# Chapter 20: Construction

## A. INTRODUCTION

As described in Chapter 1, "Project Description," the New York City Department of City Planning (DCP) is proposing a series of land use actions (the Proposed Actions) to support and facilitate implementation of the Long Island City Neighborhood Plan. The Project Area is generally bounded by the midblock between 39th and 40th Avenues between 21st and 23rd Streets to the north; the East River, Anable Basin, and 5th Street to the west; 47th Avenue, 46th Road, and the midblock between 44th Drive and 45th Avenue to the south; and 11th, 23rd, and 24th Streets and the midblock between 24th and Crescent Streets to the east. A total of 52 projected development sites and 15 potential development sites have been identified in the Project Area on which new buildings could be constructed over an approximately 10-year construction period through the year 2035. Since potential development sites are less likely to be developed over the analysis period, they are not evaluated for construction impacts.

Construction activities under the Proposed Actions, as is the case with most construction projects, are expected to result in temporary disruptions in the surrounding area. For analysis purposes, a reasonable worst-case conceptual construction phasing schedule 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 2021 *City Environmental Quality Review (CEQR) Technical Manual*, a development with an overall construction period lasting two years or longer and that is near sensitive receptors (i.e., residences, open spaces, etc.) should undergo an impact assessment. Each projected development site is estimated to take approximately one to four years to complete, depending on the size of the development. Construction activities may also occur simultaneously at multiple sites in the Project 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 the potential impacts of construction activity focuses on the technical areas of transportation, air quality, noise and vibration, and considers others including land use and neighborhood character, socioeconomic conditions, community facilities, open space, historic and cultural resources, and hazardous materials.

# B. PRINCIPAL CONCLUSIONS

## TRANSPORTATION

The third quarter of 2030 was selected as the reasonable worst-case analysis period for assessing potential cumulative transportation impacts from operational trips from completed portions of the projected developments and construction trips associated with construction activities. An assessment of transportation generated during this peak period is presented below.

### *TRAFFIC*

During construction, traffic would be generated by construction workers commuting via autos and by trucks making deliveries to projected development sites. Each worker vehicle was assumed to arrive in the morning and depart in the afternoon or early evening, while truck deliveries would occur throughout the construction day. In the third quarter of 2030, construction-related traffic would be expected to peak during the 6 AM to 7AM and 3 PM to 4 PM periods. During the 6 to 7 AM peak hour, there would be 1,758 Passenger Car Equivalent (PCE) vehicle trips, including 1,512 inbound trips and 246 outbound trips. During the 3 to 4 PM peak hour, there would be 1,352 PCE trips, including 43 inbound trips and 1,309 outbound trips.

Potential significant adverse traffic impacts could occur during construction. The impacts would be within the range of impacts identified for the for operational traffic in the 2035 build year. The mitigation measures identified in Chapter 21, “Mitigation,” for 2035 operational traffic impacts would be similarly effective at mitigating any potential construction traffic impacts.

### *PEDESTRIANS*

During the 2030 (third quarter) peak construction period, net incremental construction and operational travel demand on area sidewalks, corners, and crosswalks would be expected to total approximately 2,447 and 7,381 trips in the 6 AM to 7 AM and 3 PM to 4 PM peak construction hours, respectively. These trips would be widely distributed among the projected development sites that would be under construction in the third quarter of 2030 and would primarily occur outside the weekday AM and PM peak commuter periods and weekday midday and Saturday peak periods when pedestrians at area transit facilities typically create the greatest demand.

It is expected that potential significant adverse pedestrian impacts could occur during construction and that these impacts would be within the range of impacts identified for the 2035 With-Action conditions. The mitigation measures identified in Chapter 21, “Mitigation,” operational pedestrian impacts would likely be effective at mitigating any potential construction pedestrian impacts.

### *TRANSIT*

The construction sites are located in an area that is well served by public transportation with six subway stations or station complexes, 12 local bus routes, and two ferry landings, along with two commuter rail stations located on the periphery of the Project Area.

During the construction peak period, the net incremental construction and operational travel demand is expected to generate during the 6 AM to 7 AM and 3 PM to 4 PM peak construction hours approximately 1,793 and 3,390 subway trips, respectively, 90 and 138 rail trips, respectively, 159 and 332 bus trips, respectively, and 104 and 188 ferry trips, respectively. As peak transit demand would not meet the 200 trips/hour *CEQR Technical Manual* analysis threshold for a detailed rail analysis, significant adverse impacts to rail services are not expected to occur in the construction peak hours during the third quarter of 2030 peak construction period.

It is expected that potential significant adverse subway, bus, and ferry impacts could occur during construction and that these impacts would be within the range of impacts identified for operational phase transit in the 2035 build year. During the construction peak period, transit conditions during the 6 AM to 7 AM and 3 PM to 4 PM construction peak hours are expected to be generally better than during the analyzed operational peak hours with full build-out of projected development in 2035, as incremental demand would be lower during construction, and most construction trips would not occur during the peak hours of commuter demand. The mitigation measures identified in Chapter 21, "Mitigation" for operational subway, bus, and ferry impacts would likely be effective at mitigating any potential construction subway, bus, and ferry impacts.

*PARKING*

With full build-out of the projected developments in 2035, there would be a parking demand for more than 5,000 vehicles between 9 AM and 5 PM. Parking conditions during the peak construction period in 2030 are therefore expected to be generally better than during the analyzed operational peak hours with full build-out of projected development in 2035. Consequently, there would be less likelihood of a parking shortfall during the peak construction hours in the cumulative analysis year (2030) than with full build-out of the projected developments in 2035. While the 2030 (third quarter) construction worker parking demand could contribute to such a shortfall at midday, most of the Project Area is located in Parking Zone 2 and any potential shortfall would not be considered significant because the site is served by nearby alternative modes of transportation.

## AIR QUALITY

Measures would be taken to reduce pollutant emissions during construction in accordance with all applicable laws, regulations, and building codes. These include dust suppression measures, idling restriction, and the use of ultra-low sulfur diesel (ULSD) fuel. With the implementation of these emissions reduction measures, the dispersion modeling analysis of construction-related air emissions for both on-site and on-road sources determined that short-term particulate matter ($PM_{2.5}$ and $PM_{10}$), annual-average nitrogen dioxide ($NO_2$), and carbon monoxide (CO) concentrations would be below their corresponding CEQR *de minimis* thresholds and/or National Ambient Air Quality Standards (NAAQS), respectively. Therefore, construction under the Proposed Actions would not result in significant adverse air quality impacts.

## NOISE AND VIBRATION

Construction under the Proposed Actions would have the potential to result in significant adverse impacts related to noise. At some receptors, construction activity would result in

increments that would be considered objectionable (i.e., 15 dBA or greater) or very objectionable (i.e., 20 dBA or greater). The potential for significant adverse impacts at these receptors was determined by evaluating the duration of these increments. Receptors where noise level increases were predicted to exceed the construction noise evaluation thresholds for extended durations were identified. Construction could produce noise levels that would be noticeable and potentially intrusive during the most noise-intensive nearby construction activities. The highest levels of construction noise would not persist throughout construction and noise levels would fluctuate resulting in noise increases that would be intermittent. However, the magnitude and duration of construction noise levels at the identified receptors would constitute significant adverse impacts.

Building construction would typically occur during weekday daytime hours and would therefore not produce noise during nighttime hours when residents would be most sensitive to noise. Further, construction would comply with *New York City Noise Control Code* regulations. Per *New York City Noise Control Code* regulations, construction under the Proposed Actions would be required to prepare a Construction Noise Mitigation Plan, which may identify more control measures that would further reduce construction noise levels.

The buildings of most concern with regard to the potential for structural or architectural damage due to vibration are New York City Transit (NYCT) structures immediately adjacent to the projected and potential development sites and historic buildings within 90 feet of projected and potential development sites. For those historic buildings that are listed on the State and National Registers of Historic Places (S/NR), are New York City Landmarks (NYCLs), and/or are within New York City Historic Districts (NYCHD) and would be within 90 feet of the projected and potential development sites, vibration monitoring would be required in accordance with New York City Department of Buildings (DOB) *Technical Policy and Procedure Notices (TPPN) #10/88* requirements, and peak particle velocity (PPV) during construction would be prohibited from exceeding the 0.50 inches/second threshold. Historic buildings that have been determined eligible for S/NR listing are not afforded special protections under *TPPN #10/88.*

For non-historic buildings and 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 vibration decibels (VdB) limit is the pile driver. However, operation of pile-driving equipment would only occur for limited periods of time at a particular location and therefore would not result in any significant adverse impacts. Consequently, there would be no potential for significant adverse vibration impacts with the Proposed Actions.

