	Subway access, bus stop relocation
Landmarks Preservation Commission	Archaeological and architectural protection
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 (for rodent control)
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 (NYSDEC) regulates disposal of hazardous materials, and construction and operation of bulk petroleum and chemical storage tanks. At the federal level, although the U.S. Environmental Protection Agency (EPA) has wide-ranging authority over environmental matters, including air emissions, noise, hazardous materials, and the use of poisons for rodent control, much of its responsibility is delegated to the state and city levels. The Occupational Safety and Health Administration (OSHA) sets standards for work site safety and construction equipment.

C. CONCEPTUAL CONSTRUCTION PHASING AND SCHEDULE

A total of 68 projected development sites have been identified in the Project Area on which new buildings could be constructed or existing buildings enlarged and/or converted over an approximately 10-year construction period through 2027. At this time, there are no specific construction programs or finalized designs for the Proposed Actions. Actual construction methods and materials may vary, depending on how the construction contractors choose to implement their work to be most cost effective, within the requirements set forth in bid, contract, and construction documents. Construction specifications will require that construction contractors comply with applicable environmental regulations and obtain necessary permits for the duration of construction. Construction of each development site would follow applicable federal, state, and local laws for building and safety, as well as local noise ordinance, as appropriate.

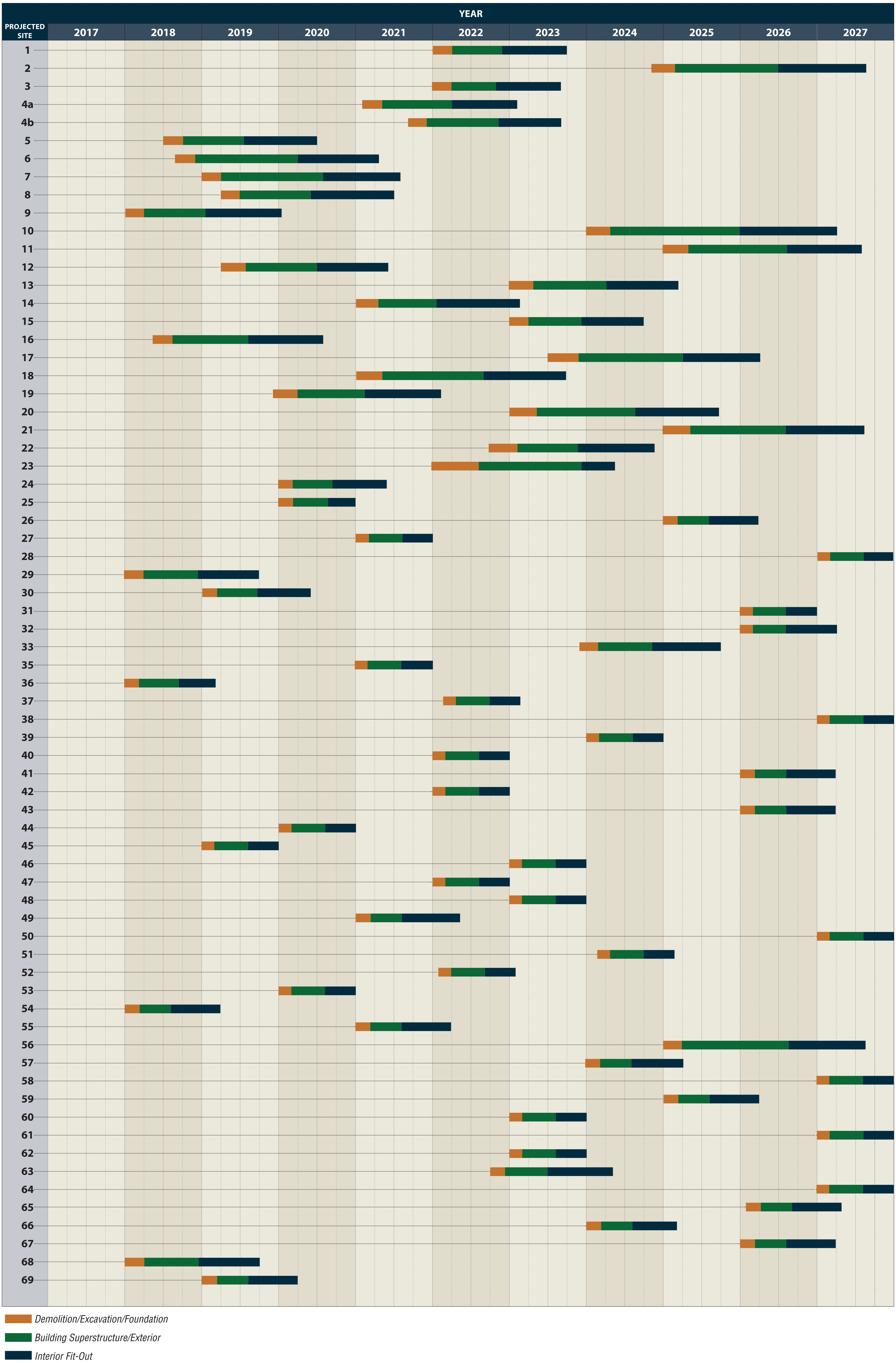
For analysis purposes, a reasonable worst-case conceptual construction phasing and schedule for the development anticipated to occur under the EHNP was established by the New York City Department of City Planning (DCP) to illustrate how development could occur over approximately the next 10 years. Because the projected development sites within the rezoning area are predominantly in private ownership, the timing of the development of those sites is unknown. As such, the Reasonable Worst-Case Development Scenario (RWCDS) presented in Chapter 1, “Project Description” does not describe which of the sites would be developed first to assume a particular sequence of development. Market considerations would ultimately determine the demand for development.

Generally, the development sites near transit were given greater weight for an earlier construction start over other sites located farther from transit. In addition, the projected development sites where there are known plans are assumed to begin construction earlier, closer to the time of project approvals (i.e., soon after the beginning of 2018). In estimating the duration of the construction period for each site, it is generally assumed that sites accommodating less than 100,000 square feet of development would take less than 24 months to complete construction, whereas sites with a larger anticipated development floor area are assumed to take longer. The conceptual construction schedule conservatively accounts for overlapping construction activities at development sites in proximity to one another to capture the cumulative nature of construction impacts with respect to number of worker vehicles, trucks, and construction equipment at any given time, within reasonable construction scheduling constraints for each of the development sites in the rezoning area.

Figure 20-1 presents the conceptual construction sequencing for use in the analysis of the Proposed Actions. In the conceptual construction schedule, construction activities are assumed to begin in the first quarter of 2018 and take place over a 10-year period. It is conservatively assumed that construction of all projected development sites would be completed by the end of the 2027 analysis year. Construction of most of the projected development sites (49 sites) would be considered short term (i.e., lasting up to 24 months) in accordance with the *CEQR Technical Manual*. Out of the projected sites (18 sites) with a construction period greater than 24 months, only one site (projected site 10) is estimated to have a construction period lasting over three years (39 months total).

D. CONSTRUCTION DESCRIPTION

Sixty-nine development sites have been identified in the rezoning area as likely to be developed with new building(s) within the 10-year analysis period. Building construction in New York City typically follows a general pattern. The first task is construction startup, which would involve the installation of public safety measures (i.e., signs and fences) and siting of work trailers. Then, if there are existing buildings on the development site, any potential hazardous materials such as asbestos would first be abated and then the buildings would be demolished. Excavation of the soils would be next along with the construction of the foundations. When the below-grade construction is completed, construction of the core and shell of the new buildings would begin. The core is the central part of the building and is the main part of the structural system. It contains the elevators and the mechanical systems for heating, ventilation, and air conditioning (HVAC). The shell is the outside of the building. As the core and floor decks of the building are being erected, installation of the mechanical and electrical internal networks would start. As the building progresses upward, the exterior façade would be placed, and interior fit-out activities would begin. These typical activities for building construction are described in greater detail below.



Source: Department of City Planning, January 2017.

Assumed Construction Schedule for Assessment of Construction Impact

Figure 20-1

GENERAL CONSTRUCTION STAGES

DEMOLITION

Construction would begin with the demolition of existing buildings where applicable. First, demolition scaffolds would be erected around these buildings. The buildings to be demolished would be abated of any hazardous materials before the start of demolition. A New York City-certified asbestos investigator would inspect the building for asbestos-containing materials (ACM), and if present, those materials would be removed by a DOL-licensed asbestos abatement contractor prior to interior demolition. Asbestos abatement is strictly regulated by DEP, DOL, EPA, and OSHA to protect the health and safety of construction workers and nearby residents. Depending on the extent and type of ACMs (if any), these agencies would be notified of the asbestos removal project and may inspect the abatement site to ensure that work is being performed in accordance with applicable regulations. Any activities with the potential to disturb lead-based paint (LBP) would be performed in accordance with the applicable OSHA regulation (including federal OSHA regulation 29 CFR 1926.62—*Lead Exposure in Construction*). In addition, any suspected poly-chlorinated biphenyls (PCB)-containing equipment (such as fluorescent light ballasts) that would be disturbed would be evaluated prior to disturbance. Unless labeling or test data indicate the contrary, such equipment would be assumed to contain PCBs, and would be removed and disposed of at properly licensed facilities in accordance with all applicable regulatory requirements.

General demolition is the next step, beginning with removal of any economically salvageable materials which could be reused. Then the interior of the buildings are deconstructed to the floor plates and structural columns. Netting around the exterior of the building would be used to prevent falling materials. Hand tools, excavators with hoe ram attachments, and front-end loaders are typically used in the demolition of the existing structures. Demolition debris would be sorted prior to being disposed of at landfills to maximize recycling opportunities.

EXCAVATION AND FOUNDATION

First, where necessary, sheeting would be installed to hold back soil around the excavation area and excavators would then be used to excavate soil. The soil would be loaded onto dump trucks with front-end loaders for transport to a licensed disposal facility or for reuse on any portion of the development site that needs fill. This stage of construction would also include the construction of the new building’s foundation and below-grade elements. Foundation work could typically include pile driving and columns and concrete walls would be built to the grade level.

Dewatering

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

SUPERSTRUCTURE AND EXTERIOR

The superstructure of a building would include the building’s framework such as beams, slabs, and columns. Construction of the interior structure, or core, of the building would include: elevator shafts; vertical risers for mechanical, electrical, and plumbing systems; electrical and mechanical equipment rooms; core stairs; and restroom areas. A mobile crane or a tower crane (for larger buildings) would typically be brought onto the development site during the superstructure stage to lift structural components, façade elements, and other large materials. Superstructure activities would typically also require the use of rebar benders, welding equipment and a variety of trucks. In addition, temporary construction elevators (hoists) would be used for the vertical movement of workers and materials during superstructure activities.

INTERIOR FIT-OUT

Interior fit-out activities would typically 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 building system (e.g., electrical system, fire alarm, plumbing, etc.) testing and inspections would also be part of this stage of construction. Equipment used during interiors and finishing would generally include hoists, forklifts, scissor lifts, delivery trucks, and a variety of small hand-held tools.

GENERAL CONSTRUCTION PRACTICES

HOURS OF WORK

Building construction in New York City would generally be carried out in accordance with City laws and regulations, which allow construction activities between 7:00 AM and 6:00 PM on weekdays. Weekday construction work and typically begin at 7:00 AM, with most workers arriving between 6:00 AM and 7:00 AM. Normally work would end at 3:30 PM, but it can be expected that, in order to complete certain time-sensitive tasks (i.e., 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 6:00 PM and would not include all construction workers on-site, but only those involved in the specific task requiring additional work time.

Weekend or night work may also be required for certain construction activities such as the erection of the tower crane and/or to make up for weather delays. Appropriate work permits from DOB must be obtained for any necessary work outside of the allowable construction hours as detailed above and no work outside of these hours could be performed until such permits are obtained. The numbers of workers and pieces of equipment in operation for weekend work would be limited to those needed to complete the particular authorized task. Therefore, the level of activity for any weekend work would be less than a normal workday. The weekend workday, if necessary, would typically be a Saturday.

ACCESS, STAGING AREAS, AND SITE SAFETY

Access to the development site during construction would typically be controlled. The work areas would be fenced off, and limited access points for workers and construction-related trucks would be provided. After work hours, the gates would be closed and locked. As is typical with New York City construction in a confined urban environment, curb lanes and sidewalks are expected to be narrowed or closed for varying periods of time. Maintenance and Protection of Traffic (MPT) plans would be developed for any temporary curb-lane and/or sidewalk closures as required by DOT. Approval of these plans and implementation of the closures would be coordinated with DOT's OCMC. It is expected that construction staging of materials and equipment would primarily occur within the development sites themselves and potentially the curb-lane adjacent to the sites.

A variety of measures would be employed to ensure public safety during the construction of the Proposed Project. These include a sidewalk bridge to be erected during above-grade construction activities to provide overhead protection for pedestrians. Construction safety signs would be posted to alert the public of ongoing construction activities. Flaggers would be posted as necessary to control trucks entering and exiting the construction area, to provide guidance to pedestrians, and/or to alert or slow down the traffic. All DOB safety requirements would be followed and construction would be undertaken as to minimize the disruption to the community.

RODENT CONTROL

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

NUMBER OF CONSTRUCTION WORKERS AND MATERIAL DELIVERIES

Construction is labor intensive, and the number of workers varies with the general construction task and/or building size. Likewise, material deliveries and removals generate truck trips, and the number also varies depending on the task and/or the building size. Workers and truck projections were based on representative sites of similar sizes and uses from prior Environmental Impact Statement (EIS) documents and information for similar known construction projects in the City.[1] Projected development sites were categorized based on similar size and use, and the most intense month from each stage of construction (demolition/excavation/foundation, superstructure/exterior, and interior) for each site was identified and used as a scaling factor for projections. Each of the 68 projected development sites was then assigned to the appropriate size category, and worker and truck projections were scaled on a per square foot basis.

A similar methodology was applied to projected development sites that are assumed to undergo construction in the RWCDS for the No Action Condition. The change in square footage in the No Action Condition was estimated for the 68 projected development sites, and the sites were grouped into three categories: (1) no change to existing structure/no construction; (2) new development on part of site, some existing structures remain; and (3) full new development of site. The construction duration was based on similarly sized projected development sites from the With Action Condition construction schedule.

The No Action Condition construction worker and truck estimates were then subtracted from the estimates for the With Action Condition, so as not to overestimate the construction effects associated with the Proposed Actions. The resultant estimate of the number of trucks and workers per quarter are summarized in **Table 20-2** (also see **Appendix H)**. As indicated in the table, the number of workers would peak in the second quarter of 2021, with an estimated 692 workers and 82 trucks per day. During this peak construction worker and truck period, 13 of the 68 projected development sites are expected to be under construction (see **Figure 20-1**).

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[1] For purposes of this analysis, construction data from the 2016 *East New York Rezoning FEIS* were used.

Table 20-2
Average Incremental Number of Daily Construction Workers and Trucks by Year and Quarter

Year	2018				2019				2020			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	28	86	173	223	351	485	480	474	527	475	356	303
Trucks	9	13	32	32	53	62	61	60	72	56	35	27
Year	2021				2022				2023			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	590	692	577	517	575	456	428	451	592	444	443	302
Trucks	81	82	70	63	73	53	43	48	82	62	53	26
Year	2024				2025				2026			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	338	345	397	387	501	469	541	456	438	335	291	362
Trucks	38	37	38	40	68	53	63	52	52	32	29	44
Year	2027											
Quarter	1st	2nd	3rd	4th	Average				Peak			
Workers	406	261	251	19	396				692			
Trucks	57	29	29	5	48				82			

E. THE FUTURE WITHOUT THE PROPOSED ACTIONS (NO ACTION CONDITION)

As described in Chapter 1, "Project Description," in the Future without the Proposed Actions (No Action Condition), the identified projected development sites are assumed to either remain unchanged from existing conditions, or constructed as-of-right under existing zoning and reflect current trends if they are vacant, occupied by vacant buildings, or occupied by low-intensity uses that are deemed likely to support more active uses.

F. THE FUTURE WITH THE PROPOSED ACTIONS (WITH ACTION CONDITION)

Construction under the Proposed Actions—as is the case with most large construction projects—would result in some temporary disruptions in the surrounding area. The following analysis describes the overall temporary effects on transportation, air quality, noise and vibration, land use and neighborhood character, socioeconomic conditions, community facilities, open space, historic and cultural resources, and hazardous materials.

TRANSPORTATION

The Proposed Actions would result in the construction of predominantly mixed-use developments on 68 projected development sites in the Project Area over a 10-year period. These developments would replace vacant land, as well as existing and anticipated No Action Condition uses on the development sites. During construction periods, projected development sites would generate trips by workers traveling to/from the construction sites, as well as trips associated with the movement of materials and equipment. Given typical construction hours, worker trips would be more concentrated in the early morning and mid-afternoon periods on weekdays than during the area's peak travel periods.

TRAFFIC

As discussed above, average daily on-site construction workers and trucks were forecast for new construction anticipated on each of the projected development sites under both the No Action and With Action Conditions. The construction worker and truck estimates in the No Action Condition were then subtracted from the With Action Condition estimates to determine the net incremental demand attributable to construction associated with the Proposed Actions. As shown in **Table 20-2**, the number of workers and trucks would peak in the second quarter of 2021, with an estimated 692 workers and 82 trucks per day. These represent peak days of work, and other days during the construction period would have fewer construction workers and trucks on-site.

Although construction traffic is expected to peak in the second quarter of 2021, the first quarter of 2025 was selected as the reasonable worst-case analysis period for assessing potential cumulative traffic impacts from operational trips from completed portions of the project and construction trips associated with construction activities. An assessment of traffic generated during these two peak periods is presented below.