## C. 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 ensures that construction projects meet the requirements of the New York City Building Code and that buildings are structurally, electrically, and mechanically safe. In addition, DOB enforces safety

regulations to protect workers and the general public during construction; the areas of oversight include installation and operation of equipment such as cranes, sidewalk sheds, and safety netting and scaffolding. The New York City Department of Parks and Recreation (NYC Parks) is responsible for the oversight, enforcement, and permitting of the replacement of street trees lost due to construction. The New York City Department of Environmental Protection (DEP) enforces the New York City Noise Code, ~~and~~ reviews and approves any needed Remedial Action Plans (RAP) and Construction Health and Safety Plans (CHASP), and regulates water disposal into the sewer system as well as abatement of hazardous materials. The City of New York Department of Sanitation (DSNY) has regulatory and enforcement oversight of the storage, transport, and disposal of asbestos waste. The New York City Fire Department (FDNY) has primary oversight of compliance with the New York City Fire Code and the installation of tanks containing flammable materials. The New York City Department of Transportation (DOT) Office of Construction Mitigation and Coordination (OCMC) reviews and approves any traffic lane and sidewalk closures. NYCT is responsible for subway access and, if necessary, bus stop relocations. NYCT also regulates vibrations that might affect the subway system.

**Table 20-1**
**Construction Oversight in New York City**

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

For projects undergoing environmental review, the New York City Landmarks Preservation Commission (LPC) reviews any archaeological testing or monitoring that may be required, and reviews and approves construction protection plans (CPP) and any monitoring measures necessary to prevent damage to historic structures.

At the state level, the New York State Department of Labor (DOL) licenses asbestos workers. The New York State Department of Environmental Conservation (DEC) regulates disposal of hazardous materials, and construction and operation of bulk petroleum and chemical storage tanks. At the federal level, 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, although much of the responsibility is delegated to the state level. The Occupational Safety and

Health Administration (OSHA) sets standards for work site safety and construction equipment.

## D. CONCEPTUAL CONSTRUCTION PHASING AND SCHEDULE

A total of 52 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. At this time, there are no finalized construction programs or designs for the projected developments. Actual construction methods and materials may vary, depending on how the construction contractors choose to implement 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 projected development would follow applicable federal, state, and local laws for building and safety, as well as local noise ordinance, as appropriate.

For analysis purposes, a conceptual construction phasing and schedule for the Reasonable Worst-Case Development Scenario (RWCDS) expected under the Proposed Actions was prepared by DCP to illustrate how development could proceed through 2035. Because the projected development sites in the rezoning area are predominantly in private ownership, the timing of the development of those sites is unknown. As such, the 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 and site conditions would ultimately determine the sequence of construction of developments.

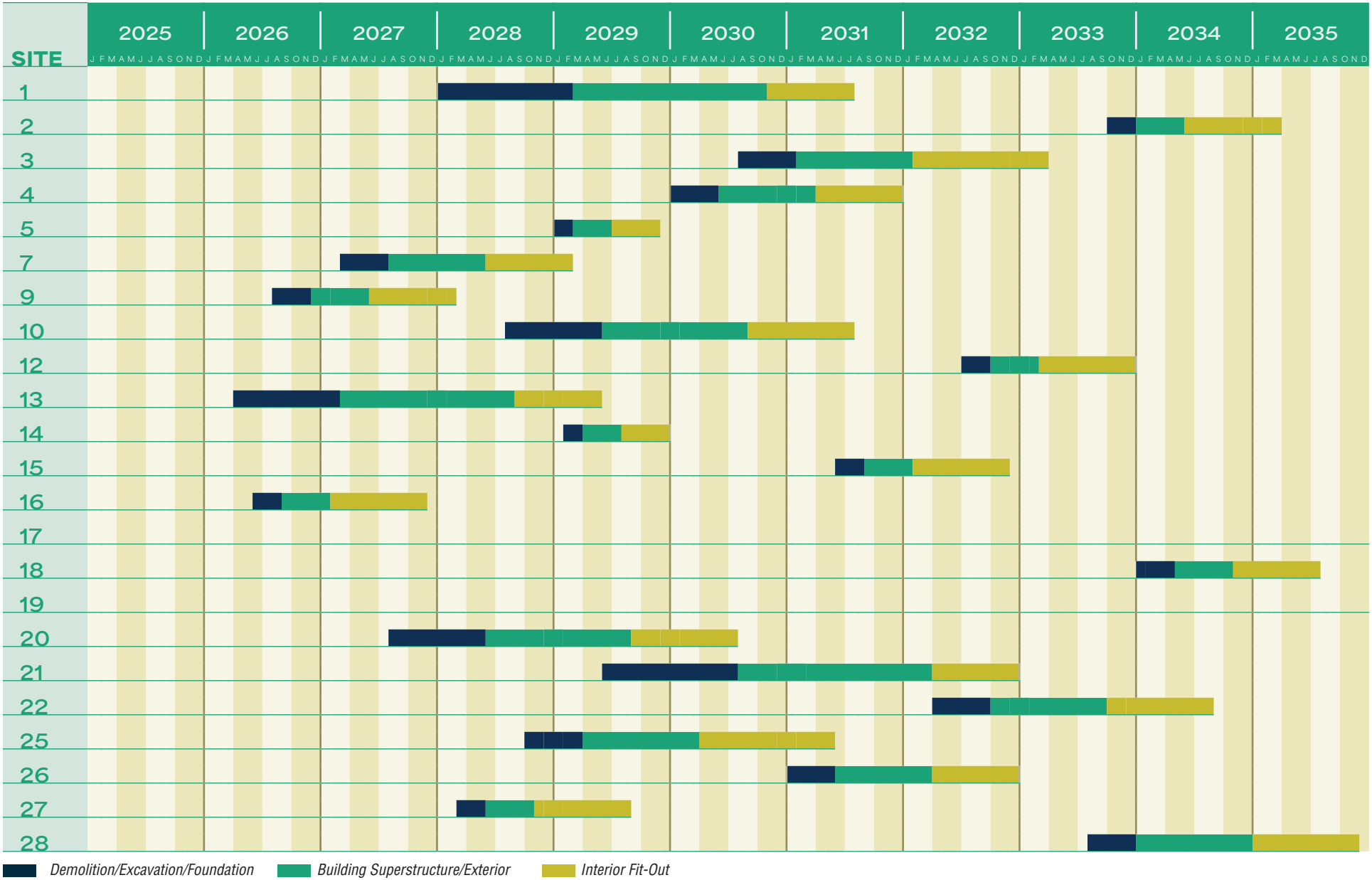
In estimating the duration of the construction for each development site, it is generally assumed that development sites less than 225,000 square feet in size would take less than 24 months to complete, whereas projected development sites with more floor area are assumed to take longer. The conceptual 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 under the Proposed Actions. In the conceptual construction schedule, construction activities are assumed to begin in 2026 and continue over a 10-year period through 2035. It is conservatively assumed that construction of all projected developments would be completed by the end of the 2035. Based on the amount of gross floor area anticipated on a development site, the construction duration at approximately half of the projected development sites (25 out of the 52 sites) would be considered short term (i.e., up to 24 months).