Peak Construction Worker Travel Demand and Truck Trips—2021 (Second Quarter)

Modal split and vehicle occupancy rates for construction workers were based on 2000 U.S. Census data for construction workers in tracts encompassing the Project Area. Based on these data, it is anticipated that approximately 68 percent of construction workers would use public transportation in their commute to and from the construction sites in the Project Area, which is well served by subway and bus transit. Approximately 17 percent of workers are expected to travel by personal automobile with an average occupancy of approximately 2.2 persons per vehicle, and 15 percent are expected to walk or bicycle. **Table 20-3** shows a forecast of incremental hourly construction worker auto and construction truck trips during the 2021 (second quarter) peak construction period. The temporal distribution for these vehicle trips was based on typical work shift allocations and conventional arrival/departure patterns for construction workers. Each worker vehicle was assumed to arrive in the morning and depart in the afternoon or early evening; whereas, truck deliveries would occur throughout the construction day. To avoid congestion and ensure that materials are on-site for the start of each shift, construction truck deliveries would often peak during the hour before the regular day shift, overlapping with construction worker arrival traffic. Each truck delivery was assumed to result in two truck trips during the same hour (one inbound and one outbound). For analysis purposes, truck trips were converted into Passenger Car Equivalents (PCEs) based on one truck being equivalent to an average of two PCEs.

As shown in **Table 20-3**, in the second quarter of 2021, construction-related traffic is expected to peak during the 6 to 7 AM and 3 to 4 PM periods. During the 6 to 7 AM peak hour there would be a total of 125 PCE vehicle trips, including 84 inbound trips and 41 outbound trips. During the 3 to 4 PM peak hour there would be a total of 51 PCE trips, including four inbound trips and 47 outbound trips.

Table 20-3
2021(Second Quarter) Peak Incremental Construction Vehicle Trip Projections (in PCEs)

Hour	Auto Trips					Truck Trips					Total Vehicle Trips		
	In		Out			In		Out					
	%	#	%	#	Total	%	#	%	#	Total	In	Out	Total
6-7 AM	80%	43	0%	0	43	25%	41	0%	41	82	84	41	125
7-8 AM	20%	11	0%	0	11	10%	16	0%	16	32	27	16	43
8-9 AM	0%	0	0%	0	0	10%	16	0%	16	32	16	16	32
9-10 AM	0%	0	0%	0	0	10%	16	0%	16	32	16	16	32
10-11 AM	0%	0	0%	0	0	10%	17	0%	17	34	17	17	34
11 AM-12 PM	0%	0	0%	0	0	10%	17	0%	17	34	17	17	34
12-1 PM	0%	0	0%	0	0	10%	17	0%	17	34	17	17	34
1-2 PM	0%	0	0%	0	0	5%	7	0%	7	14	7	7	14
2-3 PM	0%	0	5%	3	3	5%	7	5%	7	14	7	10	17
3-4 PM	0%	0	80%	43	43	2.5%	4	80%	4	8	4	47	51
4-5 PM	0%	0	15%	8	8	2.5%	4	15%	4	8	4	12	16
5-6 PM	0%	0	0%	0	0	0%	0	0%	0	0	0	0	0

Table 20-4 presents a comparison of 2021 peak incremental construction vehicle trips with the numbers of incremental operational trips that would be generated with full build-out of the project in 2027. As shown in **Table 20-4**, during the 7:30 to 8:30 PM and 4:30 to 5:30 PM peak hours for operational traffic and the 3:00 to 4:00 PM construction peak hour, the number of 2021 construction vehicle trips would be substantially less than the number of 2027 operational vehicle trips—i.e., 454, 532, and 220) fewer trips, during each of these periods, respectively. During the 6:00 to 7:00 AM construction peak hour, 2021 construction vehicle trips would exceed 2027 operational trips by 82.

Table 20-4
Comparison of 2021 Peak Incremental Construction Vehicle Trips with 2027 Operational Vehicle Trips (in PCEs)

Peak Hour	Net Incremental Vehicle Trips in PCEs		
	2027 Operational Trips	2021[1] Construction Trips	Net Difference
6:00 to 7:00 AM	43	125	82
7:30 to 8:30 AM	492	38	(454)
3:00 to 4:00 PM	271	51	(220)
4:30 to 5:30 PM	540	8	(532)

Notes:
[1] 2021 construction trips represent the second quarter of that year.
[2] Construction trips for this period based on the average for the 7 to 8 AM and 8 to 9 AM periods.
[3] Construction trips for this period based on the average for the 4 to 5 PM and 5 to 6 PM periods.

As peak construction activity in 2021 would result in 454 and 532 fewer incremental vehicle trips during the 7:30 to 8:30 AM and 4:30 to 5:30 PM operational peak hours, respectively, than would full build-out of the projected development sites under the Proposed Actions, there would be substantially fewer intersections with potentially significant adverse traffic impacts during the 2021 construction analysis year compared with the 2027 operational analysis year, and no new intersections are expected to experience significant adverse traffic impacts in these peak hours. Similarly, peak construction activity would generate 214 fewer incremental vehicle trips during the 3:00 to 4:00 PM construction peak hour in 2021 compared with operation of the Proposed Actions in 2027, and there would be less likelihood of significant adverse impacts during this peak construction year than with full build-out of the Proposed Actions.

Although peak construction activity in 2021 would result in 82 more incremental vehicle trips than the fully built-out project during the 6:00 to 7:00 AM construction peak hour, it is important to note that overall traffic volumes on the study area street network are, in general, substantially lower during the 6:00 to 7:00 AM construction peak hour than during the 7:30 to 8:30 AM operational peak hour. For example, automatic traffic recorder (ATR) count data indicate that in the aggregate, existing 6:00 to 7:00 AM traffic volumes on study area streets are approximately 26 percent lower than during the 7:30 to 8:30 AM period. Therefore, 2021 traffic conditions during the 6:00 to 7:00 AM peak hour are expected to be generally better than during the analyzed 7:30 to 8:30 AM operational peak hour with full build-out of the Proposed Actions in 2027. It should also be noted that in the second quarter of 2021 there would be net decreases of 5 to 45 operational vehicle trips in each peak hour from the displacement of planned developments expected under the No Action condition due to construction. This would further reduce the likelihood of significant adverse traffic impacts in the 2021 (second quarter) peak construction period. Consequently, there would be less likelihood of significant adverse traffic impacts during the 6:00 to 7:00 AM peak hour in this peak construction year than with full build-out of the Proposed Actions in 2027.

Any significant adverse traffic impacts during peak construction activity in 2021 would be most likely to occur at intersections in the immediate proximity of the 13 projected development sites that would be under construction at that time. It is expected that the mitigation measures identified in Chapter 21, "Mitigation," for 2027 operational traffic impacts at intersections in proximity to these development sites, which would be widely dispersed throughout the Project Area, would also be effective at mitigating any potential impacts from construction traffic during the 2021 period for peak construction activity.

Cumulative Construction and Operational Traffic—2025 (First Quarter)

Table 20-5 shows hourly worker auto trips and construction truck trips (in PCEs) in the first quarter of 2025, when construction travel demand would overlap with operational demand from completed projected development sites. During this cumulative construction and operational traffic analysis period, there would be 42 sites that are already completed and operational and 15 sites that are under construction. Prior years would see the completion of substantially less new development, whereas subsequent years would see a decreasing intensity of construction activity and lower levels of construction traffic. Construction auto and truck trips in the 2025 analysis period were based on the same travel demand assumptions utilized for the 2021 forecast presented above.

As shown in **Table 20-5**, during the 6:00 to 7:00 AM construction peak hour in 2025, a total of 99 vehicle trips (in PCEs), including 65 inbound trips and 34 outbound trips, are anticipated; during the 3:00 to 4:00 PM construction peak hour, a total of 39 trips, including four inbound trips and 35 outbound trips, are anticipated. By comparison, construction vehicle trips during the 7:30 to 8:30 AM operational peak hour would total approximately 30 (averaging the 7:00 to 8:00

AM and 8 to 9 AM totals) and six during the 4:30 to 5:30 PM operational peak hour (averaging the 4:00 to 5:00 PM and 5:00 to 6:00 PM totals).

Table 20-5
2025 (First Quarter) Peak Incremental Construction Vehicle Trip Projections (in PCEs)

Hour	Auto Trips			Truck Trips			Total Vehicle Trips		
	In	Out	Total	In	Out	Total	In	Out	Total
6–7 AM	31	0	31	34	34	68	65	34	99
7–8 AM	7	0	7	13	13	26	20	13	33
8–9 AM	0	0	0	13	13	26	13	13	26
9–10 AM	0	0	0	14	14	28	14	14	28
10–11 AM	0	0	0	14	14	28	14	14	28
11 AM–12 PM	0	0	0	14	14	28	14	14	28
12–1 PM	0	0	0	14	14	28	14	14	28
1–2 PM	0	0	0	6	6	12	6	6	12
2–3 PM	0	3	3	6	6	12	6	9	15
3–4 PM	0	31	31	4	4	8	4	35	39
4–5 PM	0	4	4	4	4	8	4	8	12
5–6 PM	0	0	0	0	0	0	0	0	0

Notes: 2025 construction trips represent the first quarter of that year.

As shown in **Table 20-6**, combined with the operational trips generated by completed With Action Condition developments, there would be a net increase of approximately 109 vehicle trips during the 6:00 to 7:00 AM construction peak hour and a net increase of 121 trips during the 3:00 to 4:00 PM construction peak hour. During the 7:30 to 8:30 AM and 4:30 to 5:30 PM operational peak hours, combined operational and construction vehicle trips would total approximately 188 and 157, respectively. During these operational peak hours, construction trips would account for only 30 of the combined trips in the AM and six in the PM.

Table 20-6
2025 Incremental Peak Hour Construction and Operational Traffic Volumes (in PCEs)

Hour	Construction Trips	Operational Trips[1]	Total Trips
6:00–7:00 AM	99	10	109
7:30–8:30 AM[2]	30	158	188
3:00–4:00 PM	39	88	127
4:30–5:30 PM	6	151	157

Notes:
1. Operational trips reflect the net increment of With Action Condition developments expected to be completed by the first quarter of 2025 cumulative analysis period less the demand from No Action Condition developments on projected development sites that have undergone, or are expected to be undergoing, construction by the first quarter of 2025 cumulative analysis period.
2. Construction trips for this period are based on the average for the 7:00 to 8:00 AM and 8:00 to 9:00 PM periods.

Table 20-7 presents a comparison of the first quarter of 2025 combined incremental construction and operational vehicle trips (in PCEs) with the incremental operational trips (in PCEs) that would be generated with full build-out of the project in 2027. As shown in **Table 20-7**, during the 7:30 to 8:30 AM and 4:30 to 5:30 PM operational peak hours, and the 3:00 to 4:00 PM construction peak hour, the incremental number of 2025 construction and operational vehicle trips would be substantially less than the incremental number of 2027 operational vehicle trips—i.e., 304, 383, and 144 fewer trips, during each of these periods, respectively. During the 6:00 to 7:00 AM construction peak hour, 2025 cumulative vehicle trips would exceed 2027 operational trips by a relatively small amount (66 trips). As noted above, however, aggregate ATR count data show that overall traffic volumes on the study area street network are approximately 26 percent lower during the 6:00 to 7:00 AM construction peak hour than during the 7:30 to 8:30 AM operational peak hour. 2025 traffic conditions during the 6:00 to 7:00 AM peak hour are therefore expected to be generally better than during the analyzed 7:30 to 8:30 AM operational peak hour with full build-out of the Proposed Actions in 2027. Consequently, there would be less likelihood of significant adverse traffic impacts during the 6:00 to 7:00 AM peak hour in the cumulative analysis year than with full build-out of the Proposed Actions in 2027. It is expected that the mitigation measures identified for 2027 operational traffic impacts in Chapter 21, "Mitigation," would also be effective at mitigating any potential impacts from construction auto and truck trips during the 2025 peak quarter for cumulative construction and operational traffic.

Street Lane and Sidewalk Closures

Temporary curb lane and sidewalk closures are anticipated adjacent to construction sites, similar to other construction projects in New York City, and these would be expected to have dedicated gates, driveways, and/or ramps for access by trucks making deliveries. Truck movements would be spread throughout the day and would generally occur between 6 AM and 5 PM, depending on the stage of construction. Flaggers are expected to be present during construction to manage the access and movement of trucks. As noted previously, detailed MPT plans for each construction site would be submitted for approval to DOT's OCMC.

Table 20-7
Comparison of 2025 Peak Incremental Construction Vehicle Trips with 2027 Operational Vehicle Trips (in PCEs)

Peak Hour	Net Incremental Vehicle Trips in PCEs		
	2027 Operational Trips	2025[1] Construction Trips	Net Difference
6:00–7:00 AM	42	109	66
7:30–8:30 AM	492	188	(304)
3:00–4:00 PM	271	127	(144)
4:30–5:30 PM	540	157	(383)

Notes:
[1] 2025 construction trips represent the first quarter of that year.
[2] Construction trips for this period based on the average for the 7 to 8 AM and 8 to 9 AM periods.
[3] Construction trips for this period based on the average for the 4 to 5 PM and 5 to 6 PM periods.

TRANSIT

As previously discussed and shown in **Table 20-2**, in the 2021 peak (second) quarter for construction travel demand, there would be a net increase of approximately 692 construction workers traveling to and from projected development sites each day under the Proposed Actions. Approximately 68 percent of these construction workers are expected to travel to and from the rezoning area by public transit (subway, bus, and/or commuter rail). The construction sites are located in a neighborhood that is well served by public transportation, with a total of eight subway stations, 21 bus routes, and one commuter rail station located in the vicinity of the Project Area.

As noted above, it is estimated that approximately 80 percent of all construction workers would arrive and depart in the peak hour before and after each shift. Therefore, in the second quarter of 2021, construction worker travel demand is expected to generate a total of approximately 374 transit trips in both the 6 to 7 AM and 3 to 4 PM construction peak hours. During these same peak hours, there would be net decreases of 21 and 217 transit trips due to the displacement of No Action Condition development by construction activity. Given that construction worker transit trips would be distributed among up to eight subway stations and 21 bus routes in proximity to projected development sites throughout the rezoning area, it is unlikely that the combined number of incremental construction and operational trips would exceed the 200-trip *CEQR Technical Manual* analysis threshold for a subway station or the 50-trip threshold for a bus analysis (per route, per direction) in either construction peak hour in 2021. In addition, as noted previously the construction worker transit trips would primarily occur outside of the AM and PM commuter peak periods when area transit facilities and services typically experience their greatest demand. As such, significant adverse transit impacts are not anticipated in the 2021 peak construction period.

As shown in **Table 20-2**, during the 2025 (first quarter) analysis period for cumulative construction and operational travel demand, it is estimated that there would be an incremental increase of approximately 501 construction workers on-site daily under the Proposed Actions. Based on the same mode choice and temporal factors utilized for the 2021 analysis, incremental construction worker subway and bus trips are expected to total approximately 236 and 35, respectively, in both the 6:00 to 7:00 AM and 3:00 to 4:00 PM construction peak hours in 2025. During these same peak hours, the net increase in operational subway trips from completed projected development sites would total approximately 92 and 413, respectively, while operational bus trips would total 20 and 89, respectively. By comparison, the net increase in operational subway trips with full build-out of the Proposed Actions in 2027 would be substantially greater in number, totaling approximately 2,350 and 2,716 trips during the weekday 7:30 to 8:30 AM and 5:00 to 6:00 PM commuter peak periods when overall demand on area subway facilities and services typically peaks. The net increase in operational bus trips in 2027 would also be substantially greater in number, totaling 511 and 617 trips during the weekday 8:00 to 9:00 AM and 5:00 to 6:00 PM commuter peak periods when overall demand on area bus services typically peaks. Therefore, 2025 transit conditions during the 6:00 to 7:00 AM and 3:00 to 4:00 PM construction peak hours are expected to be generally better than during the analyzed commuter peak hours with full build-out of the Proposed Actions in 2027. Consequently, the Proposed Actions' significant adverse subway station and bus line haul impacts would be less likely to occur in the cumulative analysis year than with full build-out of the Proposed Actions in 2027. As discussed in Chapter 21, "Mitigation," it is anticipated that with the opening of new subway stations and improvements to pedestrian circulation elements at the existing 125th Street Lexington Avenue Line station planned for 2027 under Phase II of the Second Avenue Subway some, if not all of the Proposed Actions' significant adverse subway station impacts would not occur. Should any significant adverse subway station impacts occur in the 2025 (first quarter) cumulative analysis period, they would potentially remain unmitigated pending the opening of Second Avenue Subway Phase II or the implementation of practicable mitigation measures.

Lastly, it is expected that the mitigation measures identified for the Proposed Actions' 2027 operational bus impacts would also be effective at mitigating any potential impacts from construction bus trips during the 2025 (first quarter) peak quarter for cumulative construction and operational travel demand.

PEDESTRIANS

As discussed above, during the 2021 (second quarter) peak construction travel period it is estimated that there would be a net increment of approximately 692 construction workers on-site daily under the Proposed Actions, approximately 68 percent of whom are expected to travel to/from the Project Area by transit, walking to and from area subway stations and bus stops. Up to an additional 15 percent are expected to walk to or from the Project Area. As approximately 80 percent of these trips are expected to occur during any one peak hour, net incremental construction worker travel demand on area sidewalks and crosswalks is expected to total approximately 458 trips in both the 6 to 7 AM and 3 to 4 PM construction peak hours. These trips would be widely distributed among the 13 projected development sites that would be under construction in 2021 and would primarily occur outside of the weekday AM and PM commuter peak periods and weekday midday and Saturday peak periods when area pedestrian facilities typically experience their greatest demand. During these same construction peak hours, there would be net decreases of 33 and 622 pedestrian trips (transit and walk-only) due to the displacement of No Action Condition development by construction activity. It is therefore unlikely that any single sidewalk, corner, or crosswalk would experience 200 or more incremental peak-hour trips (the threshold below which significant adverse pedestrian impacts are considered unlikely to occur based on CEQR Technical Manual guidelines). Consequently, significant adverse pedestrian impacts in the 2021 peak (second) quarter for construction worker travel demand are not anticipated. At locations where temporary sidewalk closures are required during construction activities, adequate protection or temporary sidewalks and appropriate signage would be provided in accordance with DOT requirements.

As shown in **Table 20-2**, during the 2025 peak (first) quarter for analysis of cumulative construction and operational travel demand, it is estimated that the Proposed Actions would add a net increment of approximately 501 construction workers on-site daily. Based on the same mode choice and temporal factors utilized for the 2021 analysis, construction worker pedestrian trips (transit walk trips and walk-only trips, combined) are expected to total approximately 331 in both the 6:00 to 7:00 AM and 3:00 to 4:00 PM construction peak hours in 2025. When combined with operational pedestrian trips (transit plus walk-only) from completed projected development sites, the Proposed Actions would result in a net total of approximately 451 and 597 pedestrian trips during these periods, respectively, in 2025. By comparison, pedestrian trips with full build-out of the Proposed Actions in 2027 would be substantially greater in number, totaling 3,526, 3,180, 4,793, and 4,511 during the analyzed weekday 7:30 to 8:30 AM, 2:00 to 3:00 PM (midday), 5:15 to 6:15 PM and Saturday 3:00 to 4:00 PM operational peak hours, respectively. 2025 pedestrian conditions during the weekday 6:00 to 7:00 AM and 3:00 to 4:00 PM construction peak hours are therefore expected to be generally better than during the analyzed operational peak hours with full build-out of the Proposed Actions in 2027. Consequently, there would be less likelihood of significant adverse pedestrian impacts during the construction peak hours in the cumulative analysis year than with full build-out of the Proposed Actions in 2027. It is expected that the mitigation measures identified for 2027 operational pedestrian impacts in Chapter 21, “Mitigation,” would also be effective at mitigating any potential impacts from construction pedestrian trips during the 2025 analysis period for cumulative construction and operational travel demand.

PARKING

As discussed above, during the 2021 peak construction traffic period it is estimated that there would be approximately 692 workers on site daily, approximately 17 percent of whom would be expected to travel to the rezoning area by private auto. Based on an average vehicle occupancy of 2.2 persons per vehicle, the maximum daily parking demand from project site construction workers would total approximately 54 spaces (see **Table 20-8**). These workers are expected to park on-street and in off-street public parking facilities in proximity to projected development sites throughout the Project Area. As discussed in Chapter 14, “Transportation,” under Existing conditions approximately 1,095 and 1,795 on-street parking spaces are available within ¼ mile of projected development sites during the weekday midday and overnight periods, respectively and approximately 1,579 on-street parking spaces would continue to be available during the overnight period with full build-out of the Proposed Actions in 2027; however, there would be a deficit of approximately 174 on-street and off-street public parking spaces in the weekday midday period. Consequently, there is a potential for a midday parking shortfall to occur during the 2021 (second quarter) peak construction period as existing off-street public parking capacity is displaced by new development and demand from projected development sites comes on-line. While the 54 spaces of 2021 (second quarter) peak construction worker parking demand would potentially contribute to any such shortfall in the midday, it would not be considered a significant adverse parking impact under *CEQR Technical Manual* criteria given the availability of alternative modes of transportation near the Project Area.

Table 20-8
2021 (Second Quarter) and 2025 (First Quarter)
ConstructionWorker Parking Accumulation

Hour	2021 (Q2)			2025 (Q1)		
	In	Out	Total	In	Out	Total
6–7 AM	43	0	43	31	0	31
7–8 AM	11	0	54	7	0	38
8–9 AM	0	0	54	0	0	38
9–10 AM	0	0	54	0	0	38
10–11 AM	0	0	54	0	0	38
11 AM–12 PM	0	0	54	0	0	38
12–1 PM	0	0	54	0	0	38
1–2 PM	0	0	54	0	0	38
2–3 PM	0	3	51	0	3	35
3–4 PM	0	43	8	0	31	4
4–5 PM	0	8	0	0	4	0
5–6 PM	0	0	0	0	0	0

As shown in **Table 20-2**, above, during the 2025 peak quarter for cumulative construction and operational traffic, it is estimated that there would be approximately 501 workers on site daily.

Based on the same mode choice and vehicle occupancy factors utilized for the 2021 analysis, and as presented in **Table 20-8**, the maximum daily parking demand from project site construction workers in 2025 would total approximately 38 spaces. Given the projected deficit of 174 on-street and off-street public parking spaces in the weekday midday period with full build-out of the Proposed Actions in 2027, there is a potential for a midday parking shortfall to occur during the 2025 (first quarter) analysis period for cumulative construction and operational travel demand. While the 39 spaces of 2025 (first quarter) construction worker parking demand would potentially contribute to any such shortfall in the midday, it would not be considered a significant adverse parking impact under *CEQR Technical Manual* criteria given the availability of alternative modes of transportation near the Project Area.

AIR QUALITY

Emissions from on-site construction equipment and on-road construction vehicles, as well as dust-generating construction activities, all have the potential to affect air quality. The analysis of potential construction air quality impacts included an analysis of both on-site and on-road sources of air emissions, and the combined impact of both sources, where applicable.

In general, much of the heavy equipment used in construction is powered by diesel engines that have the potential to produce relatively high levels of nitrogen oxides (NO_x) and particulate matter (PM) emissions. Fugitive dust generated by construction activities is also a source of PM. Gasoline engines produce relatively high levels of carbon monoxide (CO). Since EPA mandates the use of ultra-low sulfur diesel (ULSD) fuel for all highway and non-road diesel engines, sulfur oxides (SO_x) emitted from the proposed action’s construction activities would be negligible. Therefore, the pollutants analyzed for the construction period are nitrogen dioxide (NO_2)—which is a component of NO_x that is a regulated pollutant, particles with an aerodynamic diameter of less than or equal to 10 micrometers (PM_{10}), particles with an aerodynamic diameter of less than or equal to 2.5 micrometers ($PM_{2.5}$), and carbon monoxide (CO). **Table 20-9** shows the pollutants analyzed in the construction air quality analysis and the corresponding averaging periods.

Table 20-9
Pollutants for Analysis and Averaging Periods

Pollutant	Averaging Period
$PM_{2.5}$	24-hour
	Annual Local
PM_{10}	24-hour
NO_2	Annual
CO	1-hour
	8-hour

Chapter 14, “Air Quality,” contains a review of the pollutants for analysis; applicable regulations, standards, and benchmarks; background concentrations; and general methodology for stationary and mobile source air quality analyses. Additional details relevant only to the construction air quality analysis methodology are presented in the following section. The detailed approach for assessing the effect of construction activities resulting from the proposed action on air quality is discussed further below.

ON-SITE CONSTRUCTION ACTIVITY ASSESSMENT

To determine which construction periods constitute the worst-case periods for the pollutants of concern (PM, CO, NO_2), construction-related emissions were calculated for each calendar year throughout the duration of construction on a rolling annual and peak day basis for $PM_{2.5}$. $PM_{2.5}$ is selected for determining the worst-case periods for all pollutants analyzed, because the ratio of predicted $PM_{2.5}$ incremental concentrations to impact criteria is 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. 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.

In general, where the construction duration at a single development site is expected to be short-term (i.e., less than two years), any impacts resulting from such short-term construction generally do not require detailed assessment. However, as construction activities associated with the proposed rezoning may occur on multiple sites in proximity with each other, there is a potential for cumulative construction impacts. Therefore, emissions profiles were generated for all projected development sites to determine the construction periods with the highest potential to affect air quality.

Based on the emission profiles, the proximity of the projected development sites under construction, and the proximity of construction activities to receptors, the dispersion analysis included modeling of the worst-case annual and short-term (i.e., 24-hour, 8-hour, and 1-hour) averaging periods identified in **Table 20-9**.

Engine Emissions

The sizes, types, and number of units of construction equipment were estimated based on the construction activity schedule developed for the proposed action. Emission factors for NO_x, CO, PM_{10}, and $PM_{2.5}$ from on-site construction engines were developed using the EPA's NONROAD2008 emission model (NONROAD). Emission rates for NO_X, CO, PM_{10}, and $PM_{2.5}$ from truck engines were developed using the EPA Motor Vehicle Emission Simulator (MOVES2014a) emission model. The emission factor calculations took into account any emissions reduction measures (i.e., the application of diesel particulate filters, etc.) that is required for the projected development sites.

On-Site Fugitive Dust

In addition to engine emissions, fugitive dust emissions from operations (e.g., excavation and transferring of excavated materials into dump trucks) were calculated based on EPA procedures delineated in AP-42 Table 13.2.3-1. Since construction is required to follow the DEP *Construction Dust Rules* regarding construction-related dust emissions, a 50 percent reduction in particulate emissions from fugitive dust were conservatively assumed in the calculation (dust control methods such as wet suppression would often provide at least a 50 percent reduction in particulate emissions).

Analysis Periods

As discussed above, the construction periods with activities closest to sensitive receptors—both off-site and completed portions of the projected development sites—and with the most intense activities and highest emissions were selected as the worst-case periods for analysis. The dispersion analysis included modeling of the one worst-case annual and one short-term (i.e., 24-hour, 8-hour, and 1-hour) averaging periods identified in **Table 20-9**. April 2019 and the 12-month period between July 2018 and June 2019 were identified as the short-term and annual analysis periods, respectively, to capture the effects of cumulative construction activities at Projected Development Sites 5, 8, and 9, which are in proximity of each other.

Dispersion Modeling

Potential impacts from the proposed action's construction sources were evaluated using a refined dispersion model, the EPA/AMS AERMOD dispersion model. 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, cranes, or concrete trucks, which idle in a single location while unloading, were simulated as point sources. Other engines, which would move around the site on any given day, were simulated as area sources. For periods of 8 hours or less (less than the length of a shift), it was assumed that all engines would be active simultaneously. All sources with the exception of tower cranes would move around the site throughout the year and were therefore be simulated as area sources in the annual analysis.

Meteorological Data

The meteorological data set consists of five consecutive years of latest available meteorological data: surface data collected at the nearest representative National Weather Service Station (LaGuardia Airport) from 2012 to 2016 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 which can be readily processed by the AERMOD model.

Receptor Locations

Receptors were placed at locations that would be publicly accessible, at residential and other sensitive uses at both ground-level and elevated locations (e.g., residential windows), at adjacent sidewalk locations, at publically accessible open spaces, and at nearby projected development sites. In addition, a ground-level receptor grid was placed to enable extrapolation of concentrations throughout the study area at locations more distant from construction activities.

On-Road Sources

The traffic increments during construction are expected to be lower than the operational traffic increments for the full build-out with the Proposed Actions. In addition, construction worker commuting trips and construction truck deliveries would generally occur during off-peak hours. Furthermore, when distributed over the transportation network, the construction trip increments would not be concentrated at any single location. Therefore, a standalone mobile-source analysis is not required. Nevertheless, 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 construction sites were included with the on-site 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, MOVES2014a.[2] 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, and various other factors that influence emissions, such as inspection maintenance programs. The inputs and use of MOVES incorporate the most current guidance available from NYSDEC.

On-Road Fugitive Dust

$PM_{2.5}$ emission rates were determined with fugitive road dust to account for their impacts. However, fugitive road dust emissions were not included in the annual average $PM_{2.5}$ microscale analyses, as per the current *CEQR Technical Manual* guidance used for mobile source analysis. Road dust emission factors were calculated according to the latest procedure delineated by EPA.[3] An average weight of 17.5 tons and 2.5 tons was assumed for construction trucks and worker vehicles in the analyses, respectively.

Traffic Data

Traffic data for the air quality analysis were derived from existing traffic counts, projected future growth in traffic, and other information developed as part of the construction traffic analysis for the Proposed Actions.

Impact Criteria

The *CEQR Technical Manual* states that the significance of a predicted consequence of a project (i.e., whether it is material, substantial, large or important) should be assessed in connection with its setting (e.g., urban or rural), its probability of occurrence, its duration, its irreversibility, its geographic scope, its magnitude, and the number of people affected.[4] In terms of the magnitude of air quality impacts, any action predicted to increase the concentration of a criteria air pollutant to a level that would exceed the concentrations defined by the NAAQS would be deemed to have a potential significant adverse impact. In addition, to maintain concentrations lower than the NAAQS in attainment areas, or to ensure that concentrations will not be significantly increased in non-attainment areas, threshold levels have been defined for certain pollutants; any action predicted to increase the concentrations of these pollutants above the thresholds would be deemed to have a potential significant adverse impact, even in cases where violations of the NAAQS are not predicted.

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[2] EPA, Motor Vehicle Emission Simulator (MOVES), User Guide for MOVES2014a, November 2015.

[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.

[4] New York City. *CEQR Technical Manual*. Chapter 1, section 222. March 2014; and New York State Environmental Quality Review Regulations, 6 NYCRR § 617.7

EMISSIONS CONTROL MEASURES

Measures would be taken to reduce pollutant emissions during construction under the Proposed Actions in accordance with all applicable laws, regulations, and building codes. These required measures include dust suppression measures as specified in the DEP *Construction Dust Rules*, diesel- and gas-powered equipment reduction, and truck idling restrictions. In addition, development sites that include City-owned parcels and/or receive financing from the City are subject to New York City Local Law 77 (LL77)[5] to further minimize the effects of construction on air quality. LL77 requires the use of ULSD fuel and Best Available Technology (BAT) for equipment at the time of construction:

- *Clean Fuel*. ULSD[6] fuel will be used exclusively for all diesel engines throughout the development area.
- *Best Available Tailpipe Reduction Technologies*. Non-road diesel engines with a power rating of 50 horsepower (hp) or greater and controlled truck fleets (i.e., truck fleets under long-term contract with the project) including but not limited to concrete mixing and pumping trucks would utilize the best available technology (BAT) for reducing 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 diesel nonroad engines rated at 50 hp or greater would utilize DPFs, either installed by the original equipment manufacturer (OEM) or retrofitted. Retrofitted DPFs must be verified by EPA or the California Air Resources Board (CARB). Active DPFs or other technologies proven to achieve an equivalent reduction may also be used.

For development sites that are not subject to LL77, it is expected that the emissions control measures under LL77 would likely be implemented during construction of the proposed project to the extent practicable and feasible as these measures are commonly used in the New York City construction industry today. Regardless, since construction under the Proposed Actions is anticipated to occur over an approximately 10-year period through 2027, there would be an increasing percentage of in-use newer and cleaner vehicles and engines for construction in future years, resulting in greatly reduced air pollutant emissions that would be consistent with the emission reduction levels associated with LL77.

Overall, the emission control measures identified above are expected to significantly reduce air pollutant emissions during construction under the Proposed Actions.

ANALYSIS RESULTS

Maximum predicted concentration increments from construction under the Proposed Actions, and maximum overall concentrations including background concentrations, are presented in **Table 20-10**, for the construction peak period analyzed. For PM2.5, monitored background

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[5] Local Law 77, adopted December 22, 2003, applies to all city-owned non-road diesel vehicles and engines and any privately owned diesel vehicles and engines used on construction projects funded by the City.

[6] EPA required a major reduction in the sulfur content of diesel fuel intended for use in locomotive, marine, and non-road engines and equipment, including construction equipment. As of 2015, the diesel fuel produced by all large refiners, small refiners, and importers must be ULSD fuel sulfur levels in non-road diesel fuel are limited to a maximum of 15 parts per million.

concentrations are not added to modeled concentrations from sources, since impacts are determined by comparing the predicted increment from construction activities to the CEQR de minimis criteria. The maximum predicted concentration increments include both on-site construction sources and on-road construction sources.

Table 20-10
Maximum Predicted Pollutant Concentrations from Construction Site Sources—2019 Peak Analysis Period (µg/ m3)

Pollutant	Averaging Period	Background	Maximum Modeled Increment	Total Concentration	*De Minimis* Criteria	NAAQS
$PM_{2.5}$	24-hour[1]	—	5.2	—	5.65[2]	—
	Annual Local[1]	—	0.26	—	0.3	—
PM_{10}	24-hour	39.0	8.8	47.8	—	150
NO_2	Annual	39.1	14.2	53.3	—	100
CO	One-hour	2.7 ppm	23.5 ppm	26.2 ppm	—	35 ppm
	Eight-hour	1.7 ppm	4.2 ppm	5.9 ppm	—	9 ppm

Notes:
Results for any other time period and/or location are expected to be comparable or lower.
$PM_{2.5}$ concentration increments were compared with the applicable *de minimis* criteria. Total concentrations were compared with the NAAQS.
[1]Monitored concentrations are not added to modeled $PM_{2.5}$ values.
[2]$PM_{2.5}$ *de minimis* criteria—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.

As described above under "Analysis Periods," based on the $PM_{2.5}$ construction emissions profiles and the proximity of the Projected Development sites under construction, April 2019 and the 12-month period between July 2018 and June 2019 were identified as the short-term and annual analysis periods, respectively, to capture the cumulative effects of construction activities at Projected Development Sites 5, 8, and 9.

As shown in **Table 20-10**, the maximum predicted total concentrations of PM_{10}, CO, and annual-average NO_2 are below the applicable NAAQS. The maximum predicted 24-hour average $PM_{2.5}$ incremental concentration (5.2 µg/m^3) would occur at a residential location immediately west of Projected Development Site 8, and the maximum predicted annual average $PM_{2.5}$ incremental concentration (0.11 µg/m^3) would occur at a sidewalk location immediately south of Projected Development Site 5. The maximum predicted $PM_{2.5}$ incremental concentrations would not exceed the applicable CEQR *de minimis* criterion of 5.65 µg/m^3 in the 24-hour average period or 0.3 µg/m^3 in the annual average period.

Although the modeled results are based on the representative peak construction periods, conclusions regarding other periods could be derived based on the lower concentration increments from construction that would generally be expected during periods with lower construction emissions (i.e., construction of Projected Developments Sites 4a and 4b).