## E. CONSTRUCTION DESCRIPTION

Fifty-two projected development sites have been identified in the Project Area as likely to be developed with new building(s) during the 10-year analysis period. Typically, the first task is construction startup, which involves installing public safety measures (i.e., signs

3.27.25

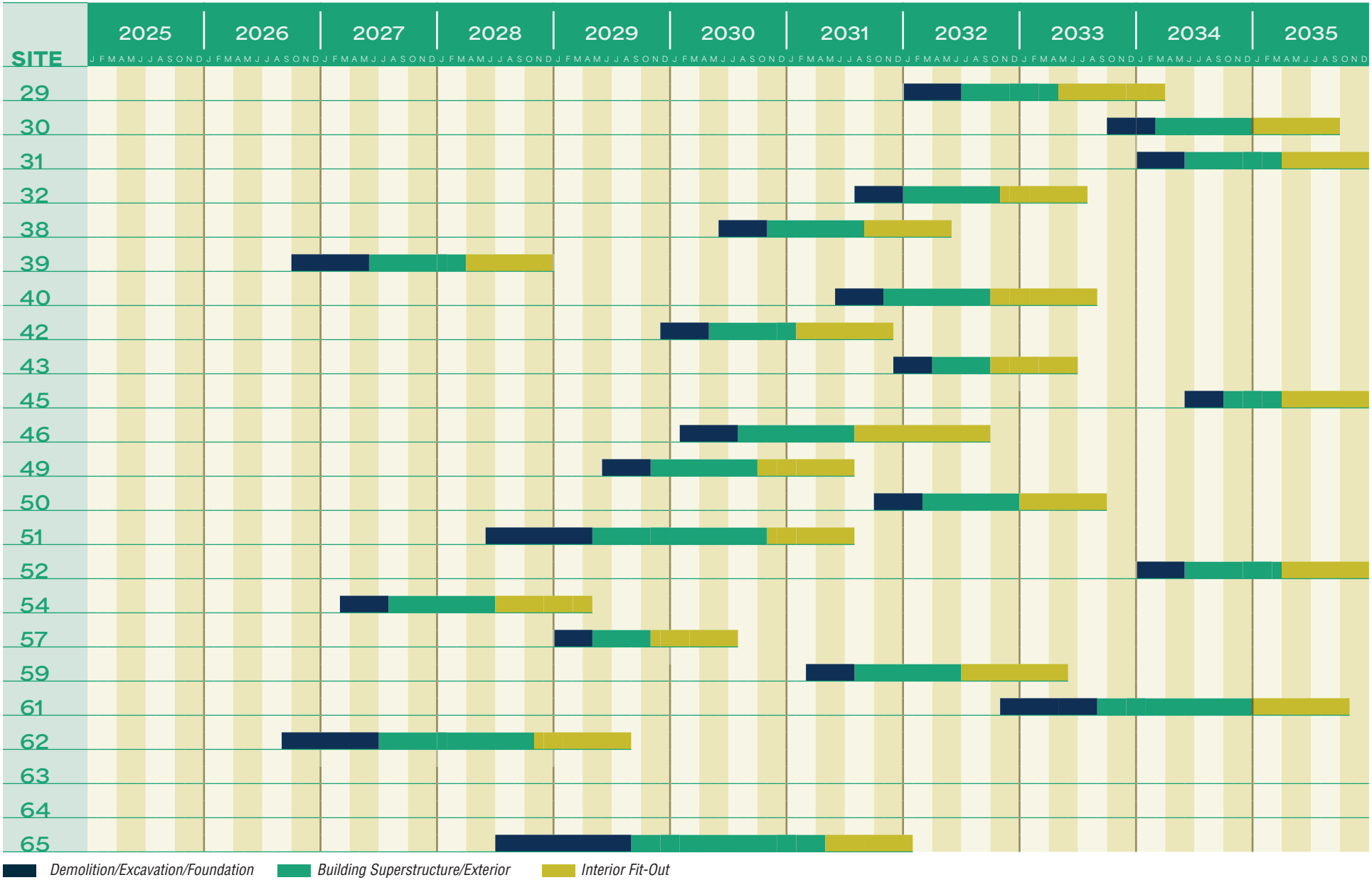



Conceptual Construction Schedule

**LONG ISLAND CITY NEIGHBORHOOD PLAN**

**Figure 20-1a**

3.27.25

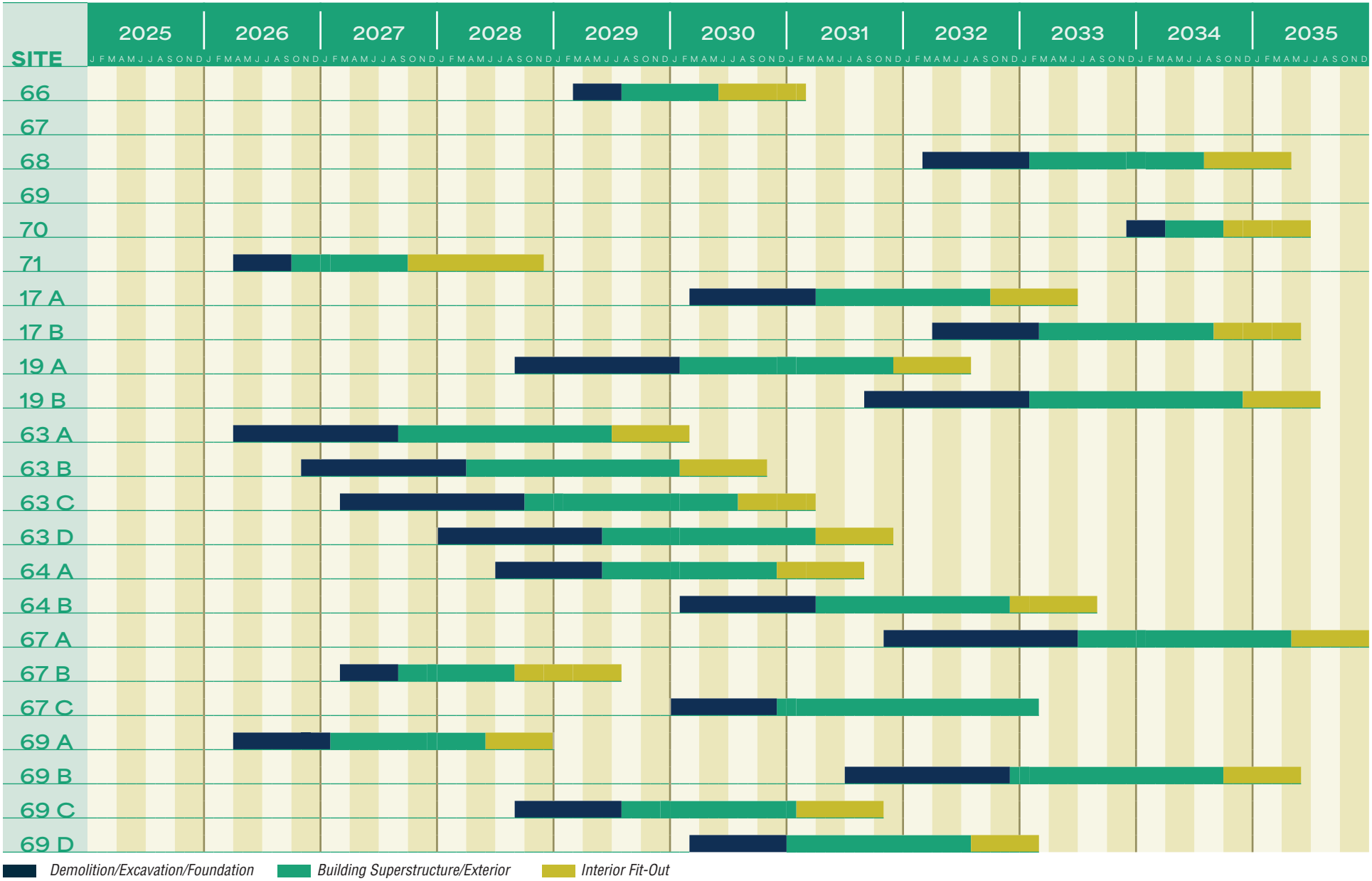



Conceptual Construction Schedule

**LONG ISLAND CITY NEIGHBORHOOD PLAN**

**Figure 20-1b**

3.27.25




Conceptual Construction Schedule

**LONG ISLAND CITY NEIGHBORHOOD PLAN**

**Figure 20-1c**

and fences) and siting of work trailers. Then, if there are existing buildings on the development site, any potential hazardous materials such as asbestos are abated and then the buildings are demolished. Excavation of the soils is next, along with the construction of the foundation. When the below-grade construction is completed, construction of the core and shell of the new buildings begins. The core is the central part of the building and is the main part of the structural system. It contains elevators and mechanical systems for heating, ventilation, and air conditioning (HVAC). The shell is the exterior of the building. As the core and floor decks of the building are being erected, installation of the mechanical and electrical internal networks starts. The core and shell stages of construction are typically referred to as the "superstructure." As the building progresses upward, the exterior façade is installed, and interior fit-out activities begin. These typical activities for building construction are described in greater detail below.

## GENERAL CONSTRUCTION STAGES

### *DEMOLITION, EXCAVATION, AND FOUNDATION*

Construction begins with the demolition of existing buildings where applicable. First, 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 biphenyl (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 that 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 is typically 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 building. Demolition debris is sorted prior to being disposed of at landfills to maximize recycling opportunities.

Regarding excavation activities, where necessary, sheeting is installed to stabilize soil around the excavation area and excavators are then used to excavate soil. The soil is 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 also includes the construction of the new building's foundation and below-grade elements. Foundation work could typically include pile installation, 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 includes the building's framework such as beams, slabs, and columns. Construction of the interior structure of the building includes elevator shafts, vertical risers for mechanical, electrical, and plumbing systems, electrical and mechanical equipment rooms, core stairs, and restrooms. A mobile crane or a tower crane (for larger buildings) are typically brought onto the development site during the superstructure stage to lift structural components, façade elements, and other large materials. Superstructure activities typically also require the use of rebar benders, welding equipment and a variety of trucks. In addition, temporary construction elevators (hoists) are used for the vertical movement of workers and materials during superstructure activities.

*INTERIOR FIT-OUT*

Interior fit-out activities 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 systems (electrical system, fire alarm, plumbing, etc.) testing and inspection are also part of this stage of construction. Equipment used during interiors and finishing generally includes hoists, forklifts, scissor lifts, delivery trucks, and a variety of small hand-held tools.

## F. GENERAL CONSTRUCTION PRACTICES

### HOURS OF WORK

Building construction would generally be carried out in accordance with City laws and regulations, which allow construction activities between 7 AM and 6 PM on weekdays. Weekday construction work typically begins at 7 AM, with most workers arriving between 6 AM and 7 AM. Normal workdays end at 3:30 PM, but it can be expected that, in order to complete certain time-sensitive tasks (e.g., finishing a concrete pour for a floor deck), the workday may occasionally be extended beyond normal work hours. Any extended workdays generally last until approximately 6 PM and do 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 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 a development site during construction is typically controlled at the perimeter. The work areas would be fenced off with limited access points for workers and construction vehicles. After work hours, the gates would be closed and locked. As is typical with New York City construction in a dense urban setting, 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 Office of Construction Mitigation and Coordination (OCMC). It is expected that construction staging of materials and equipment would be primarily within the development sites themselves, or the adjacent curb-lane.

A variety of measures are typically required by the City and implemented to ensure public safety during project construction. These include installing sidewalk bridges during above-grade construction activities to provide overhead protection for pedestrians; providing construction safety signs to alert the public of ongoing construction activities; posting flaggers 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; and implementing all DOB safety requirements to minimize disruption to the community.

*RODENT CONTROL*

Construction contracts typically include provisions for a pre-construction rodent control program. Before the start of construction, the contractor surveys and baits the appropriate areas and provides for proper site sanitation, as necessary. During construction, the contractor would also carry out a maintenance program, as needed. Signage would be posted, and coordination conducted with the appropriate public agencies.

## NUMBER OF CONSTRUCTION WORKERS AND TRUCK 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 their number also varies depending on the task and/or the building size. Workers and truck projections were based on representative sites of similar size and use 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 52 projected development sites was then assigned to the appropriate size category, and worker and truck projections were scaled on a per-square-foot basis.

The resultant estimate of the number of trucks and workers per quarter is summarized in **Table 20-2**. As indicated in the table, the number of workers would peak in the third quarter of 2030, with an estimated 3,276 workers per day. The number of trucks would peak in the third quarter of 2030, with an estimated 448 trucks per day.

[1] For purposes of this analysis, construction impact analysis data from the 2021 *Gowanus Rezoning FEIS* were used.

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

| Year | 2026 | | | | 2027 | | | | 2028 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Quarter | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th |
| Workers | - | 162 | 194 | 388 | 601 | 845 | 1,214 | 1,463 | 1,568 | 1,845 | 2,009 | 2,227 |
| Trucks | - | 76 | 87 | 119 | 154 | 199 | 225 | 229 | 284 | 298 | 346 | 379 |
| Year | 2029 | | | | 2030 | | | | 2031 | | | |
| Quarter | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th |
| Workers | 2,216 | 2,627 | 2,949 | 3,023 | 3,189 | 3,150 | **3,276** | 2,980 | 3,208 | 3,214 | 2,819 | 2,445 |
| Trucks | 376 | 397 | 403 | 390 | 432 | 444 | **448** | 378 | 364 | 333 | 339 | 329 |
| Year | 2032 | | | | 2033 | | | | 2034 | | | |
| Quarter | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th |
| Workers | 2,161 | 2,160 | 1,986 | 1,906 | 2,019 | 1,938 | 1,995 | 1,863 | 2,061 | 2,069 | 2,063 | 1,864 |
| Trucks | 324 | 342 | 313 | 281 | 270 | 256 | 253 | 244 | 274 | 270 | 257 | 203 |
| Year | 2035 | | | | | | | | | | | |
| Quarter | 1st | 2nd | 3rd | 4th | Average | | | | Peak | | | |
| Workers | 1,734 | 1,379 | 835 | 592 | 1,955 | | | | 3,276 | | | |
| Trucks | 167 | 127 | 78 | 56 | 276 | | | | 448 | | | |

## G. THE FUTURE WITHOUT THE PROPOSED ACTIONS (NO ACTION CONDITION)

As described in Chapter 1, “Project Description,” in the No Action condition, the projected development sites are assumed to either remain unchanged from existing conditions or be redeveloped, enlarged, or undergo conversion to a new use under existing zoning.

## H. 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

*TRAFFIC*

As discussed above, average daily on-site construction workers and trucks were forecasted for new construction anticipated on each of the projected development sites with the Proposed Actions. As shown in **Table 20-2**, the average number of workers would peak at an estimated 3,276 per day in the third quarter of 2030, while the average number of trucks per day would peak at an estimated 448 in the same quarter of 2030. These represent peak days of work; other days during the construction period would have fewer construction workers and trucks on-site. Overall, the third quarter of 2030 is expected to be the peak period for total construction travel demand (worker trips and truck trips combined).

In addition to ongoing construction during the third quarter of 2030, operational trips from completed portions of the projected developments would simultaneously occur. As such, the third quarter of 2030 was selected as the reasonable worst-case analysis period for assessing potential cumulative traffic impacts from operational trips from completed portions of the projected developments and construction trips associated with construction activities. An assessment of traffic generated during this peak period is presented below.

*Peak Construction Worker Travel Demand and Truck Trips—2030 (Third Quarter)*

Modal split and vehicle occupancy rates for construction workers is 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 41.0 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, rail, ferry, and bus transit. Approximately 56.5 percent of workers are expected to travel by personal automobile with an average occupancy of approximately 1.17 persons per vehicle, 0.97 percent are expected to taxi, and 1.5 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 2030 (third 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 PCEs based on one truck being equivalent to an average of two PCEs.

As shown in **Table 20-3**, in the third quarter of 2030, construction-related traffic is expected to peak during the 6:00 to 7:00 a.m. and 3:00 to 4:00 p.m. periods. During the 6:00 to 7:00 a.m. peak hour there would be a total of 1,758 PCE vehicle trips, including 1,512 inbound trips and 246 outbound trips. During the 3:00 to 4:00 p.m. peak hour there would be a total of 1,352 PCE trips, including 43 inbound trips and 1,309 outbound trips.

*Cumulative Operational Traffic—2030 (Third Quarter)*

As discussed above, **Table 20-3** shows hourly worker auto trips and construction truck trips (in PCEs) in the 2030 (third quarter) analysis period. 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. During this peak period, construction travel demand would also simultaneously overlap with operational demand from completed projected development sites. During this cumulative construction and operational traffic analysis period, there would be 11 sites already completed and operational (3 of which would have one building of all proposed buildings completed), and 20 sites that are under construction.