CONCLUSIONS

Measures would be taken to reduce pollutant emissions during construction in accordance with all applicable laws, regulations, and building codes as well as New York City Local Law 77. These include dust suppression measures, idling restriction, and the use of ULSD and best available tailpipe reduction technologies. With the implementation of these emission reduction measures, the dispersion modeling analysis of construction-related air emissions for both on-site and on-road sources determined that $PM_{2.5}$, PM_{10}, annual-average NO_2, and CO concentrations would be below their corresponding *de minimis* thresholds or NAAQS, respectively. Therefore, construction under the Proposed Actions would not result in significant adverse air quality impacts due to construction sources.

NOISE AND VIBRATION

INTRODUCTION

Potential impacts on community noise levels during construction under the Proposed Actions could result from construction equipment operation as well as vehicles and delivery vehicles traveling to and from the development sites. Noise and vibration levels at a given location would be dependent on the type and number of pieces of construction equipment in operation, the acoustical utilization factor of the equipment (i.e., the percentage of time a piece of equipment is operating at full power), the distance from the construction site, and any shielding effects from structures such as buildings, walls, or barriers. Noise levels caused by construction activities would vary widely, depending on the stage of construction and the location of the construction relative to receptor locations. The most noise-intensive construction activities are typically intermittent and would not occur throughout the workday or the duration of the construction task. During hours when the loudest pieces of construction equipment would not be in use, receptors would experience lower construction noise levels. Construction noise levels would fluctuate during the construction period at each receptor, with the greatest levels of construction noise occurring for limited periods during construction. The most substantial construction noise sources are expected to be impact-related equipment such as pile drivers and heavy equipment such as dump trucks and excavators.

Construction noise is regulated by the requirements of the *New York City Noise Control Code* (also known as Chapter 24 of the *Administrative Code of the City of New York*, or Local Law 113) and the DEP Notice of Adoption of Rules for Citywide Construction Noise Mitigation (also known as Chapter 28). These requirements mandate that specific construction equipment and motor vehicles must meet specified noise emission standards; that construction activities be limited to weekdays between the hours of 7 AM and 6 PM; and that those construction materials be handled and transported in such a manner as not to create unnecessary noise. Permits would be required to be obtained, as specified in the *New York City Noise Control Code*, for weekend and after-hour work if they become necessary. As required under the *New York City Noise Control Code*, a site-specific noise mitigation plan for the Proposed Actions would be developed and implemented that may include source controls, path controls, and receiver controls.

CONSTRUCTION NOISE IMPACT CRITERIA

Chapter 22, Section 100 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 both the potential for construction to create high noise levels (the “intensity”), and whether construction noise would occur for an extended period of time (the “duration”) in evaluating potential construction noise effects.

Chapter 19, Section 421 of the *CEQR Technical Manual* states that the impact criteria for vehicular sources, using conditions without the Proposed Actions, or the “future without the Proposed Actions” noise level as the baseline, should be used for assessing construction effects.

As recommended in Chapter 19, Section 410 of the *CEQR Technical Manual*, this study uses the following criteria to define a significant adverse noise impact from mobile and on-site construction activities:

- If the future without the Proposed Actions condition noise level is less than 60 dBA $L_{eq(1)}$, a 5 dBA $L_{eq(1)}$ or greater increase would be considered significant.
- If the Future without the Proposed Actions condition noise level is between 60 dBA $L_{eq(1)}$ and 62 dBA $L_{eq(1)}$, a resultant $L_{eq(1)}$ of 65 dBA or greater would be considered a significant increase.
- If the future without the Proposed Actions condition noise level is equal to or greater than 62 dBA $L_{eq(1)}$, or if the analysis period is a nighttime period (defined in the *CEQR* criteria as being between 10 PM and 7 AM), the incremental significant impact threshold would be 3 dBA $L_{eq(1)}$.

NOISE ANALYSIS FUNDAMENTALS

As stated above, construction activities for the Proposed Actions would be expected to result in increased noise levels as a result of: (1) the operation of construction equipment on the proposed development sites; and (2) the movement of construction-related vehicles (i.e., worker trips and material and equipment trips) on the roadways to and from the projected development. The effect of each of these noise sources was evaluated. The results presented below show the effects of construction activities (i.e., noise due to both on-site construction equipment and construction-related vehicle operation) on noise levels at nearby noise receptor locations.

Noise from the 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 site 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 from construction fence, nearby buildings, etc.

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 MODELING

Noise effects from construction activities were evaluated using the CadnaA model, a computerized model developed by DataKustik for noise prediction and assessment. The model 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 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 drawings that define site work areas, adjacent building footprints, and heights, locations of streets, and locations of sensitive receptors. For each analysis period, the geographic location and operational characteristics—including equipment usage rates for each piece of construction equipment operating at the projected development sites, as well as noise control measures—were input to the model. 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[7].

NOISE ANALYSIS METHODOLOGY

The construction noise analysis involved the following process:

1. Select analysis hours for cumulative on-site equipment and construction truck noise analysis. The 7 AM hour was selected as the analysis hour because this would be the hour when the highest number of truck trips to and from the construction site would overlap with on-site equipment operation.
2. Select representative construction sites for analysis. The largest projected development site (Projected Development Site 4a), a typical projected development site on Park Avenue (Projected Development Site 9), and a projected development site on Third Avenue (Projected Development Site 16) were selected to be analyzed for each phase of construction: excavation and foundation; superstructure; and interior fit-out. Because the analysis is based on construction phases, it does not capture the natural daily and hourly variability of construction noise at each receptor. The level of noise produced by construction fluctuates throughout the days and months of the construction phases, while the construction noise analysis is based on the worst-case time periods only, which is conservative. Based on the schedule and location of the three projected development sites selected for quantitative analysis, they would not have the potential to simultaneously affect

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

noise levels at any surrounding receptor sites (i.e., these projected development sites would not be constructed simultaneously. Consequently, they were analyzed independently.

3. Select receptor locations for quantitative cumulative on-site equipment and construction truck noise analysis at the representative construction sites. Selected receptors were representative of open space, educational, residential, or other noise-sensitive uses potentially affected by construction on the representative construction sites during operation of on-site construction equipment and/or along routes taken to and from the sites by construction trucks.
4. Establish existing noise levels at selected receptors. Noise levels were measured at several at-grade locations, and calculated for the other noise receptor locations included in the analysis. Figure 17-1 shows the construction noise measurement locations. Existing noise levels at noise receptors other than the selected noise measurement locations were established using the CadnaA model along with existing-condition traffic information. The calculated existing noise levels were conservatively used to represent No Action Condition noise levels, since noise levels are not projected to increase substantially between the Existing and No Action Conditions.
5. Calculate construction noise levels for each construction phase at each receptor location based on the sound power level, acoustical usage factor and physical placement of each piece of equipment. Given the on-site equipment and construction truck trips that are expected during each of the analysis periods at each construction site, and the location of the equipment, which was based on construction logistics and construction truck and worker vehicle trip assignments, a CadnaA model file for each construction phase was created for all three analyzed projected development sites. All model files 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, as well as the noise control measures that would be used on the site, as described below.
6. Determine total noise levels and noise level increments during construction at the selected receptor locations during construction of Projected Development Sites 4a, 9, and 16. For each analysis period, the calculated level of construction noise at each receptor location was logarithmically added to the existing noise level to determine the cumulative total noise level. The existing noise level at each receptor was then arithmetically subtracted from the cumulative noise level in each analysis period to determine the noise level increments.
7. Compare total noise levels and noise level increments with impact criteria as set forth in Chapter 19, Section 421 of the *CEQR Technical Manual*. The predicted noise levels were compared with the noise impact criteria from the *CEQR Technical Manual* to determine the potential effects of construction noise based on the magnitude of construction noise at each receptor.
8. Establish range of impact criteria exceedances for each analyzed projected development site in terms of distance from each construction site as well as the surrounding geometry including shielding objects such as buildings. Based on the results of the quantitative construction noise analyses at Projected Development Sites 4a, 9, and 16 as described above, the range from each site that noise levels are predicted to exceed *CEQR Technical Manual* criteria was established.
9. Establish magnitude of construction noise at noise receptors near other project development sites other than those analyzed. Projected Development Site 9 represented all projected

development sites along Park Avenue (except for Projected Development Site 4a); Projected Development Site 16 represented all projected development sites along Lexington Avenue, Third Avenue, Second Avenue, and other streets. Extrapolating from the construction noise analysis results at the selected construction sites, based on the expected stages of construction during each year at each project development site according to the conceptual construction schedule and the ranges established in item 8 above, noise receptors were identified that would be expected to experience substantially increased noise due to construction of the other projected development sites.

10. Establish construction noise duration. For each receptor, the noise level increments in each analysis period were examined to determine the phases of construction at the nearby construction sites that would result in exceedances of the *CEQR Technical Manual* impact criteria. Based on the conceptual construction schedule and the ranges established in item 8 above, the worst-case month per year of the construction schedule was used to determine the duration of construction noise at the analyzed receptors.
11. Identify and describe potential significant adverse construction noise impacts. At each receptor, based on the magnitude and duration of predicted noise level increases due to construction, a determination was made as to whether the Proposed Actions would have the potential to result in significant adverse construction noise impacts.

NOISE REDUCTION MEASURES

Construction of the Proposed Actions would be required to follow the requirements of the *NYC Noise Control Code* for construction noise control measures. Specific noise control measures would be incorporated in noise mitigation plan(s) required under the *NYC Noise Code*. These measures could 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 would be implemented in accordance with the *NYC Noise Code*:

- Equipment that meets the sound level standards specified in Subchapter 5 of the *NYC Noise Control Code* would be utilized from the start of construction. **Table 20-11** shows the noise levels for typical construction equipment and the mandated noise levels for the equipment that would be used for construction under the Proposed Actions.
- As early in the construction period as logistics would 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 feasible and practicable, construction sites would be configured to minimize back-up alarm noise. In addition, all trucks would not 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.

Table 20-11
Typical Construction Equipment Noise Emission Levels (dBA)

Equipment List	NYCDEP Typical Noise Level at 50 feet[1]
All Other Equipment > 5 HP	85
Bar Bender	80
Concrete Mixer Truck	85
Concrete Trowel	67[2]
Crane	85
Dozer	85
Dump Truck	84
Excavator	85
Forklift	64[3]
Front End Loader	80
Generator	82
Hoist	75[4]
Impact Pile Driver	95
Jackhammer	73
Pump	77
Saw	76[5]
Scissor Lift	63
Vibratory Concrete Mixer	80
Welder	73

Sources:
[1] "Rules for Citywide Construction Noise Mitigation," Chapter 28, DEP, 2007, except where noted.
[2] Columbia Manhattanville Noise Certification.
[3] Dantruck.com.
[4] "Noise Control for Construction Equipment…" Report for Hydro Quebec, 1985.
[5] East New York Rezoning FEIS, 2016

In terms of path controls (e.g., placement of equipment, implementation of barriers or enclosures between equipment and sensitive receptors), the following measures for construction would be implemented to the extent feasible and practicable:

- Where logistics allow, noisy equipment, such as cranes, concrete pumps, concrete trucks, and delivery trucks, would be located away from and shielded from sensitive receptor locations.
- Noise barriers constructed from plywood or other materials would be erected to provide shielding; and
- Path noise control measures (i.e., portable noise barriers, panels, enclosures, and acoustical tents, where feasible) for certain dominant noise equipment would be employed to the extent feasible and practical based on the results of the construction noise calculations. The details to construct portable noise barriers, enclosures, tents, etc. are shown in DEP's "Rules for Citywide Construction Noise Mitigation."[8]

NOISE RECEPTOR SITES

Within the area surrounding the analyzed development sites, 152 receptor locations were selected to represent buildings or noise-sensitive open space locations near the analysis locations

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

for the construction noise analysis. These receptors are either located adjacent to planned areas of activity or streets where construction trucks would travel. At some buildings, multiple building façades were analyzed. At high-rise buildings, noise receptors were selected at multiple elevations. The receptor sites selected for detailed analysis are representative locations where maximum project effects due to construction noise would be expected. At-grade noise measurements were conducted at 19 locations to determine existing noise levels in the study area as described in Chapter 17, "Noise."

Figures 20-2 and 20-3 show the locations of the noise receptor locations, and **Tables 20-12 and 20-13** lists the noise receptor locations as well as the associated land use at each site.

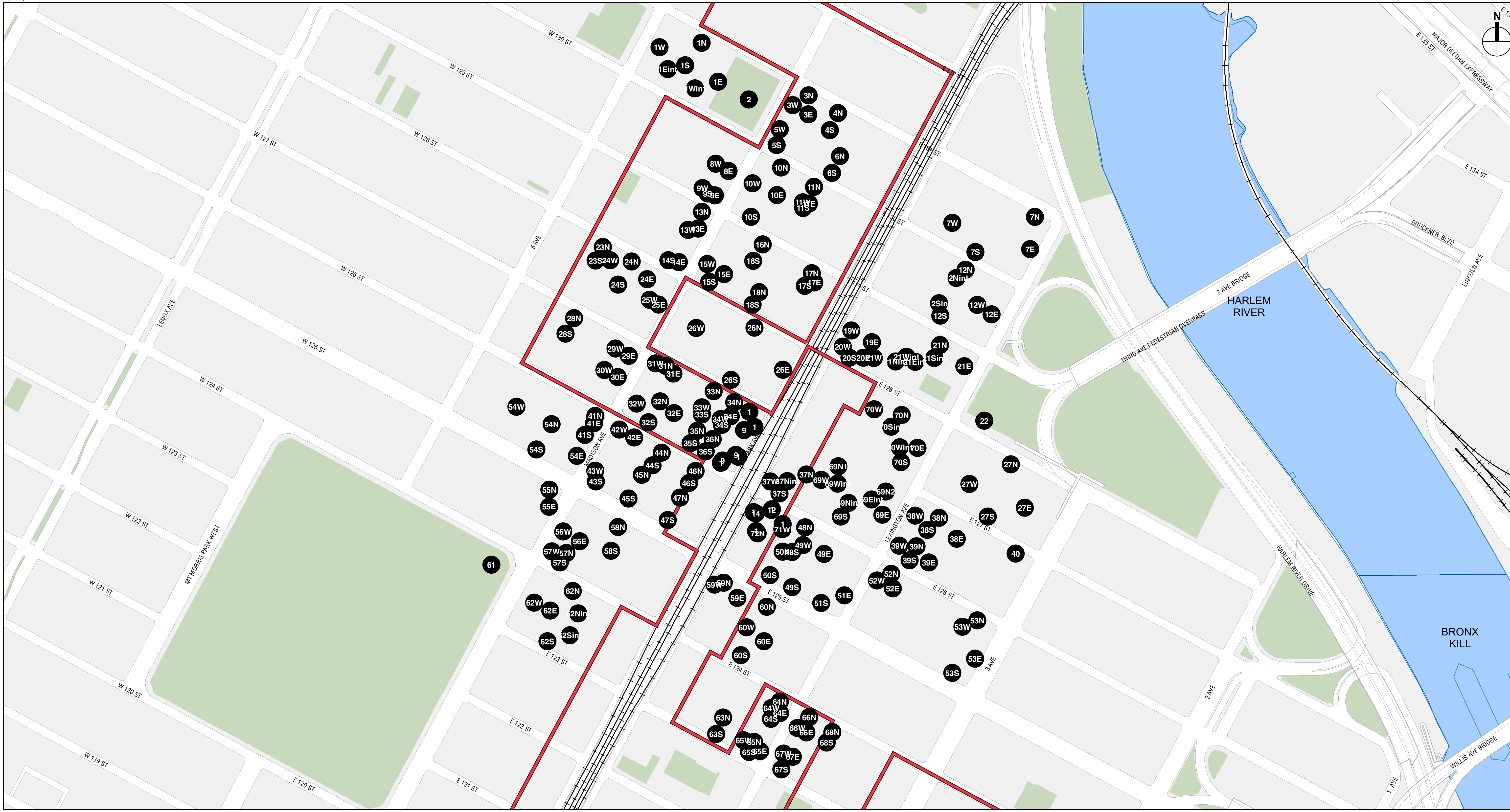
Noise Survey Results

The baseline noise levels at each of the noise survey locations are described in detail in Chapter 17, "Noise." At all noise measurement locations, the dominant existing noise source was from vehicular traffic on the adjacent roadways.

Table 20-12
Sites 4a and 9 Noise Receptor Locations

Receptor Number	Location	Land Use
1	2121 Fifth Avenue	Institutional
2	2058 Madison Avenue	Open Space
3	2071 Madison Avenue	Residential
4	56 East 131st Street	Residential
5	47 East 130th Street	Residential
6	69 East 130th Street	Residential
7	107 East 130th Street	Residential
8	2046 Madison Avenue	Residential
9	2034 Madison Avenue	Residential
10	41 East 129th Street	Institutional
11	58 East 130th Street	Residential
12	123 East 129th Street	Residential
13	32 East 129th Street	Residential
14	2020 Madison Avenue	Mixed Use Residential and Commercial
15	2015 Madison Avenue	Institutional
16	50 East 129th Street	Residential
17	68 East 129th Street	Institutional
18	57 East 128th Street	Residential
19	1885 Park Avenue	Institutional
20	1881 Park Avenue	Institutional
21	105 East 128th Street	Residential
22	145 East 128th Street	Open Space
23	10 East 128th Street	Residential
24	22 East 128th Street	Institutional
25	2004 Madison Avenue	Residential
26	2005 Madison Avenue	Institutional
27	144 East 128th Street	Institutional
28	16 East 127th Street	Residential
29	1990 Madison Avenue	Residential
30	1982 Madison Avenue	Residential

3/31/2017



Primary Study Area

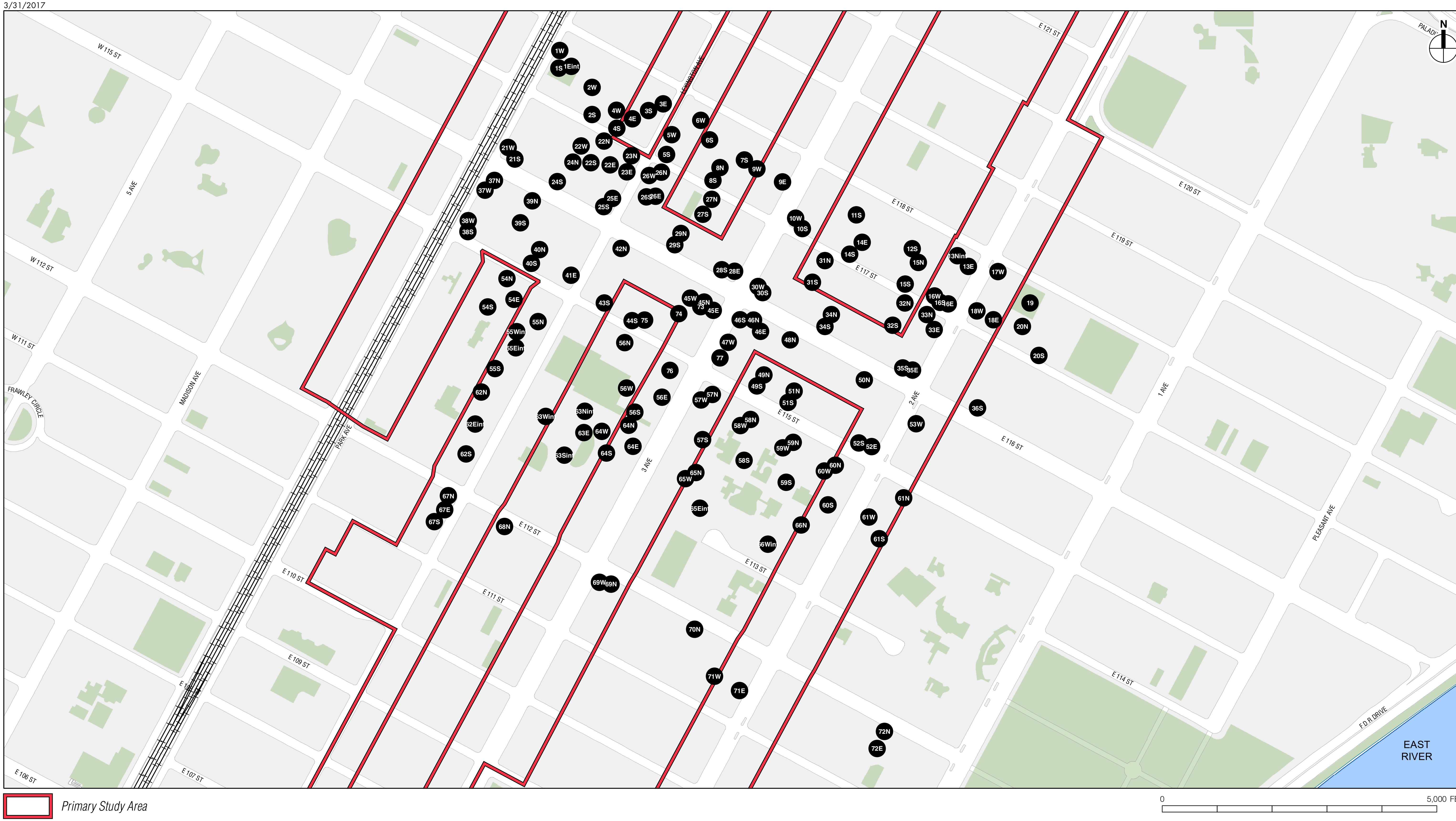
0 5,000 FEET

EAST HARLEM REZONING

CadnaA Receptor Locations for Projected Development Sites 4a and 9

Figure 20-2

3/31/2017



EAST HARLEM REZONING

CadnaA Receptor Locations for Projected Development Site 16

Figure 20-3

Table 20-12 (cont'd)
Site 4 and 9 Noise Receptor Locations

Receptor Number	Location	Land Use
31	1991 Madison Avenue	Residential
32	1971 Madison Avenue	Institutional
33	70 East 127th Street	Residential
34	78 East 127th Street	Residential
35	53 East 126th Street	Residential
36	59 East 126th Street	Residential
37	1841 Park Avenue	Institutional
38	160 East 127th Street	Residential
39	2089 Lexington Avenue	Residential
40	2338 Third Avenue	Open Space
41	40 East 126th Street	Residential
42	1965 Madison Avenue	Residential
43	51 East 125th Street	Mixed Use Residential and Commercial
44	52 East 126th Street	Residential
45	63 East 125th Street	Residential
46	66 East 126th Street	Residential
47	79 East 125th Street	Residential
48	108 East 126th Street	Mixed Use Residential and Commercial
49	110 East 126th Street	Institutional
50	111 East 125th Street	Mixed Use Residential and Commercial
51	127 East 125th Street	Mixed Use Residential and Commercial
52	142 East 126th Street	Mixed Use Residential and Commercial
53	2306 Third Avenue	Institutional
54	35 East 125th Street	Institutional
55	28 East 125th Street	Residential
56	1939 Madison Avenue	Residential
57	1931 Madison Avenue	Residential
58	62 East 125th Street	Residential
59	1815 Park Avenue	Residential
60	118 East 125th Street	Institutional
61	18 Mt. Morris Park West	Open Space
62	1911 Madison Avenue	Mixed Use Residential and Commercial
63	113 East 123rd Street	Residential
64	136 East 124th Street	Mixed Use Residential and Commercial
65	2022 Lexington Avenue	Residential
66	150 East 124th Street	Institutional
67	149 East 123rd Street	Mixed Use Residential and Commercial
68	158 East 124th Street	Residential
69	107 East 126th Street	Residential
70	112 East 128th Street	Residential
71	104 East 126th Street	Commercial and Office Space
72	1825 Park Avenue	Commercial and Office Space

Note: (1) Projected Development Sites 5, 8, and 9 were not included in the Projected Development Site 9 construction analysis.

Table 20-13
Projected Development Site 16 Noise Receptor Locations

Receptor Number	Location	Land Use
1	1669 Park Avenue	Residential
2	125 East 117th Street	Institutional
3	1894 Lexington Avenue	Residential
4	127 East 117th Street	Residential
5	1885 Lexington Avenue	Mixed Use Residential and Commercial
6	152 East 118th Street	Residential
7	170 East 118th Street	Mixed Use Residential and Commercial
8	173 East 117th Street	Residential
9	2152 Third Avenue	Institutional
10	2143 Third Avenue	Mixed Use Residential and Commercial
11	210 East 118th Street	Residential
12	234 East 118th Street	Residential
13	2295 Second Avenue	Mixed Use Residential and Commercial
14	215 East 117th Street	Residential
15	235 East 117th Street	Mixed Use Residential and Commercial
16	2283 Second Avenue	Mixed Use Residential and Commercial
17	2296 Second Avenue	Mixed Use Residential and Commercial
18	2284 Second Avenue	Mixed Use Residential and Commercial
19	308 East 118th Street	Outdoor Space
20	305 East 117th Street	Institutional
21	101 East 116th Street	Residential
22	136 East 117th Street	Residential
23	142 East 117th Street	Mixed Use Residential and Commercial
24	115 East 116th Street	Residential
25	137 East 116th Street	Mixed Use Residential and Commercial
26	156 East 117th Street	Mixed Use Residential and Commercial
27	178 East 117th Street	Residential
28	2128 Third Avenue	Mixed Use Residential and Commercial
29	161 East 116th Street	Mixed Use Residential and Commercial
30	2125 Third Avenue	Mixed Use Residential and Commercial
31	212 East 117th Street	Residential
32	244 East 117th Street	Residential
33	250 East 117th Street	Residential
34	223 East 116th Street	Residential
35	2261 Second Avenue	Residential
36	307 East 117th Street	Mixed Use Residential and Commercial
37	100 East 116th Street	Mixed Use Residential and Commercial

Table 20-13 (cont'd)
Projected Development Site 16 Noise Receptor Locations

Receptor Number	Location	Land Use
38	101 East 115th Street	Mixed Use Residential and Commercial
39	112 East 116th Street	Mixed Use Residential and Commercial
40	121 East 115th Street	Residential
41	1860 Lexington Avenue	Mixed Use Residential and Commercial
42	152 East 116th Street	Mixed Use Residential and Commercial
43	159 East 115th Street	Residential
44	171 East 115th Street	Residential
45	2118 Third Avenue	Mixed Use Residential and Commercial
46	2121 Third Avenue	Mixed Use Residential and Commercial
47	2111 Third Avenue	Mixed Use Residential and Commercial
48	216 East 116th Street	Institutional
49	211 East 115th Street	Institutional
50	242 East 116th Street	Mixed Use Residential and Commercial
51	225 East 115th Street	Residential
52	2243 Second Avenue	Mixed Use Residential and Commercial
53	1154 Second Avenue	Mixed Use Residential and Commercial
54	1844 Lexington Avenue	Residential
55	1844 Lexington Avenue	Residential
56	176 East 115th Street	Institutional
57	2055 Third Avenue	Residential
58	2055 Third Avenue	Residential
59	2055 Third Avenue	Residential
60	2055 Third Avenue	Residential
61	2178 Second Avenue	Residential
62	1844 Lexington Avenue	Residential
63	1833 Lexington Avenue	Residential
64	1833 Lexington Avenue	Residential
65	2055 Third Avenue	Residential
66	2055 Third Avenue	Residential
67	144 East 112th Street	Residential
68	158 East 112th Street	Residential
69	2039 Third Avenue	Mixed Use Residential and Commercial
70	236 East 112th Street	Mixed Use Residential and Commercial
71	2167 Second Avenue	Residential
72	334 East 112th Street	Residential
73	2118 3rd Avenue	Mixed Use Residential and Commercial
74	176 East 116th Street	Commercial
75	171 East 115th Street	Residential
76	176 East 115th Street	Institutional
77	2107 Third Avenue	Mixed Use Residential and Commercial

CONSTRUCTION NOISE ANALYSIS RESULTS

Using the methodology described above, and considering the noise abatement measures specified above, cumulative noise analyses were performed to determine maximum 1-hour equivalent ($L_{eq(1)}$) noise levels that would be expected during one (1) worst-case month for each phase of construction at each projected development site selected for analysis. This resulted in a predicted range of peak hourly construction noise levels throughout the construction period (see **Appendix H** for the complete construction noise analysis results).

Projected Development Site 4a

Construction of Projected Development Site 4a is predicted to result in noise level increases at noise-sensitive receptors close to the construction area at some times during the construction period. Areas immediately adjacent to construction work areas would experience the highest levels of construction noise (while construction is ongoing immediately adjacent), whereas receptors located further from the development area would experience less noise because of the greater distance from the on-site construction equipment. The results of the detailed construction noise analysis for Projected Development Site 4a are summarized in **Table 20-14**.

The maximum predicted noise levels shown in **Table 20-14** would occur during the most noise-intensive activities of construction, which typically do not occur every day, and do not occur during every hour on days during which those activities are conducted. During hours when the loudest pieces of construction equipment (e.g., impact pile driver) are not in use, receptors would experience lower construction noise levels. As described below, construction noise levels would fluctuate during the construction period at each receptor, with the greatest levels of construction noise occurring for limited periods during construction.

Table 20-14
Projected Development Site 4a Construction Noise Analysis Results in dBA

Receptor	Location	Existing L_{EQ}		Total L_{EQ}		Change in L_{EQ}	
		Min	Max	Min	Max	Min	Max
1	2121 Fifth Avenue	61.9	61.9	61.9	63.2	0.0	1.3
2	2058 Madison Avenue	61.9	61.9	61.9	61.9	0.0	0.0
3	2071 Madison Avenue	61.9	61.9	61.9	62.2	0.0	0.3
4	56 East 131st Street	61.9	61.9	61.9	64.7	0.0	2.8
5	47 East 130th Street	61.9	61.9	61.9	62.9	0.0	1.0
6	69 East 130th Street	61.9	64.5	61.9	68.0	0.0	4.5
7	107 East 130th Street	61.9	64.4	61.9	64.4	0.0	1.2
8	2046 Madison Avenue	61.9	61.9	61.9	61.9	0.0	0.0
9	2034 Madison Avenue	61.9	61.9	61.9	63.0	0.0	1.1
10	41 East 129th Street	61.9	61.9	61.9	63.9	0.0	2.0
11	58 East 130th Street	61.9	63.7	61.9	67.7	0.0	5.1
12	123 East 129th Street	61.9	62.5	61.9	69.1	0.0	7.2
13	32 East 129th Street	61.9	62.4	61.9	64.9	0.0	3.0
14	2020 Madison Avenue	61.9	63.0	62.6	67.5	0.7	5.4
15	2015 Madison Avenue	61.9	62.8	62.1	69.0	0.1	7.1
16	50 East 129th Street	61.9	62.6	62.0	67.1	0.1	5.2
17	68 East 129th Street	66.2	72.4	66.5	75.0	0.3	2.8
18	57 East 128th Street	61.9	64.5	62.1	74.6	0.2	10.3
19	1885 Park Avenue	61.9	74.8	64.0	78.1	1.6	12.7
20	1881 Park Avenue	61.9	74.8	64.4	83.7	2.3	13.9
21	105 East 128th Street	61.9	65.6	62.0	79.2	0.1	14.7
22	145 East 128th Street	61.9	61.9	62.9	67.8	1.0	5.9
23	10 East 128th Street	61.9	61.9	61.9	62.1	0.0	0.2
24	22 East 128th Street	61.9	61.9	61.9	62.9	0.0	1.0
25	2004 Madison Avenue	61.9	62.6	61.9	67.4	0.0	4.8
26	2005 Madison Avenue	61.9	74.3	62.0	81.7	0.1	7.5
27	144 East 128th Street	61.9	62.8	61.9	65.6	0.0	3.7
28	16 East 127th Street	61.9	64.4	61.9	66.8	0.0	2.8
29	1990 Madison Avenue	61.9	68.4	62.0	69.7	0.0	1.8
30	1982 Madison Avenue	61.9	67.9	62.0	69.2	0.0	1.5
31	1991 Madison Avenue	61.9	68.4	62.0	70.0	0.1	2.4
32	1971 Madison Avenue	61.9	67.3	62.0	67.3	0.0	3.0
33	70 East 127th Street	61.9	71.3	62.0	74.4	0.0	3.5
34	78 East 127th Street	63.2	76.6	63.5	76.7	0.0	3.6
35	53 East 126th Street	70.7	71.2	70.8	71.3	0.0	0.3
36	59 East 126th Street	73.0	73.9	73.0	74.1	0.0	0.5
37	1841 Park Avenue	73.4	80.6	74.1	80.8	0.1	3.2
38	160 East 127th Street	61.9	64.2	61.9	71.2	0.0	8.0
39	2089 Lexington Avenue	61.9	63.9	61.9	67.1	0.0	5.2
40	2338 Third Avenue	63.1	63.1	63.4	66.7	0.3	3.6
41	40 East 126th Street	61.9	68.7	61.9	68.8	0.0	0.3
42	1965 Madison Avenue	65.1	68.6	65.2	68.7	0.1	0.9
43	51 East 125th Street	69.6	71.7	69.8	72.5	0.2	0.8
44	52 East 126th Street	61.9	68.6	61.9	69.3	0.0	0.7
45	63 East 125th Street	61.9	72.8	61.9	73.5	0.0	0.7
46	66 East 126th Street	73.4	75.5	73.4	75.5	0.0	0.2
47	79 East 125th Street	74.5	75.0	74.5	75.1	0.0	0.5
48	108 East 126th Street	61.9	71.7	62.1	73.0	0.1	3.7
49	110 East 126th Street	61.9	66.7	62.0	69.8	0.1	3.1

Table 20-14 (cont'd)
Projected Development Site 4a Construction Noise Analysis Results in dBA

Receptor	Location	Existing L_{EQ}		Total L_{EQ}		Change in L_{EQ}	
		Min	Max	Min	Max	Min	Max
50	111 East 125th Street	61.9	68.3	62.0	70.1	0.1	3.2
51	127 East 125th Street	64.4	66.2	64.9	69.7	0.5	3.5
52	142 East 126th Street	61.9	64.5	61.9	65.8	0.0	3.0
53	2306 Third Avenue	61.9	64.4	61.9	68.2	0.0	3.8
54	35 East 125th Street	61.9	65.9	61.9	67.9	0.0	5.2
55	28 East 125th Street	63.4	66.0	65.6	67.9	0.3	3.8
56	1939 Madison Avenue	61.9	65.3	61.9	65.5	0.0	0.3
57	1931 Madison Avenue	61.9	65.5	61.9	66.3	0.0	1.0
58	62 East 125th Street	68.4	69.8	68.6	70.2	0.1	1.5
59	1815 Park Avenue	66.4	77.6	67.1	78.0	0.3	1.2
60	118 East 125th Street	61.9	70.1	61.9	71.4	0.0	2.5
61	18 Mt. Morris Park West	61.9	61.9	61.9	61.9	0.0	0.0
62	1911 Madison Avenue	61.9	67.4	61.9	67.5	0.0	0.4
63	113 East 123rd Street	61.9	63.2	61.9	63.3	0.0	0.1
64	136 East 124th Street	61.9	64.3	61.9	65.1	0.0	2.6
65	2022 Lexington Avenue	61.9	61.9	61.9	61.9	0.0	0.0
66	150 East 124th Street	61.9	63.8	61.9	66.1	0.0	2.8
67	149 East 123rd Street	61.9	61.9	61.9	64.2	0.0	2.3
68	158 East 124th Street	61.9	61.9	61.9	61.9	0.0	0.0
69	107 East 126th Street	61.9	68.2	62.0	79.1	0.1	13.2
70	112 East 128th Street	61.9	67.8	62.1	80.1	0.2	14.8
71	104 East 126th Street	61.9	72.6	62.5	73.4	0.1	6.7
72	1825 Park Avenue	75.7	78.7	75.7	78.7	0.0	0.0

Demolition, Excavation, and Foundation

During demolition, excavation, and foundation construction at Projected Development Site 4a, the primary noise sources would include impact pile drivers, excavators, and bulldozers. The pile drivers would operate intermittently during a portion of the approximately four months of this construction period. Excavators and bulldozers would operate on the site regularly during demolition activities and excavation activities, but infrequently during foundation activities; there would be relatively little time during which both of these sources would overlap on the site. The construction noise analysis, however, is conservatively based on a worst-case time period including all of these sources. A summary of noise levels predicted to occur during the demolition, excavation, and foundation construction phase for Projected Development Site 4a is presented in **Table 20-15**.