**Table 20-3**
**2030 (Third Quarter) Peak Incremental Construction Vehicle Trip Projections (in PCEs)**

| | Worker Vehicle Trips | | | | | | | | Truck Trips | | | | | Total Vehicle Trips | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | % | | Auto | | | Taxi | | | In | | Out | | | | | |
| Hour | In | Out | In | Out | Total | In | Out | Total | % | # | % | # | Total | In | Out | Total |
| 6-7 AM | 80% | 0% | 1,266 | 0 | 1,266 | 22 | 22 | 44 | 25% | 25% | 224 | 224 | 448 | 1,512 | 246 | 1,758 |
| 7-8 AM | 20% | 0% | 317 | 0 | 317 | 6 | 6 | 12 | 10% | 10% | 90 | 90 | 180 | 413 | 96 | 509 |
| 8-9 AM | 0% | 0% | 0 | 0 | 0 | 0 | 0 | 0 | 10% | 10% | 90 | 90 | 180 | 90 | 90 | 180 |
| 9-10 AM | 0% | 0% | 0 | 0 | 0 | 0 | 0 | 0 | 10% | 10% | 90 | 90 | 180 | 90 | 90 | 180 |
| 10-11 AM | 0% | 0% | 0 | 0 | 0 | 0 | 0 | 0 | 10% | 10% | 90 | 90 | 180 | 90 | 90 | 180 |
| 11 AM-12 PM | 0% | 0% | 0 | 0 | 0 | 0 | 0 | 0 | 10% | 10% | 90 | 90 | 180 | 90 | 90 | 180 |
| 12-1 PM | 0% | 0% | 0 | 0 | 0 | 0 | 0 | 0 | 10% | 10% | 90 | 90 | 180 | 90 | 90 | 180 |
| 1-2 PM | 0% | 0% | 0 | 0 | 0 | 0 | 0 | 0 | 5% | 5% | 45 | 45 | 90 | 45 | 45 | 90 |
| 2-3 PM | 0% | 5% | 0 | 79 | 79 | 1 | 1 | 2 | 5% | 5% | 45 | 45 | 90 | 46 | 125 | 171 |
| 3-4 PM | 0% | 80% | 0 | 1,266 | 1,266 | 22 | 22 | 44 | 2.5% | 2.5% | 21 | 21 | 42 | 43 | 1,309 | 1,352 |
| 4-5 PM | 0% | 15% | 0 | 237 | 237 | 4 | 4 | 8 | 2.5% | 2.5% | 21 | 21 | 42 | 25 | 262 | 287 |
| 5-6 PM | 0% | 0% | 0 | 0 | 0 | 0 | 0 | 0 | 0% | 0% | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 20-4** shows the comparison of the vehicle trips generated under the 2030 peak construction period and 2035 build year during traditional AM and PM peak hours for traffic (previously identified in Chapter 13, "Transportation") as well as the AM and PM construction peak hours. The 2030 construction trips are based on the data presented in **Table 20-3** and the 2030 operational trips are based on the planning factors outlined in Chapter 13, "Transportation," of the traffic generated as a result of the 11 sites that would be operational by 2030 (this conservatively assumes all buildings on all 11 sites would be built and operational even though some would still under construction). The total vehicle trips generated under the 2030 construction period is the aggregate of the 2030 construction trips and 2030 operational trips. The net difference of these trips is compared to the 2035 operational trips, which are the trips that would be generated by the 52 sites under the 2035 build year.

**Table 20-4**
**Comparison of 2030 Peak (Third Quarter) Incremental Construction and Operational Vehicle Trips with 2035 Operational Vehicle Trip**

| Peak Hour | Net Incremental Vehicle Trips | | | | |
|---|---|---|---|---|---|
| | 2030[1] Construction Trips | 2030[1] Operational Trips | 2030[1] Construction + Operational Trips | 2035 Operational Trips | Net Difference |
| Construction AM | 1,758 | 167 | 1,925 | 580 | 1,345 |
| Operational AM[2] | 262 | 824 | 1,086 | 2,698 | -1,612 |
| Construction PM | 1,352 | 622 | 1,974 | 1,947 | 27 |
| Operational PM | 287 | 902 | 1,189 | 2,642 | -1,453 |

**Notes:**
[1] 2030 construction trips represent the third quarter of that year.
[2] Construction trips for this period based on the average for the 7:00-8:00 a.m. and 8:00-9:00 a.m. periods.

During the AM construction peak hour in 2030, a total of 167 operational vehicle trips (in PCEs) are anticipated; during the PM construction peak hour, a total of 622 operational trips are anticipated. By comparison, construction vehicle trips during the AM operational peak hour would total approximately 262 and 287 during the PM operational peak hour.

As shown in **Table 20-4**, combined with the operational trips generated by completed projected developments, there would be a total of approximately 1,925 vehicle trips during the AM construction peak hour and a total of 1,974 trips during the PM construction peak hour in 2030 (third quarter). During the AM and PM operational peak hours in 2030 (third quarter), combined operational and construction vehicle trips would total approximately 1,086 and 1,189, respectively. During these operational peak hours, construction trips would account for only 262 of the combined trips in the AM and 287 in the PM.

As peak construction and operational activity in 2030 would result in 1,612 and 1,453 fewer incremental vehicle trips during the traditional AM and PM peak hours, respectively, than would full build-out of the projected development sites under the Proposed Actions, it is expected that any significant adverse traffic impacts during the 2030 construction analysis year would be within the range of impacts identified for the 2035 operational analysis year. Furthermore, no new intersections are likely to experience significant adverse traffic impacts during the AM and PM peak rush hour periods in the 2030 construction analysis year.

Peak construction and operational activity would generate 1,345 and 27 more incremental vehicle trips during the AM and PM construction peak hours in 2030, respectively compared with operation of the Proposed Actions in 2035. Based on traffic counts that were collected in the study area over a 24-hour period, overall traffic volumes on the study area street network are, in general, lower during the AM construction peak hour than during the AM operational commuter peak hour and comparable during the PM construction peak hour to the PM operational peak hour. As such, traffic conditions during the construction peak hours are expected to be generally better than during the operational commuter peak hours. For example, automatic traffic recorder (ATR) count data indicates that in the aggregate, existing from 6 AM to 7 AM traffic volumes on study area streets would be approximately 24 percent lower than during the operational AM peak hour. Traffic conditions in 2030 during the 6 AM to 7 AM and the 3 PM to 4 PM construction peak hours are therefore expected to be generally better or comparable than during the analyzed operational AM and PM peak hours with full build-out of the Proposed Actions in 2035. Consequently, there would be less likelihood of significant adverse traffic impacts during the construction peak hour in the Proposed Actions' peak construction period than with the full build-out during operational peak hours analyzed in the EIS. It is expected that the mitigation measures identified in Chapter 21, "Mitigation," for 2035 operational traffic impacts would also be effective at mitigating potential impacts during the peak construction periods.

*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 workday 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. Detailed MPT plans for each construction site would also need to be submitted for approval to DOT's Office of Construction Mitigation and Coordination (OCMC). The MPT plans would detail the

measures needed to be implemented at each construction site to ensure the safe and efficient maintenance of vehicular and pedestrian traffic flows.

*TRANSIT*

As previously discussed and shown in **Table 20-2**, in the 2030 peak (third) quarter for construction travel demand, there would be a net increase of approximately 3,276 construction workers traveling to and from projected development sites each day under the Proposed Actions. Approximately 41.0 percent of these construction workers are expected to travel to and from the Project Area by public transit (subway, bus, ferry, and/or commuter rail). The RWCDS construction sites are located in a neighborhood that is well served by public transportation, with a total of six subway stations or station complexes, 12 local bus routes, and two ferry landings, along with two commuter rail stations located in proximity to 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 third quarter of 2030, construction worker travel demand is expected to generate a total of approximately 1,074 transit trips (822 by subway, 66 by rail, 52 by ferry, and 134 by bus) in each of the 6 AM to 7 AM and the 3 PM to 4 PM construction peak hours. Construction worker transit trips would be distributed among numerous subway stations, bus routes, ferry landings, and commuter rail stations in proximity to projected development sites that are located throughout the Project Area. In addition, as stated above construction worker transit trips are primarily outside of the peak AM and PM commuter periods when area transit facilities and services typically experience their greatest demand.

As shown in **Table 20-2**, during the 2030 (second quarter) analysis period, cumulative construction and operational travel demand would simultaneously utilize the transit network as a result of projected development sites under construction and those completed with occupancy. Based on the planning factors outlined in Chapter 13, “Transportation,” the operational subway trips generated as a result of the four completed project developments sites would total approximately 971 and 2,568 during the AM and PM construction peak hours, respectively, while operational rail trips would increase by 24 and 72 and operational bus trips would increase by 25 and 198 during the same periods. Operational ferry trips would increase by 52 and 136 during the same periods. Therefore, in the peak construction period, the increase in transit demand (construction and operational) during the 6 AM to 7 AM and the 3 PM to 4 PM construction peak hours would total 1,793 and 3,390 subway trips, respectively, 90 and 138 rail trips, respectively, 159 and 332 bus trips, respectively, and 104 and 188 ferry trips, respectively.