Table 20-15
Projected Development Site 4a Demolition, Excavation, and Foundation Noise Levels

Receptor Grouping	CadnaA Receptor Numbers	Existing Noise Levels	Predicted Construction Noise Levels	Maximum Predicted Increment	CEQR Threshold Exceedance?
On Block 1775	37, 69, 70	Low 60s to Low 80s	Low 50s to High 70s	13	Yes
Across Park Avenue	26, 34, 36	Low 60s to Mid-70s	High 40s to High 70s	5	Yes
Across a Narrow Street	20, 21	Low 60s to Mid-70s	High 40s to Low 80s	12	Yes
Up to One Block Away	6, 11, 12, 14–19, 22, 25–27, 31–33, 35, 38–40, 44–52, 71, 72	Low 60s to High 70s	Low 40s to High 70s	10	Yes
Within Two Blocks on Construction Routes	43, 45, 47, 50, 51, 53–55, 58–60	Low 60s to High 70s	Low 40s to High 60s	5	Yes
More than One Block Away	1–5, 7–10, 13, 23, 24, 28–30, 41, 42, 56, 57, 61–68	Low to High 60s	Mid-30s to High 50s	1	No

Superstructure and Exteriors

During building superstructure and exteriors construction at Projected Development Site 4a, the primary noise sources would include emergency generators, dump trucks, and concrete mixer trucks and would be expected to operate over a period of approximately 11 months. The dump trucks and concrete mixer trucks would operate on the site regularly during building superstructure activities, while the generator would be expected to operate on the site throughout both building superstructure and exteriors activities. The construction noise analysis, however, is conservatively based on a worst-case time period including all of these sources. A summary of noise levels predicted to occur during the superstructure and exteriors construction phase for Projected Development Site 4a is presented in **Table 20-16**.

Table 20-16
Projected Development Site 4a Superstructure and Exteriors Noise Levels

Receptor Grouping	CadnaA Receptor Numbers	Existing Noise Levels	Predicted Construction Noise Levels	Maximum Predicted Increment	CEQR Threshold Exceedance?
On Block 1775	37, 69, 70	Low 60s to Low 80s	High 40s to Low 80s	15	Yes
Across Park Avenue	26, 34, 36	Low 60s to Mid-70s	High 40s to Low 80s	8	Yes
Across a Narrow Street	20, 21	Low 60s to Mid-70s	High 40s to Low 80s	15	Yes
Up to One Block Away	6, 11, 12, 14–19, 22, 25–27, 31–33, 35, 38–40, 44–52, 71, 72	Low 60s to High 70s	Low 40s to Low 80s	13	Yes
Within Two Blocks on Construction Routes	43, 45, 47, 50, 51, 53–55 58–60	Low 60s to High 70s	Low 40s to Low 70s	5	Yes
More than One Block away	1–5, 7–10, 13, 23, 24, 28–30, 41, 42, 56, 57, 61–68	Low to High 60s	High 30s to Mid-60s	2	No

Interior Fit-Out

During interior fit-out construction at Projected Development Site 4a, the primary noise sources would include crawler cranes, hoists, and dump trucks and would be expected to operate over a period of approximately 10 months. While the cranes, hoists and dump trucks would always operate simultaneously throughout the work day, the construction noise analysis, however, is conservatively based on a worst-case time period including all of these sources. A summary of noise levels predicted to occur during the interior Fit-Out construction phase for Projected Development Site 4a is presented in **Table 20-17**.

Table 20-17
Projected Development Site 4a Interior Fit-Out Noise Levels

Receptor Grouping	CadnaA Receptor Numbers	Existing Noise Levels	Predicted Construction Noise Levels	Maximum Predicted Increment	CEQR Threshold Exceedance?
On Block 1775	37, 69, 70	Low 60s to Low 80s	High 40s to Low 70s	4	Yes
Across Park Avenue	26, 34, 36	Low 60s to Mid-70s	Mid-40s to High 70s	6	Yes
Across a Narrow Street	20, 21	Low 60s to Mid-70s	High 40s to High 70s	6	Yes
Up to One Block Away	6, 11, 12, 14–19, 22, 25-27, 31–33, 35, 38–40, 44–52, 71, 72	Low 60s to High 70s	High 30s to High 70s	9	Yes
Within Two Blocks on Construction Routes	43, 45, 47, 50, 51, 53–55 58–60	Low 60s to High 70s	High 30s to high 60s	5	Yes
More than One Block Away	1–5, 7–10, 13, 23, 24, 28–30, 41, 42, 56, 57, 61–68	Low to High 60s	Mid-30s to Mid-50s	1	No

Projected Development Site 9

Construction of Projected Development Site 9 is predicted to at times result in noise level increases at noise-sensitive receptors close to the construction area. Areas immediately adjacent to construction work areas would experience the highest levels of construction noise (while construction is ongoing immediately adjacent), whereas receptors located further from the development area would experience less noise because of the greater distance from the on-site construction equipment. The results of the detailed construction noise analysis for Projected Development Site 9 are summarized in **Table 20-18**.

Table 20-18
Projected Development Site 9 Construction Noise Analysis Results in dBA

Receptor	Location	Existing L_{EQ}		Total L_{EQ}		Change in L_{EQ}	
		Min	Max	Min	Max	Min	Max
1	2121 Fifth Avenue	61.9	61.9	61.9	62.2	0.0	0.3
2	2058 Madison Avenue	61.9	61.9	61.9	61.9	0.0	0.0
3	2071 Madison Avenue	61.9	61.9	61.9	61.9	0.0	0.0
4	56 East 131st Street	61.9	61.9	61.9	62.4	0.0	0.5
5	47 East 130th Street	61.9	61.9	61.9	61.9	0.0	0.0
6	69 East 130th Street	61.9	64.5	61.9	66.0	0.0	2.6
7	107 East 130th Street	61.9	64.4	61.9	64.4	0.0	0.2
8	2046 Madison Avenue	61.9	61.9	61.9	62.0	0.0	0.1
9	2034 Madison Avenue	61.9	61.9	61.9	62.0	0.0	0.1
10	41 East 129th Street	61.9	61.9	61.9	62.8	0.0	0.9
11	58 East 130th Street	61.9	63.7	61.9	65.7	0.0	2.0
12	123 East 129th Street	61.9	62.5	61.9	62.9	0.0	1.0
13	32 East 129th Street	61.9	62.4	61.9	63.8	0.0	1.9
14	2020 Madison Avenue	61.9	63.0	61.9	63.7	0.0	1.1
15	2015 Madison Avenue	61.9	62.8	61.9	65.2	0.0	3.3
16	50 East 129th Street	61.9	62.6	61.9	63.6	0.0	1.7
17	68 East 129th Street	66.2	72.4	66.3	72.8	0.1	0.8
18	57 East 128th Street	61.9	64.5	61.9	67.9	0.0	4.6
19	1885 Park Avenue	61.9	74.8	61.9	75.2	0.0	2.1
20	1881 Park Avenue	61.9	74.8	61.9	75.3	0.0	2.6
21	105 East 128th Street	61.9	65.6	61.9	68.5	0.0	3.4
22	145 East 128th Street	61.9	61.9	61.9	62.9	0.0	1.0
23	10 East 128th Street	61.9	61.9	61.9	62.0	0.0	0.1
24	22 East 128th Street	61.9	61.9	61.9	62.6	0.0	0.7
25	2004 Madison Avenue	61.9	62.6	61.9	64.7	0.0	2.4
26	2005 Madison Avenue	61.9	74.3	61.9	75.6	0.0	4.4
27	144 East 128th Street	61.9	62.8	61.9	64.1	0.0	2.2
28	16 East 127th Street	61.9	64.4	61.9	64.5	0.0	0.3
29	1990 Madison Avenue	61.9	68.4	61.9	68.6	0.0	0.2
30	1982 Madison Avenue	61.9	67.9	61.9	68.0	0.0	0.2
31	1991 Madison Avenue	61.9	68.4	61.9	68.4	0.0	0.2
32	1971 Madison Avenue	61.9	67.3	61.9	71.9	0.0	4.9
33	70 East 127th Street	61.9	71.3	62.0	74.9	0.1	4.8
34	78 East 127th Street	63.2	76.6	63.5	78.4	0.1	3.8
35	53 East 126th Street	70.7	71.2	71.1	75.7	0.1	4.7
36	59 East 126th Street	73.0	73.9	73.2	77.7	0.2	3.8
37	1841 Park Avenue	73.4	80.6	73.5	84.6	0.1	9.0
38	160 East 127th Street	61.9	64.2	61.9	65.2	0.0	3.3
39	2089 Lexington Avenue	61.9	63.9	61.9	70.7	0.0	8.1

Table 20-18 (cont'd)
Projected Development Site 9 Construction Noise Analysis Results in dBA

Receptor	Location	Existing L_{EQ}		Total L_{EQ}		Change in L_{EQ}	
		Min	Max	Min	Max	Min	Max
40	2338 Third Avenue	63.1	63.1	63.1	63.1	0.0	0.0
41	40 East 126th Street	61.9	68.7	61.9	68.8	0.0	0.5
42	1965 Madison Avenue	65.1	68.6	65.8	69.3	0.0	3.2
43	51 East 125th Street	69.6	71.7	69.7	72.5	0.1	0.8
44	52 East 126th Street	61.9	68.6	62.0	70.4	0.1	2.0
45	63 East 125th Street	61.9	72.8	62.2	73.4	0.2	4.6
46	66 East 126th Street	73.4	75.5	74.0	77.2	0.5	1.9
47	79 East 125th Street	74.5	75.0	74.6	79.2	0.1	4.4
48	108 East 126th Street	61.9	71.7	62.3	77.3	0.4	11.0
49	110 East 126th Street	61.9	66.7	62.3	71.6	0.4	9.7
50	111 East 125th Street	61.9	68.3	62.4	73.0	0.5	11.1
51	127 East 125th Street	64.4	66.2	64.8	70.1	0.4	5.7
52	142 East 126th Street	61.9	64.5	61.9	71.3	0.0	7.3
53	2306 Third Avenue	61.9	64.4	61.9	67.3	0.0	3.0
54	35 East 125th Street	61.9	65.9	61.9	69.0	0.0	4.8
55	28 East 125th Street	63.4	66.0	64.7	67.6	0.1	3.5
56	1939 Madison Avenue	61.9	65.3	61.9	66.0	0.0	2.4
57	1931 Madison Avenue	61.9	65.5	61.9	65.9	0.0	3.6
58	62 East 125th Street	68.4	69.8	68.6	71.7	0.1	2.1
59	1815 Park Avenue	66.4	77.6	66.7	78.2	0.2	0.9
60	118 East 125th Street	61.9	70.1	61.9	71.6	0.0	3.7
61	18 Mt. Morris Park West	61.9	61.9	61.9	61.9	0.0	0.0
62	1911 Madison Avenue	61.9	67.4	61.9	69.3	0.0	2.5
63	113 East 123rd Street	61.9	63.2	61.9	63.2	0.0	0.0
64	136 East 124th Street	61.9	64.3	61.9	65.4	0.0	2.4
65	2022 Lexington Avenue	61.9	61.9	61.9	61.9	0.0	0.0
66	150 East 124th Street	61.9	63.8	61.9	65.7	0.0	2.3
67	149 East 123rd Street	61.9	61.9	61.9	62.0	0.0	0.1
68	158 East 124th Street	61.9	61.9	61.9	61.9	0.0	0.0
69	107 East 126th Street	61.9	68.2	61.9	75.9	0.0	12.5
70	112 East 128th Street	61.9	67.8	61.9	71.2	0.0	4.5
71	104 East 126th Street	61.9	72.6	63.5	85.7	0.2	23.8
72	1825 Park Avenue	75.7	78.7	76.7	86.7	0.1	9.0

The maximum predicted noise levels shown in **Table 20-18** would occur during the most noise-intensive activities of construction, which typically do not occur every day, and do not occur during every hour on days during which those activities are conducted. During hours when the loudest pieces of construction equipment (e.g., impact pile driver) are not in use, receptors would experience lower construction noise levels. As described below, construction noise levels would fluctuate during the construction period at each receptor, with the greatest levels of construction noise occurring for limited periods during construction.

Demolition, Excavation, and Foundation

During demolition, excavation, and foundation construction at Projected Development Site 9, the primary noise sources would include impact pile drivers, excavators, and bulldozers. The pile drivers would operate intermittently during a portion of the approximately 4 months of this construction period. Excavators and bulldozers would operate on the site regularly during demolition activities and excavation activities, but infrequently during foundation activities; there would be relatively little time during which both of these sources would overlap on the site. The construction noise analysis, however, is conservatively based on a worst-case time period including all of these sources. A summary of noise levels predicted to occur during the demolition, excavation, and foundation construction phase for Projected Development Site 9 is presented in **Table 20-19**.

Table 20-19
Projected Development Site 9 Demolition, Excavation, and Foundation Noise Levels

Receptor Grouping	CadnaA Receptor Numbers	Existing Noise Levels	Predicted Construction Noise Levels	Maximum Predicted Increment	CEQR Threshold Exceedance?
On Block 1774	48–51, 71, 72	Low 60s to High 70s	Mid-50s to Mid-80s	24	Yes
Across Park Avenue	46, 47	Mid-70s	High 50s to Mid-70s	2	No
Across a Narrow Street	37, 69	Low 60s to Low 80s	High 40s to High 70s	8	Yes
Up to One Block Away	15, 18, 21, 26, 31–36, 38, 39, 41–45, 52, 53, 56–60, 70	Low 60s to High 70s	High 30s to Low 70s	4	Yes
Within Two Blocks on Construction Routes	54, 55	Low to Mid-60s	Low 40s to High 50s	2	No
More than One Block Away	1–30, 40, 61–68	Low 60s to Mid-70s	Mid-30s to Mid-60s	1	No

Superstructure and Exteriors

During building superstructure and exteriors construction at Projected Development Site 9, the primary noise sources would include emergency generators, dump trucks and concrete mixer trucks and would be expected to operate over a period of approximately 10 months. The dump trucks and concrete mixer trucks would operate on the site regularly during building superstructure activities, while the generator would be expected to operate on the site throughout both building superstructure and exteriors activities. The construction noise analysis, however, is conservatively based on a worst-case time period including all of these sources. A summary of noise levels predicted to occur during the superstructure and exteriors construction phase for Projected Development Site 9 is presented in **Table 20-20**.

Interiors Fit-Out

During Interior Fit-Out construction at Projected Development Site 9, the primary noise sources would include crawler cranes, hoists, and dump trucks and would be expected to operate over a period of approximately 12 months. While the cranes, hoists, and dump trucks would always operate simultaneously throughout the work day, the construction noise analysis, however, is conservatively based on a worst-case time period including all of these sources. A summary of noise levels predicted to occur during the Interior Fit-Out construction phase for Projected Development Site 9 is presented in **Table 20-21**.

Table 20-20
Projected Development Site 9 Superstructure and Exteriors Noise Levels

Receptor Grouping	CadnaA Receptor Numbers	Existing Noise Levels	Predicted Construction Noise Levels	Maximum Predicted Increment	CEQR Threshold Exceedance?
On Block 1774	48–51, 71, 72	Low 60s to High 70s	Low 60s to Mid-80s	22	Yes
Across Park Avenue	46, 47	Mid-70s	Low 60s to High 70s	4	Yes
Across a Narrow Street	37, 69	Low 60s to Low 80s	Low 50s to Mid-80s	13	Yes
Up to One Block Away	15, 18, 21, 26, 31–36, 38, 39, 41–45, 52, 53, 56–60, 70	Low 60s to High 70s	Low 40s to Mid-70s	8	Yes
Within Two Blocks on Construction Routes	54, 55	Low to Mid-60s	Low 50s to Mid-60s	5	Yes
More than One Block Away	1–30, 40, 61–68	Low 60s to Mid-70s	High 30s to High 60s	2	No

Table 20-21
Projected Development Site 9 Interior Fit-Out Noise Levels

Receptor Grouping	CadnaA Receptor Numbers	Existing Noise Levels	Predicted Construction Noise Levels	Maximum Predicted Increment	CEQR Threshold Exceedance?
On Block 1774	48–51, 71, 72	Low 60s to High 70s	Low 50s to Mid-70s	2	No
Across Park Avenue	46, 47	Mid-70s	Mid-60s to Low 70s	1	No
Across a Narrow Street	37, 69	Low 60s to Low 80s	Mid-40s to High 70s	2	No
Up to One Block Away	15, 18, 21, 26, 31–36, 38, 39, 41–45, 52, 53, 56–60, 70	Low 60s to High 70s	High 30s to Low 70s	3	Yes
Within Two Blocks on Construction Routes	54, 55	Low to Mid-60s	Mid 40s to Mid-60s	4	Yes
More than One Block Away	1–30, 40, 61–68	Low 60s to Mid-70s	Low 30s to Mid-60s	1	No

Projected Development Site 16

Construction of Projected Development Site 16 is predicted to at times result in noise level increases at noise-sensitive receptors close to the construction area. Areas immediately adjacent to construction work areas would experience the highest levels of construction noise (while construction is ongoing immediately adjacent), whereas receptors located further from the development area would experience less noise because of the greater distance from the on-site construction equipment. The results of the detailed construction noise analysis for Projected Development Site 16 are summarized in **Table 20-22**.

Table 20-22
Projected Development Site 16 Construction Noise Analysis Results in dBA

Receptor	Location	Existing L_{EQ}		Total L_{EQ}		Change in L_{EQ}	
		Min	Max	Min	Max	Min	Max
1	1669 Park Avenue	61.9	76.2	61.9	76.2	0.0	0.1
2	125 East 117th Street	61.9	64.2	61.9	64.3	0.0	1.2
3	1894 Lexington Avenue	61.9	67.7	61.9	67.7	0.0	1.4
4	127 East 117th Street	61.9	65.9	61.9	66.1	0.0	1.9
5	1885 Lexington Avenue	64.7	67.9	64.8	67.9	0.0	1.4
6	152 East 118th Street	61.9	61.9	61.9	63.5	0.0	1.6
7	170 East 118th Street	61.9	61.9	61.9	64.0	0.0	2.1
8	173 East 117th Street	61.9	64.6	61.9	66.2	0.0	1.7
9	2152 Third Avenue	61.9	70.6	61.9	71.3	0.0	0.8
10	2143 Third Avenue	66.4	71.5	66.5	72.8	0.1	1.9
11	210 East 118th Street	61.9	61.9	61.9	64.5	0.0	2.6
12	234 East 118th Street	61.9	61.9	61.9	61.9	0.0	0.0
13	2295 Second Avenue	61.9	67.9	61.9	67.9	0.0	0.0
14	215 East 117th Street	61.9	61.9	61.9	65.3	0.0	3.4
15	235 East 117th Street	61.9	61.9	61.9	64.8	0.0	2.9
16	2283 Second Avenue	61.9	68.5	61.9	68.5	0.0	1.6
17	2296 Second Avenue	66.2	67.5	66.2	67.5	0.0	0.4
18	2284 Second Avenue	61.9	68.6	61.9	68.6	0.0	0.3
19	308 East 118th Street	61.9	61.9	61.9	61.9	0.0	0.0
20	305 East 117th Street	61.9	61.9	61.9	63.0	0.0	1.1
21	101 East 116th Street	76.4	79.9	76.4	79.9	0.0	0.1
22	136 East 117th Street	61.9	65.9	61.9	65.9	0.0	2.3
23	142 East 117th Street	65.8	68.6	65.8	69.0	0.0	1.0
24	115 East 116th Street	61.9	73.1	61.9	73.3	0.0	0.3
25	137 East 116th Street	68.1	70.9	68.1	71.5	0.0	1.0
26	156 East 117th Street	61.9	68.8	61.9	69.0	0.0	3.6
27	178 East 117th Street	61.9	64.6	61.9	66.6	0.0	4.7
28	2128 Third Avenue	68.9	71.8	69.0	72.9	0.1	3.2
29	161 East 116th Street	61.9	68.7	62.0	70.7	0.0	2.6
30	2125 Third Avenue	70.1	72.3	71.1	75.4	0.6	4.4
31	212 East 117th Street	61.9	64.6	61.9	66.9	0.0	5.0
32	244 East 117th Street	61.9	61.9	61.9	64.8	0.0	2.9
33	250 East 117th Street	62.6	68.6	62.6	68.6	0.0	0.2
34	223 East 116th Street	61.9	66.5	61.9	69.2	0.0	3.1
35	2261 Second Avenue	67.0	69.3	67.0	69.3	0.0	0.7
36	307 East 117th Street	66.0	66.4	66.0	66.5	0.0	0.1
37	100 East 116th Street	77.6	79.2	77.6	79.2	0.0	0.0
38	101 East 115th Street	70.0	77.0	70.4	77.0	0.0	0.6
39	112 East 116th Street	61.9	72.3	61.9	72.3	0.0	2.4
40	121 East 115th Street	61.9	64.2	61.9	66.2	0.0	2.0
41	1860 Lexington Avenue	67.4	68.8	67.6	69.6	0.1	1.1
42	152 East 116th Street	69.4	69.9	69.4	70.0	0.0	0.1
43	159 East 115th Street	62.8	63.6	65.4	67.1	2.2	3.5
44	171 East 115th Street	63.2	63.8	69.8	74.8	6.1	11.6
45	2118 Third Avenue	61.9	71.6	62.1	80.7	0.2	18.8
46	2121 Third Avenue	61.9	72.1	62.1	78.3	0.1	7.2
47	2111 Third Avenue	70.3	71.7	73.4	80.4	1.7	9.9
48	216 East 116th Street	68.6	69.9	68.7	69.9	0.0	0.1
49	211 East 115th Street	61.9	62.8	62.1	73.0	0.2	10.5

Table 20-22 (cont'd)
Projected Development Site 16 Construction Noise Analysis Results in dBA

Receptor	Location	Existing L_{EQ}		Total L_{EQ}		Change in L_{EQ}	
		Min	Max	Min	Max	Min	Max
50	242 East 116th Street	65.3	66.5	65.3	66.5	0.0	0.1
51	225 East 115th Street	61.9	61.9	61.9	68.4	0.0	6.5
52	2243 Second Avenue	61.9	68.4	64.3	68.8	0.2	4.1
53	1154 Second Avenue	68.1	68.9	68.1	68.9	0.0	0.3
54	1844 Lexington Avenue	61.9	64.4	61.9	67.5	0.0	5.0
55	1844 Lexington Avenue	61.9	64.2	61.9	68.0	0.0	6.1
56	176 East 115th Street	61.9	69.3	62.0	76.2	0.1	14.0
57	2055 Third Avenue	61.9	69.9	62.3	78.0	0.4	12.7
58	2055 Third Avenue	61.9	61.9	62.0	73.1	0.1	11.2
59	2055 Third Avenue	61.9	61.9	61.9	69.4	0.0	7.5
60	2055 Third Avenue	61.9	62.2	61.9	67.1	0.0	5.2
61	2178 Second Avenue	61.9	67.6	61.9	67.7	0.0	4.4
62	1844 Lexington Avenue	61.9	65.1	61.9	65.8	0.0	3.9
63	1833 Lexington Avenue	61.9	61.9	61.9	70.5	0.0	8.6
64	1833 Lexington Avenue	61.9	68.4	62.0	71.7	0.1	9.0
65	2055 Third Avenue	61.9	65.1	61.9	71.9	0.0	8.9
66	2055 Third Avenue	61.9	61.9	62.0	63.6	0.1	1.7
67	144 East 112th Street	62.9	68.8	62.9	68.8	0.0	0.0
68	158 East 112th Street	65.6	67.2	65.6	67.5	0.0	0.5
69	2039 Third Avenue	67.5	71.5	67.7	72.5	0.1	1.2
70	236 East 112th Street	62.1	64.0	62.2	64.0	0.0	0.1
71	2167 Second Avenue	61.9	68.2	61.9	68.2	0.0	0.3
72	334 East 112th Street	61.9	62.6	61.9	62.6	0.0	0.0
73	2118 Third Avenue	61.9	61.9	62.4	76.6	0.5	14.7
74	176 East 116th Street	61.9	61.9	65.7	84.5	3.8	22.6
75	171 East 115th Street	61.9	61.9	66.7	74.3	4.8	12.4
76	176 East 115th Street	64.5	64.5	76.1	81.1	11.6	16.6
77	2107 Third Avenue	71.7	71.7	74.0	79.7	2.3	8.0

The maximum predicted noise levels shown in **Table 20-22** would occur during the most noise-intensive activities of construction, which typically do not occur every day, and do not occur during every hour on days during which those activities are conducted. During hours when the loudest pieces of construction equipment (e.g., impact pile driver) are not in use, receptors would experience lower construction noise levels. As described below, construction noise levels would fluctuate during the construction period at each receptor, with the greatest levels of construction noise occurring for limited periods during construction.

Demolition, Excavation, and Foundation

During demolition, excavation, and foundation construction at Projected Development Site 16, the primary noise sources would include impact pile drivers, excavators, and bulldozers. The pile drivers will operate intermittently during a portion of the approximately 4 months of this construction period. Excavators and bulldozers would operate on the site regularly during demolition activities and excavation activities, but infrequently during foundation activities; there would be relatively little time during which both of these sources would overlap on the site. The construction noise analysis, however, is conservatively based on a worst-case time period including all of these sources. A summary of noise levels predicted to occur during the demolition, excavation, and foundation construction phase for Projected Development Site 16 is presented in **Table 20-23**.

Table 20-23
Projected Development Site 16 Demolition, Excavation, and Foundation Noise Levels

Receptor Grouping	CadnaA Receptor Numbers	Existing Noise Levels	Predicted Construction Noise Levels	Maximum Predicted Increment	CEQR Threshold Exceedance?
On Block 1643	42–45, 73, 74, 75	Low 60s to Low 70s	High 40s to Mid-80s	23	Yes
Across a Wide Multi-Lane Street	46, 47, 77	Low 70s	Mid-60s to Mid-70s	7	Yes
Across a Narrow Street	56, 57, 76	Low to High 60s	Mid-60s to Mid-70s	12	Yes
Within One Building Row	28–35, 46, 48–51, 58–60	Low 60s to Low 70s	Low 40s to Low 70s	9	Yes
Within Two Building Rows	23, 25–27, 52–55, 61–66	Low to High 60s	High 30s to Low 70s	8	Yes
More than Three Building Rows Away	1–22, 24, 36–41, 67–72	Low 60s to High 70s	Low 30s to Low 60s	2	No

Superstructure and Exteriors

During building superstructure and exteriors construction at Projected Development Site 16, the primary noise sources would include emergency generators, dump trucks, and concrete mixer trucks and would be expected to operate over a period of approximately 11 months. The dump trucks and concrete mixer trucks would operate on the site regularly during building superstructure activities, while the generator would be expected to operate on the site throughout both building superstructure and exteriors activities. The construction noise analysis, however, is conservatively based on a worst-case time period including all of these sources. A summary of noise levels predicted to occur during the superstructure and exteriors construction phase for Projected Development Site 16 is presented in **Table 20-24**.

Table 20-24
Projected Development Site 16 Superstructure and Exteriors Noise Levels

Receptor Grouping	CadnaA Receptor Numbers	Existing Noise Levels	Predicted Construction Noise Levels	Maximum Predicted Increment	CEQR Threshold Exceedance?
On Block 1643	42–45, 73, 74, 75	Low 60s to Low 70s	High 40s to Mid-70s	15	Yes
Across a Wide Multi-Lane Street	46, 47, 77	Low 70s	High 70s	10	Yes
Across a Narrow Street	56, 57, 76	Low to High 60s	Mid-70s to Low 80s	17	Yes
Within One Building Row	28–35, 46, 48–51, 58–60	Low 60s to Low 70s	Mid-40s to Mid-70s	11	Yes
Within Two Building Rows	23, 25–27, 52–55, 61–66	Low to High 60s	Low 40s to Low 70s	9	Yes
More than Three Building Rows Away	1–22, 24, 36–41, 67–72	Low 60s to High 70s	Mid-30s to Mid-60s	2	No

Interiors Fit-Out

During Interior Fit-Out construction at Projected Development Site 16, the primary noise sources would include crawler cranes, hoists, and dump trucks and would be expected to operate over a period of approximately 12 months. While the cranes, hoists, and dump trucks would always operate simultaneously throughout the work day, the construction noise analysis, however, is conservatively based on a worst-case time period including all of these sources. A summary of noise levels predicted to occur during the Interior Fit-Out construction phase for Projected Development Site 16 is presented in **Table 20-25**.

Table 20-25
Projected Development Site 16 Interior Fit-Out Noise Levels

Receptor Grouping	CadnaA Receptor Numbers	Existing Noise Levels	Predicted Construction Noise Levels	Maximum Predicted Increment	CEQR Threshold Exceedance?
On Block 1643	42–45, 73, 74, 75	Low 60s to Low 70s	High 40s to Mid-70s	12	Yes
Across a Wide Multi-Lane Street	46, 47, 77	Low 70s	High 60s to Low 70s	4	Yes
Across a Narrow Street	56, 57, 76	Low to High 60s	Mid-60s to Mid-70s	12	Yes
Within One Building Row	28–35, 46, 48–51, 58–60	Low 60s to Low 70s	Low 40s to Low 70s	8	Yes
Within Two Building Rows	23, 25-27, 52–55, 61–66	Low to High 60s	High 30s to Mid-60s	6	Yes
More than Three Building Rows Away	1–22, 24, 36–41, 67–72	Low 60s to High 70s	Low 30s to Low 60s	2	No

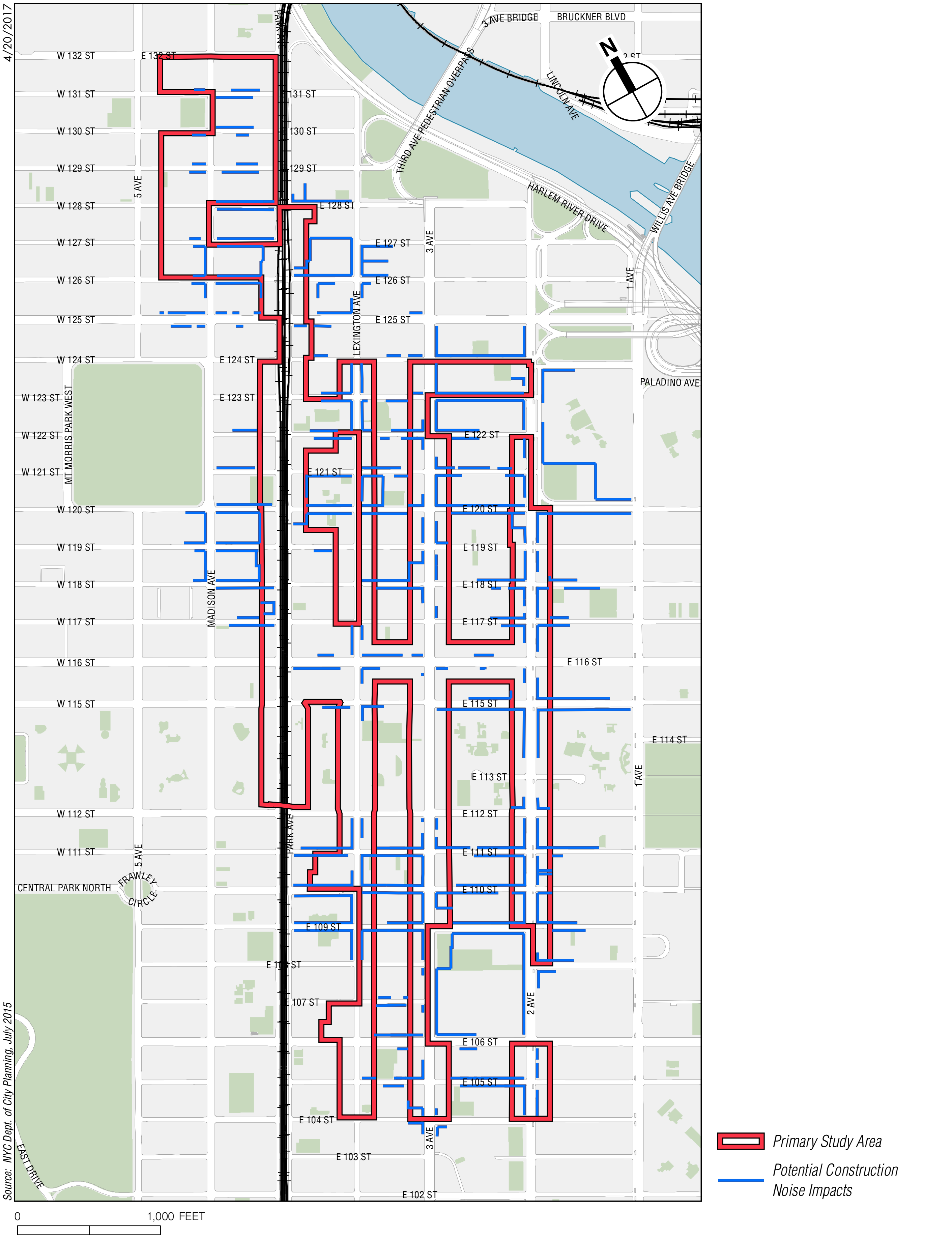
CONSTRUCTION NOISE ANALYSIS DISCUSSION

Using the methodology described above and considering the noise abatement measures for source and path controls to satisfy DEP's *Rules for Citywide Construction Noise Mitigation* specified above, cumulative noise analyses were performed to determine maximum one-hour equivalent ($L_{eq(1)}$) noise levels that would be expected to occur during each of the excavation/foundation, superstructure, and interior fit-out construction stages of Projected Development Sites 4a, 9, and 16.

For impact determination purposes, the significance of adverse noise impacts is determined based on whether predicted incremental noise levels at sensitive receptor locations would be greater than the noise impact threshold criteria for an extended period of time. While increases exceeding the noise impact threshold criteria for short periods of time may be noisy and intrusive, they are not considered to be significant adverse noise impacts using the *CEQR Technical Manual* methodology.

Based on the construction stage predicted to occur at each development site according to the conceptual construction schedule during each of the selected analysis periods, each receptor expected to an experience exceedance of the *CEQR Technical Manual* noise impact threshold was determined for each period. One peak construction period per year was analyzed, from 2018 to 2027. Based on these determinations, receptors where noise level increases are predicted to exceed the noise impact threshold criteria for two or more consecutive years were identified.

The noise analysis results show that the predicted noise levels could exceed the *CEQR Technical Manual* impact criteria throughout the rezoning area. **Figure 20-4** shows where receptor locations are predicted to experience noise level increases that exceed the noise impact threshold criteria for two or more consecutive years based on the analysis discussed above.