As discussed above, in the construction peak period, it is estimated that there would be an increase of approximately 1,793 and 3,390 subway trips during the construction AM and PM peak hours, respectively. By comparison, the net increase in operational subway trips with full build-out of the Proposed Actions in 2035 would be substantially greater in number, totaling approximately 11,722 and 10,403 subway trips during the weekday AM and PM commuter peak periods when overall demand on area subway facilities and services typically peaks. Therefore, 2030 subway conditions during the 6 AM to 7 AM and the 3 PM to 4 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

2035. Therefore, it is expected that any significant adverse subway station and line haul impacts during the 2030 cumulative construction analysis year would be within the range of impacts identified for the 2035 operational analysis year. Furthermore, no new subway elements are likely to experience significant adverse impacts during the AM and PM peak rush hour periods in the 2030 construction analysis year. It is expected that the mitigation measures identified for 2035 operational subway station and line haul impacts in Chapter 21, "Mitigation," would be similarly effective at mitigating any potential impacts from construction subway trips during the 2030 analysis period for cumulative construction and operational travel demand.

As discussed above, in the construction peak period, it is estimated that there would be an increase of approximately 90 and 138 rail trips during the construction AM and PM peak hours, respectively. As peak transit demand would not meet the 200 trips/hour *CEQR Technical Manual* analysis threshold for a detailed rail analysis, significant adverse impacts to rail services are not expected to occur in the construction peak hours during the third quarter of 2030 peak construction period.

In the construction peak period, it is estimated that there would be an increase of approximately 159 and 332 bus trips during the construction AM and PM peak hours, respectively. By comparison, the net increase in operational bus trips with full build-out of the Proposed Actions in 2035 would be substantially greater in number, totaling approximately 1,129 and 1,027 bus trips during the weekday AM and PM commuter peak periods when overall demand on area bus facilities and services typically peaks. Therefore, 2030 bus conditions during the 6 AM to 7 AM and the 3 PM to 4 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 2035. Therefore, it is expected that any significant adverse bus line haul impacts during the 2030 cumulative construction analysis year would be within the range of impacts identified for the 2035 operational analysis year. Furthermore, no new bus routes are likely to experience significant adverse impacts during the AM and PM peak rush hour periods in the 2030 construction analysis year. It is expected that the mitigation measures identified for 2035 operational bus line haul impacts in Chapter 21, "Mitigation," would be similarly effective at mitigating any potential impacts from construction bus trips during the 2030 analysis period for cumulative construction and operational travel demand.

As discussed above, in the construction peak period, it is estimated that there would be an increase of approximately 104 and 188 ferry trips during the construction AM and PM peak hours, respectively. By comparison, the net increase in operational ferry trips with full build-out of the Proposed Actions in 2035 would be substantially greater in number, totaling approximately 676 and 601 bus trips during the weekday AM and PM commuter peak periods when overall demand on area ferry landings and services typically peaks. Therefore, 2030 ferry conditions during the 6 AM to 7 AM and the 3 PM to 4 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 2035. Therefore, it is expected that any significant adverse ferry impacts during the 2030 cumulative construction analysis year would be within the range of impacts identified for the 2035 operational analysis year. Furthermore, no new ferry elements are likely to experience significant adverse impacts during the AM and PM peak rush hour periods in the 2030 construction analysis year. It is expected that the mitigation measures identified for 2035 operational ferry line haul and landing impacts in Chapter 21, "Mitigation," would be

similarly effective at mitigating any potential impacts from construction ferry trips during the 2030 analysis period for cumulative construction and operational travel demand.

*PEDESTRIANS*

As discussed above, during the 2030 (third quarter) peak construction travel period it is estimated that there would be a net increment of approximately 3,276 construction workers on site daily under the Proposed Actions, approximately 41.0 percent of whom are expected to travel to/from the Project Area by transit, walking to and from area subway stations, rail stations, ferry landings, and bus stops. Up to an additional 1.5 percent are expected to walk to or from the Project Area. As approximately 80 percent of construction worker trips are expected to occur during any one peak hour, net incremental travel demand on area sidewalks, corners, and crosswalks is expected to total approximately 1,114 trips ~~in~~ from the 6 AM to 7 AM and the PM 3 to 4 PM construction peak hours. These trips would be widely distributed among the projected development sites that would be under construction in the third quarter of 2030 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. It should be noted that 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.

During the 2030 peak (third) quarter for analysis, construction and operational travel demand would occur simultaneously in the pedestrian network as a result of projected development sites under construction and those completed with occupancy. Based on the planning factors outlined in Chapter 13, “Transportation,” as a result of the 11 completed projected developments, pedestrian trips (transit walk trips, bike trips, and walk-only trips combined) from the completed projected development sites would total approximately 1,333 in the AM and 6,267 in the PM construction peak hours in 2030. When combined with construction pedestrian trips (transit plus walk-only) from projected development sites under construction (1,114 trips in each period), the Proposed Actions would result in a net total of approximately 2,447 and 7,381 pedestrian trips during these periods, respectively, in 2030. By comparison, incremental pedestrian trips with full build-out of the projected development in 2035 would be substantially greater in number, totaling 20,007, 17,981, 22,798, and 23,012 during the analyzed weekday AM, midday, PM, and Saturday midday operational peak hours, respectively. Therefore, it is expected that any significant adverse pedestrian impacts during the 2030 cumulative construction analysis year would be within the range of impacts identified for the 2035 operational analysis year. Furthermore, no new pedestrian elements are likely to experience significant adverse impacts during the AM and PM peak rush hour periods in the 2030 construction analysis year. It is expected that the mitigation measures identified for 2035 operational pedestrian impacts in Chapter 21, “Mitigation,” would be similarly effective at mitigating any potential impacts from construction pedestrian trips during the 2030 analysis period for cumulative construction and operational travel demand.

*PARKING*

During the 2030 peak construction traffic period it is estimated that there would be approximately 3,276 construction workers on site daily, approximately 56.5 percent of whom would be expected to travel to the Project Area by private auto. Based on an

average vehicle occupancy of 1.17 persons per vehicle, the maximum daily parking demand from project site construction workers would total approximately 1,583 spaces (see **Table 20-5**). These workers are expected to park in on-street and ~~in~~ off-street public parking facilities in proximity to projected development sites throughout the Project Area. During the 2030 (third quarter) construction peak analysis period, simultaneous operational parking demand would be generated by four completed projected development sites. Based on the planning factors outlined in Chapter 13, "Transportation," parking demand from completed projected development sites would peak during weekday overnight period (3 AM to 4 AM) with approximately 2,450 vehicles. In summation, construction and operational parking would total approximately 4,033 vehicles during the peak construction period. However, comparatively, with full build-out of the Proposed Actions in 2035, there would be a parking demand of over 5,000 vehicles between 9 AM and 5 PM. 2030 parking conditions during the construction peak period are therefore expected to be generally better than during the analyzed operational peak periods with full build-out of the Proposed Actions in 2035. Consequently, there would be less likelihood of a parking shortfall during the construction peak hours in the cumulative analysis year (2030) than with full build-out of the Proposed Actions in 2035. While the 1,583 spaces of 2030 (third quarter) construction worker parking demand would potentially contribute to any such shortfall at midday, a majority of the ~~of~~ Project Area is located in Parking Zone 2, per *CEQR Technical Manua*l guidelines, and any potential shortfall would not be considered significant as the site is served by alternative modes of transportation near the Project Area.

**Table 20-5**
**2030 (Third Quarter) Construction Worker Parking Accumulation**

| | 2030 (Q3) | | |
|---|---|---|---|
| **Hour** | **In** | **Out** | **Total** |
| 6-7 AM | 1,266 | 0 | 1,266 |
| 7-8 AM | 317 | 0 | 317 |
| 8-9 AM | 0 | 0 | 1,583 |
| 9-10 AM | 0 | 0 | 1,583 |
| 10-11 AM | 0 | 0 | 1,583 |
| 11 AM-12 PM | 0 | 0 | 1,583 |
| 12-1 PM | 0 | 0 | 1,583 |
| 1-2 PM | 0 | 0 | 1,583 |
| 2-3 PM | 0 | 79 | 1,503 |
| 3-4 PM | 0 | 1,266 | 1,266 |
| 4-5 PM | 0 | 237 | 0 |
| 5-6 PM | 0 | 0 | 0 |

## 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.

In general, much of the heavy equipment used in construction is powered by diesel engines that have the potential to produce elevated levels of nitrogen oxides (NOx) and

PM emissions. Fugitive dust generated by construction activities is also a source of PM. Gasoline engines produce relatively high levels of CO. Since EPA mandates the use of ULSD fuel for all highway and non-road diesel engines, sulfur oxides (SOx) emitted from the Proposed Project's construction activities would be negligible. Therefore, the pollutants to be analyzed for the construction period are $NO_2$—which is a component of NOx 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 CO. **Table 20-6** shows the pollutants analyzed in the construction air quality analysis and the corresponding averaging periods.

**Table 20-6**
**Pollutants for Analysis and Averaging Periods**

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

Concentrations were predicted using dispersion models to determine the potential for air quality impacts during on-site construction activities and due to construction-generated traffic on local roadways. Concentrations for each pollutant of concern due to construction activities at each sensitive receptor were predicted during the most representative worst-case period. The potential for significant adverse impacts were determined by comparing modeled $PM_{10}$, $NO_2$ and CO concentrations to NAAQS, and modeled $PM_{2.5}$ increments to applicable CEQR *de minimis* criteria.

Chapter 15, "Air Quality," contains a review of the air pollutants; applicable regulations, standards, and benchmarks; and general methodology for the air quality analyses. Additional details relevant to the construction air quality analysis methodology are discussed further below.

*EMISSIONS REDUCTION MEASURES*

Construction activity in general, and large-scale construction in particular, has the potential to adversely affect air quality because of diesel emissions. 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 include the use of clean fuel, dust suppression measures, idling restrictions, and diesel equipment reduction:

- Clean Fuel. ULSD fuel would be used exclusively for all diesel engines throughout the development area.
- Dust Control. To minimize dust emissions from construction activities, a dust control plan including a robust watering program would be required. For example, all trucks hauling loose material would be equipped with tight-fitting tailgates and their loads securely covered prior to leaving the development site; and water sprays would be used for all demolition, excavation, and transfer of soils so that materials would be

dampened as necessary to avoid the suspension of dust into the air. Stockpiled soils or debris would be watered, stabilized with a chemical suppressing agent, or covered. All measures required by DEP's Construction Dust Rules regulating construction-related dust emissions would be implemented.

- Idling Restriction. Construction activities would adhere to the local law restricting unnecessary idling on roadways. Vehicle idle time would be restricted to three minutes for all equipment and vehicles that are not using their engines to operate a loading, unloading, or processing device (e.g., concrete-mixing trucks) or are otherwise required for the proper operation of the engine.
- Diesel Equipment Reduction. In accordance with the New York City Noise Control Code as discussed below, under "Noise," electrically powered equipment would be preferred over diesel-powered and gasoline-powered versions of that equipment to the extent practicable. Equipment that would use grid power in lieu of diesel engines includes, but may not be limited to, hoists and small equipment (such as welders).

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

*ON-SITE CONSTRUCTION ACTIVITY ASSESSMENT*

Projected developments with a construction duration that is expected to be short-term (i.e., less than 24 months) are assumed not to have the potential to result in significant adverse construction air quality impact. For the projected developments with a construction duration expected to be 24 months or longer, four representative projected development sites were selected for analysis through a systematic approach that grouped projected developments together based on the developments' overall gross floor area. The development sites analyzed for worst-case annual and short-term averaging periods were among the largest developments in each of the four groups and within close proximity to existing sensitive receptors. The results of detailed modeling at the four selected sites were used to represent the potential air quality effects during the construction period for all other projected development sites through the Project Area. **Table 20-7** presents the projected development sites that were selected for analysis and the development site sizes (in gross square footage) represented by each site. Projected Development Site 19 was selected to evaluate the potential for project-on-project impacts at sites with multiple buildings on the same lot in close proximity (i.e. potential construction impacts at proposed Building 19B due to activities at Building 19A located to the south on the same block).

**Table 20-7**
**Representative Sites for**
**Detailed Quantitative Construction Air Modeling**

| Projected Development Site | Size (gsf) | Size of Projected Development Sites Represented (gsf) |
|---|---|---|
| Site 22 | 322,741 | < 325,000 |
| Site 20 | 457,092 | 325,000 – 460,000 |
| Site 19 (Building 19A) | 735,871 | 460,001 – 750,000 |
| Site 1 | 1,003,786 | > 750,000 |
| **Note**: gsf = gross square feet | | |

Construction-related emissions were calculated for each calendar year throughout the duration of construction on a rolling annual and peak day basis for $PM_{2.5}$ to determine which construction periods constitute the worst-case periods for the pollutants of concern (PM, CO, $NO_2$) for each of the four representative sites. $PM_{2.5}$ was selected for determining the worst-case periods for all pollutants analyzed because the ratio of predicted $PM_{2.5}$ incremental concentrations to impact criteria 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 different pattern but would also be anticipated to be highest during periods when the most activity would occur. Based on the emission profiles (see **Appendix I**), one representative worst-case annual and short-term (i.e., 24-hour, 8-hour, and 1-hour) period was selected for analysis for each of the four representative sites. As presented in the emission profiles, the projected maximum short-term peak would occur in April 2026 and the maximum annual average peak would occur from April 2026 to March 2027.

*ENGINE EMISSIONS*

The sizes, types, and number of units of construction equipment were estimated based on the construction activity schedule developed. Emission rates for $NO_X$, CO, $PM_{10}$, and $PM_{2.5}$ from truck engines were developed using the EPA Motor Vehicle Emission Simulator (MOVES5[2]) emission model. Emission factors for $NO_x$, CO, $PM_{10}$, and $PM_{2.5}$ from on-site construction engines were developed using the NONROAD emission module included in the MOVES emission model. Diesel construction equipment engines greater than 50 horsepower are assumed to meet EPA's Tier 3 emissions standards for CO and NOx and Tier 3 standard with diesel particulate filter (DPF) for PM.

*ON-SITE DUST EMSSIONS*

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 DEP's Construction Dust Rules regarding construction-related dust emissions, a 50 percent reduction in particulate emissions from fugitive dust was conservatively assumed in the calculation (dust control methods such as wet suppression would often provide at least a 50 percent reduction in particulate emissions).

*DISPERSION MODELING*

Potential impacts from the construction sources associated with the Proposed Actions 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

[2] EPA, Motor Vehicle Emission Simulator (MOVES), User Guide for MOVES2014a, November 2015. Overview of EPA's Motor Vehicle Emission Simulator (MOVES5). EPA-420-B-24-043. November 2024. There is no stand-alone user's guide for MOVES5 as information is incorporated into the interface.

(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 concrete pump, pile drivers, or generators, 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 would move around the site throughout the year and were therefore simulated as area sources in the annual analyses.

*METEOROLOGICAL DATA*

The meteorological data set consists of five consecutive years of latest available meteorological data: surface data collected at the nearest representative National Weather Service Station (LGA Airport) from 2015 to 2019, and concurrent upper air data collected at Brookhaven, New York. Meteorological data from 2017 to 2019 was used instead of more recent meteorological data from DEC due to uncertainties in the representativeness of data in 2020 and 2021 due to the effects of COVID-19. The meteorological data provide hour-by-hour wind speeds and directions, stability states, and temperature inversion elevation over the five-year period. This data was processed using the EPA AERMET program to develop data in a format which can be readily processed by the AERMOD model.

*BACKGROUND CONCENTRATIONS*

To estimate the maximum expected total pollutant concentrations, the calculated impacts from the emission sources must be added to a background value that accounts for existing pollutant concentrations from other sources. The background levels are based on concentrations monitored at the nearest DEC ambient air monitoring stations, as shown in **Table 20-8**. Data from 2017 to 2019 were used due to uncertainties in the representativeness of background concentrations in 2020 and 2021 due to the effects of COVID-19.

*RECEPTOR LOCATIONS*

Receptors were placed at locations that would be publicly accessible—at residences, schools, and other sensitive uses at both ground-level and elevated locations (e.g., residential windows), at adjacent sidewalk locations, at publicly accessible open spaces, and buildings at nearby projected development sites which are assumed to be operational during construction.