Potential Construction Noise Impact Locations

EAST HARLEM REZONING

Figure 20-4

CONCLUSIONS

At locations predicted to experience an exceedance of the noise impact threshold criteria, the exceedances would be due principally to noise generated by on-site construction activities (rather than construction-related traffic). As previously discussed, this noise analysis examined the reasonable worst-case peak hourly noise levels that would result from construction in an analyzed month, and consequently is conservative in predicting significant increases in noise levels. Typically, the loudest hourly noise level during each month of construction would not persist throughout the entire month. Furthermore, this analysis is based on a conceptual site plan and construction schedule. It is possible that the actual construction may be of less magnitude, or that construction on multiple projected development sites may not overlap, in which case construction noise would be less intense than the analysis predicts.

CONSTRUCTION VIBRATION ANALYSIS

Introduction

Construction activities have the potential to result in vibration levels that may result in 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 through the ground 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.

Construction Vibration Criteria

For purposes of assessing potential structural or architectural damage, the determination of a significant impact was based on the vibration impact criterion used by LPC of a PPV of 0.50 inches/second as specified in the DOB TPPN #10/88. For non-fragile buildings, vibration levels between 0.5 inches/second and 2.0 inches/second 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;

Lv(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 20-26 shows vibration source levels for typical construction equipment.

Table 20-26
Vibration Source Levels for Construction Equipment

Equipment		PPV_{ref} (in/sec)	Approximate L_v (ref) (VdB)
Pile Driver (impact)	Upper Range	1.518	112
	Typical	0.644	104
Bulldozer		0.089	87
Loaded trucks		0.076	86
Jackhammer		0.035	79
Source: *Transit Noise and Vibration Impact Assessment*, FTA-VA-90-1003-06, May 2006.			

The source vibration levels shown in **Table 20-26** were projected to nearby receptors to estimate the levels of construction vibration that would occur in the study area.

CONSTRUCTION VIBRATION ANALYSIS RESULTS

The buildings of most concern with regard to the potential for structural or architectural damage due to vibration would be historic buildings, Metro North structures and other structures immediately adjacent to the Projected Development Sites (i.e., 1916 Park Avenue, 81 East 125th Street, 171 East 121st Street, and 147 East 119th Street). Vibration levels at these buildings and structures within 55 feet of a Projected Development Site may exceed the 0.50 in/sec PPV during pile driving. Since these historic buildings and structures would be within 90 feet of the Projected Development Sites, vibration monitoring would be required per NYCDOB TPPN #10/88 regulations, and PPV during construction would be prohibited from exceeding the 0.50 inches/second threshold.

For non-historic buildings and other structures immediately adjacent to Projected Development Sites, vibration levels within 25 feet may result in PPV levels between 0.50 and 2.0 in/sec, which is generally considered acceptable for a non-historic building or structure.

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 VdB limit is also the pile driver. It would have the potential to produce perceptible vibration levels (i.e., vibration levels exceeding 65 VdB) at receptor locations within a distance of approximately 550 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, there is no potential for significant adverse vibration impacts under the Proposed Actions.

OTHER TECHNICAL AREAS

LAND USE AND NEIGHBORHOOD CHARACTER

According to the *CEQR Technical Manual*, a construction impact analysis for land use and neighborhood character is typically needed if construction would require continuous use of property for an extended duration, thereby having the potential to affect the nature of the land use and character of the neighborhood. A land use and neighborhood character assessment for construction impacts examines construction activities that would occur on the site (or portions of the site) and their duration. The analysis determines whether the type and duration of the activities would affect neighborhood land use patterns or neighborhood character. For example, a single property might be used for staging for several years, resulting in a "land use" that would be industrial in nature. Depending upon the nature of the existing land uses in the surrounding area, the use of a single piece of property for an extended duration and its compatibility with neighboring properties may be assessed to determine whether it would have a significant adverse impact on the surrounding area.

Construction of the 68 projected development sites would be spread out over a period of approximately 10 years, throughout an approximately 84-block rezoning area. As noted above, construction of most of the projected development sites (49 sites) would be short term (i.e., lasting up to 24 months). Out of the projected sites (18 sites) with a construction period greater than 24 months, only one site (Projected Development Site 10) would have a construction period lasting over 35 months (39 months total). Construction activities resulting from the Proposed Actions would affect land use on the development sites, but would not alter surrounding land uses. As is typical with construction projects, during periods of construction there would be some disruption, predominantly noise, to the nearby area. There would be construction trucks and construction workers travelling to the various development sites. There would also be noise, sometimes intrusive, from building construction as well as trucks and other vehicles backing up, loading, and unloading. These disruptions would be temporary in nature and would have limited effects on land uses within the study area, particularly as most construction activities would take place within each of the development sites or within portions of sidewalks, curbs, and travel lanes of public streets immediately adjacent to these sites.

Throughout the construction period as required by City regulations, access to residences, businesses, and institutions in the area surrounding the development sites would be maintained. In addition, as discussed in details above in "Air Quality" and "Noise and Vibration," measures would be implemented to control air pollutant emissions, noise, and vibration on construction sites. While construction of the new buildings resulting from the Proposed Actions would cause temporary disruption, particularly related to noise, it is expected that such effects in any given area would be relatively short term, even under the worst-case construction sequencing and, therefore, would not create a neighborhood character impact. Therefore, no significant or long-term adverse construction impacts to land use and neighborhood character are expected.

SOCIOECONOMIC CONDITIONS

According to the *CEQR Technical manual*, construction impacts to socioeconomic conditions are possible if the Proposed Action would entail construction of a long duration that could affect access to and thereby viability of a number of businesses, and if the failure of those businesses has the potential to affect neighborhood character.

Construction could, in some instances, temporarily affect pedestrian and vehicular access on street frontages immediately adjacent to the development sites. However, lane and/or sidewalk closures are expected to be of very limited duration, and are not expected to occur in front of entrances to any existing or planned retail businesses. Construction activities would not obstruct major thoroughfares used by customers or businesses. Because of the MPT measures required by DOT, businesses would not be significantly affected by any temporary reductions in the amount of pedestrian foot traffic or vehicular delays that could occur as a result of construction activities. Utility service would be maintained to all businesses, although very short-term interruptions (i.e., hours) may occur when new equipment (e.g., a transformer, or a sewer or water line) is put into operation. Overall, construction resulting from the Proposed Actions is not expected to result in any significant adverse impacts on surrounding businesses.

Construction would create direct benefits resulting from expenditures on labor, materials, and services. Construction activities would also create indirect benefits created by expenditures by materials suppliers, construction workers, and other employees involved in the direct activity. Construction would also contribute to increased tax revenues for New York City and State, including those from personal income taxes.

COMMUNITY FACILITIES

According to the *CEQR Technical Manual*, construction impacts to community facilities are possible if a community facility were directly affected by construction (e.g., if construction would disrupt services provided at the facility or close the facility temporarily, etc.).

Construction activities related to the Proposed Actions would not physically displace or alter any existing community facilities described in Chapter 4, “Community Facilities.” The construction sites would be surrounded by construction fencing and barriers that would limit the effects of construction on nearby facilities. Construction workers would not place any burden on public schools and would have minimal, if any, demands on libraries, child care facilities, and health care in the rezoning area. Construction of the projected buildings would not block or restrict access to any facilities in the area, and would not materially affect emergency response times. The New York City Police Department (NYPD) and FDNY emergency services and response time would not be materially affected as a result of the geographic distribution of the police and fire facilities and their respective coverage areas. Therefore, no construction impacts would be expected to community facilities in the area as a result of the Proposed Actions.

OPEN SPACE

According to the *CEQR Technical Manual*, construction impacts to open space are possible if the open space is taken out of service for a period of time during the construction process. As described in Chapter 5, “Open Space,” there are no publicly accessible open spaces on any of the projected development sites. While several of the projected development sites are located close to existing open space resources, no open space resources are located on any of the projected development sites, nor would any access to publicly accessible open space be impeded during construction within the rezoning area. In addition, measures would be implemented to control air emissions, dust, noise, and vibration on the construction sites. While construction under the Proposed Actions may cause temporary disruptions to the community, particularly related to noise, it is expected that such disruptions in any given area would be temporary and would not be ongoing for the full duration of the construction period. Therefore, no significant construction impacts are anticipated on open space.

HISTORIC AND CULTURAL RESOURCES

A detailed assessment of potential impacts on historic and cultural resources (including both archaeological and architectural resources) is described in Chapter 7, "Historic and Cultural Resources." This section summarizes the potential for significant adverse impacts on historic and cultural resources as presented in Chapter 7, "Historic and Cultural Resources."

Architectural Resources

For the purposes of this analysis, the study area for archaeological resources is limited to sites that may be developed within the rezoning area and include projected as well as potential development sites. LPC conducted an initial review of the proposed potential and projected development sites. In a comment letter dated November 30, 2016, LPC determined that Potential Development Site V and Projected Development Site 4 possess potential archaeological significance (see **Appendix C**). LPC requested that a Phase 1A Archaeological Documentary Study ("Phase 1A study") of these sites be prepared to further clarify their archaeological sensitivity. The remaining potential and projected development sites were determined by LPC to have no potential archaeological significance and as such, no additional archaeological analysis of those properties is warranted.

A Phase 1A study of Potential Development Site V and Projected Development Site 4 was completed by Joan Geismar, Ph.D., in March 2017.[9] The Phase 1A study focused on an Area of Potential Effect (APE) in the northwestern corner of Sites V and 4, where a church was formerly located. The Phase 1A study identified the potential and projected development sites as potentially sensitive for human remains associated with the churchyard and burial vaults of Saint Andrew's Church, which was formerly located within both development sites. The Proposed Actions therefore possess the potential to have a significant adverse impact on archaeological resources if archaeological resources are present.

The Phase 1A study concluded that Phase 1B archaeological testing is necessary to confirm the presence or absence of human remains on the sites in question as outlined in the *CEQR Technical Manual* and LPC's 2002 *Guidelines for Archaeological Work in New York City*.

Projected Development Site 4 contains a City-owned lot under the jurisdiction of HPD. The future development of Projected Development Site 4 would be in accordance with HPD requirements, including measures to require prospective sponsors to conduct archaeological testing and if warranted, recovery of human remains. Measures to require a Phase 1B Archaeological Investigation and any subsequent phases of work (e.g., mitigation), if warranted, would be required through provisions in the Land Disposition Agreement (LDA) between HPD and the project sponsor. The Phase 1B testing will be designed to confirm the presence or absence of archaeological resources in any areas of archaeological sensitivity that were identified in the Phase 1A study. Prior to the completion of the Phase 1B archaeological

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[9] Geismar, Joan H., PhD. (2017): "East Harlem Rezoning Project Archaeological Phase 1A Archaeological for Potential Development Site V and Projected Development Site 4; Block 1175 Manhattan." Prepared for the New York City Department of City Planning and the New York City Department of Housing Preservation and Development; New York, NY.

investigation, a Phase 1B Testing Protocol and Human Remains Discovery Plan would be prepared and submitted to LPC for review and concurrence.

In the event that the Phase 1B archaeological investigation determines that Projected Development Site 4 possesses no archaeological sensitivity and that human remains are not present, no further archaeological analysis would be warranted. If the Phase 1B archaeological investigation identifies human remains on the development site, then a Phase 2 Archaeological Investigation would be required to determine the vertical and horizontal boundaries of any areas containing human remains and to determine the site's significance and eligibility for listing on the State and National Registers of Historic Places (S/NR). If the Phase 2 investigation determines that the archaeological site is significant and would be impacted by any proposed construction, then mitigation measures including either avoidance or full archaeological excavation in the form of a Phase 3 Archaeological Data Recovery must be developed and implemented. If such work is not possible, then this would be considered an impact that cannot be mitigated. Consultation with LPC and the descendant community—should one be identified—would be required throughout all phases of archaeological investigation.

Potential Development Site V is owned by a private entity. There is no mechanism in place to require a developer to conduct archaeological testing or require the preservation or documentation of archaeological resources, should they exist. Because there is no mechanism to avoid or mitigate potential impacts at Potential Development Site V, the significant adverse impact would be an unavoidable. In the event that human remains are encountered during the construction of an as-of-right project, it is expected that the developer would contact the New York City Police Department (NYPD) and the New York City Office of the Chief Medical Examiner.

Construction-Related Impacts to Adjacent Resources

The Proposed Actions would result in significant adverse construction-related impacts to four S/NR-Eligible architectural resources located within 90 feet of projected or potential development sites. These S/NR-Eligible architectural resources include St. Paul's Rectory and School, Chambers Memorial Baptist Church, a former stable at 166 East 124th Street, and the Park Avenue Viaduct.

Buildings or structures that are S/NR-Eligible or New York City Landmark (NYCL)-Eligible would be afforded standard protection under DOB's TPPN #10/88, regulations applicable to all buildings located adjacent (within 90 feet) to construction sites; however, since the resources identified above are not S/NR-Listed or NYCLs, they are not afforded the added special protections under DOB's TPPN #10/88. Additional protective measures afforded under DOB TPPN #10/88, which include a monitoring program to reduce the likelihood of construction damage to adjacent S/NR-Listed resources or NYCLs, would only become applicable if the S/NR-Eligible resources are listed or designated in the future prior to the initiation of construction. Otherwise, there is the potential for inadvertent construction damage and impacts to occur as a result of adjacent development resulting from the Proposed Actions

Designated NYCL or S/NR-Listed architectural resources located within 90 feet of a projected or potential new construction site are subject to the protections of DOB's TPPN #10/88, development resulting from the Proposed Actions would not cause any significant adverse construction-related impacts to NYCLs and S/NR-Listed resources. This would apply to Projected Development Site 8, which is located directly adjacent to the former Mount Morris Bank (S/NR-Listed and NYCL), Projected Development Site 12, which is located within 90 feet of the Elmendorf Reformed Church (S/NR-Listed) and the Harlem Courthouse (S/NR-Listed and NYCL), and Projected Development Site 21, which is within 90 feet of Fire Engine Company No. 53 (NYCL) and the 28th Police Precinct Station House (NYCL). No significant adverse construction-related impacts would occur to these resources.

Direct (Physical) Impacts

Three architectural resources are located on potential and projected development sites. Projected Development Site 41, which is expected to be developed with an approximately 95-foot-tall, approximately 38,000-square-foot residential building with a community facility on the ground floor under the Proposed Actions contains the First Spanish United Methodist Church (Resource #33, State and National Register [S/NR]-Eligible). Under the Proposed Actions, Potential Development Site U, which currently contains the Kress Building (Resource #34, S/NR-Eligible), is expected to be developed with an approximately 260-foot-tall, approximately 117,188-square-foot mixed-use building. Potential Development Site O located at 1916 Park Avenue would be rezoned for residential use while maintaining the existing building, Resource #1, S/NR-Eligible. The redevelopment of Site 41 and Site U would result in the demolition of two architectural resources. However, since it is assumed that the First Spanish United Methodist Church and the Kress Building would be redeveloped in the future without the Proposed Actions, redevelopment of these sites under the Proposed Actions would not result in significant adverse impacts. The development of Site O would retain the architectural resource and redevelop it for residential use, which would not be expected to result in a significant adverse impact to the resource. Therefore, no architectural resources would be impacted under the Proposed Actions when compared with No Action Condition.

HAZARDOUS MATERIALS

Activities associated with the redevelopment of the 68 projected development sites and the 34 potential development sites could result in demolition and soil disturbance activities that could increase human exposure to hazardous materials. However, as discussed in Chapter 10, “Hazardous Materials,” the possibility of impacts to the health and safety of workers, the community, and future occupants would be reduced by performing demolition and construction activities in accordance with the measures identified below:

- Prior to construction, further investigation would be performed on each site. This would start with preparation of a Phase I Environmental Site Assessment (ESA) in accordance with American Society of Testing Materials (ASTM) Standard E1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Practice*. This would be followed by preparation of a subsurface investigation protocol for agency review. The scope of the investigation would be determined by the findings of the Phase I ESA. Upon approval of the protocol, the investigation (typically including laboratory analysis of soil, groundwater, and soil vapor samples from the site) would be implemented and a report prepared for the agency along with the proposed remediation plan (i.e., measures to be implemented prior to or as part of construction to avoid impacts to the health and safety of workers, the community, and future occupants) which would include a CHASP.
- Any renovation or demolition activities with the potential to disturb LBP would be performed in accordance with the applicable Occupational Safety and Health Administration regulation (OSHA 29 CFR 1926.62—*Lead Exposure in Construction*).

- Prior to any renovation or demolition activities with the potential to disturb suspect ACMs, an asbestos survey would be conducted to determine whether these materials are ACMs. If these materials prove to contain asbestos, they would be properly removed and disposed of in accordance with all state and federal regulations.
- Unless there is labeling or test data that indicate that florescent lights, other electrical equipment, and hydraulic fluid are not mercury- and/or PCB-containing, if disposal is required, it would be performed in accordance with applicable federal, state, and local regulations and guidelines.
- All excavated soil requiring off-site disposal would be managed in accordance with applicable regulatory requirements. All soil and any other materials intended for off-site disposal would be tested in accordance with the requirements of the intended receiving facility. Transportation of material leaving the site for off-site disposal would be in accordance with federal, state, and local requirements covering licensing of haulers and trucks, placarding, truck routes, manifesting, etc. All on-site petroleum storage tanks (and any unforeseen tanks encountered during redevelopment) would be properly closed and removed in accordance with applicable requirements.
- If dewatering is required for construction, testing would be performed to ensure compliance with DEP sewer discharge permit/approval requirements and, if necessary, pre-treatment would be conducted prior to discharge to the sewer.

To ensure the measures above are implemented, as warranted, an (E) Designation for hazardous materials would be placed on the privately owned sites as part of the proposed rezoning. Recommendations for (E) Designation are based on whether the sites may have been adversely affected by current or historical uses at, adjacent to, or within 400 feet. An (E) Designated site is designated on the zoning map within which no change of use or development requiring a DOB permit may be issued without approval of the Mayor’s Office of Environmental Remediation (OER). These sites require OER’s review to ensure the protection of human health and the environment from any known or suspected hazardous materials associated with the site. With these measures, construction under the Proposed Actions would not result in any significant adverse impacts related to hazardous materials. ✷