**Table 20-8**
**Representative Monitored Ambient Air Quality Data**

| Pollutant | Location | Units | Averaging Period | Concentration | NAAQS |
|---|---|---|---|---|---|
| CO | CCNY | ppm | 1-Hour | 2.5 ppm | 35 ppm |
| | | | 8-Hour | 1.2 ppm | 9 ppm |
| $PM_{10}$ | IS 52 | $\mu g/m^3$ | 24-Hour | 36.0 $\mu g/m^3$ | 150 $\mu g/m^3$ |
| $PM_{2.5}$ | JHS 126 | $\mu g/m^3$ | 24-Hour | 17.8 $\mu g/m^3$ | 35 $\mu g/m^3$ |
| | | | Annual | 7.6 $\mu g/m^3$ | 9 $\mu g/m^3$ |
| $NO_2$ | IS 52 | $\mu g/m^3$ | Annual | 32.8 $\mu g/m^3$ | 100 $\mu g/m^3$ |

**Source:** New York State Air Quality Report Ambient Air Monitoring System, NYSDEC, 2017–2019.

*ON-ROAD SOURCES*

The construction worker commuting trips and construction truck deliveries would generally occur during off-peak hours. Furthermore, 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 site 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, MOVES5. 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 DEC.

*On-Road Dust Emissions*

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

*CONSTRUCTION AIR QUALITY ANALYSIS RESULTS*

Maximum predicted concentrations during the representative worst-case construction periods for the representative sites are presented in **Tables 20-9 through 20-12**. As discussed above, Projected Development Site 19 was selected to evaluate the potential for project-on-project impacts at sites with multiple buildings on the same lot in close proximity (i.e., potential construction impacts at proposed Building 19B due to activities at Building 19A located to the south on the same block). To estimate the maximum total

[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.

pollutant concentrations, the modeled concentrations for the representative sites were added to a background value that accounts for existing pollutant concentrations from other nearby sources. As shown in **Tables 20-9 through 20-12**, the maximum predicted total concentrations of all pollutants are below the applicable NAAQS. In addition, the maximum predicted $PM_{2.5}$ concentrations would not exceed the applicable *CEQR Technical Manual de minimis* thresholds in the 24-hour and annual averaging periods.

**Table 20-9**
**Maximum Pollutant Concentrations – Projected Development Site 22**

| Pollutant | Averaging Period | Units | Maximum Modeled Impact | Background Concentration[1] | Total Concentration | *De minimis* | NAAQS |
|---|---|---|---|---|---|---|---|
| $NO_2$ | Annual | µg/m$^3$ | 4.9 | 32.8 | 37.7 | - | 100 |
| CO | 1-hour | ppm | 0.2 | 2.5 | 2.7 | - | 35 |
| | 8-hour | ppm | 0.04 | 1.2 | 1.2 | - | 9 |
| $PM_{10}$ | 24-hour | µg/m$^3$ | 12.4 | 36.0 | 48.4 | - | 150 |
| $PM_{2.5}$ | 24-hour | µg/m$^3$ | 2.5 | 17.8 | 20.3 | 8.6[2] | 35 |
| | Annual—Local | µg/m$^3$ | 0.1 | 7.6 | 7.7 | 0.3 | 9 |
| | Annual—Neighborhood | µg/m$^3$ | 0.002 | 7.6 | 7.6 | 0.1 | 9 |

**Notes:** N/A—Not Applicable
[1] The background levels are based on the most representative concentrations monitored at NYSDEC ambient air monitoring stations (see **Table 20-8**).
[2] $PM_{2.5}$ *de minimis* criterion—24-hour average, not to exceed more than half the difference between the background concentration and the 24-hour standard of 35 µg/m$^3$.

**Table 20-10**
**Maximum Pollutant Concentrations – Projected Development Site 20**

| Pollutant | Averaging Period | Units | Maximum Modeled Impact | Background Concentration[1] | Total Concentration | *De minimis* | NAAQS |
|---|---|---|---|---|---|---|---|
| $NO_2$ | Annual | µg/m$^3$ | 3.4 | 32.8 | 36.2 | - | 100 |
| CO | 1-hour | ppm | 0.2 | 2.5 | 2.7 | - | 35 |
| | 8-hour | ppm | 0.05 | 1.2 | 1.3 | - | 9 |
| $PM_{10}$ | 24-hour | µg/m$^3$ | 9.5 | 36.0 | 45.5 | - | 150 |
| $PM_{2.5}$ | 24-hour | µg/m$^3$ | 1.9 | 17.8 | 19.7 | 8.6[2] | 35 |
| | Annual—Local | µg/m$^3$ | 0.1 | 7.6 | 7.7 | 0.3 | 9 |
| | Annual—Neighborhood | µg/m$^3$ | 0.002 | 7.6 | 7.6 | 0.1 | 9 |

**Notes:** N/A—Not Applicable
[1] The background levels are based on the most representative concentrations monitored at NYSDEC ambient air monitoring stations (see **Table 20-8**).
[2] $PM_{2.5}$ *de minimis* criterion—24-hour average, not to exceed more than half the difference between the background concentration and the 24-hour standard of 35 µg/m$^3$.

Emissions from the other less intensive construction periods would be less than the emissions during the modeled worst-case periods; therefore, the resulting concentrations from these non-peak periods are expected to be less than the concentrations presented in **Tables 20-9 through 20-12**. Therefore, construction of the Proposed Development would not result in significant adverse air quality impacts due to construction sources.

**Table 20-11**
**Maximum Pollutant Concentrations – Projected Development Site 19 (Building 19A)**

| Pollutant | Averaging Period | Units | Maximum Modeled Impact | Background Concentration[1] | Total Concentration | *De minimis* | NAAQS |
|---|---|---|---|---|---|---|---|
| $NO_2$ | Annual | $\mu g/m^3$ | 3.2 | 32.8 | 36.0 | - | 100 |
| CO | 1-hour | ppm | 0.4 | 2.5 | 2.9 | - | 35 |
| | 8-hour | ppm | 0.1 | 1.2 | 1.3 | - | 9 |
| $PM_{10}$ | 24-hour | $\mu g/m^3$ | 10.7 | 36.0 | 46.7 | - | 150 |
| $PM_{2.5}$ | 24-hour | $\mu g/m^3$ | 1.6 | 17.8 | 19.4 | 8.6[2] | 35 |
| | Annual—Local | $\mu g/m^3$ | 0.1 | 7.6 | 7.75 | 0.3 | 9 |
| | Annual—Neighborhood | $\mu g/m^3$ | 0.003 | 7.6 | 7.6 | 0.1 | 9 |

**Notes:** N/A—Not Applicable
[1] The background levels are based on the most representative concentrations monitored at NYSDEC ambient air monitoring stations (see **Table 20-8**).
[2] $PM_{2.5}$ *de minimis* criterion—24-hour average, not to exceed more than half the difference between the background concentration and the 24-hour standard of 35 $\mu g/m^3$.

**Table 20-12**
**Maximum Pollutant Concentrations – Projected Development Site 1**

| Pollutant | Averaging Period | Units | Maximum Modeled Impact | Background Concentration[1] | Total Concentration | *De minimis* | NAAQS |
|---|---|---|---|---|---|---|---|
| $NO_2$ | Annual | $\mu g/m^3$ | 2.8 | 32.8 | 35.6 | - | 100 |
| CO | 1-hour | ppm | 0.1 | 2.5 | 2.6 | - | 35 |
| | 8-hour | ppm | 0.02 | 1.2 | 1.2 | - | 9 |
| $PM_{10}$ | 24-hour | $\mu g/m^3$ | 13.5 | 36.0 | 49.5 | - | 150 |
| $PM_{2.5}$ | 24-hour | $\mu g/m^3$ | 2.0 | 17.8 | 19.8 | 8.6[2] | 35 |
| | Annual—Local | $\mu g/m^3$ | 0.16 | 7.6 | 7.8 | 0.3 | 9 |
| | Annual—Neighborhood | $\mu g/m^3$ | 0.004 | 7.6 | 7.6 | 0.1 | 9 |

**Notes:** N/A—Not Applicable
[1] The background levels are based on the most representative concentrations monitored at NYSDEC ambient air monitoring stations (see **Table 20-8**).
[2] $PM_{2.5}$ *de minimis* criterion—24-hour average, not to exceed more than half the difference between the background concentration and the 24-hour standard of 35 $\mu g/m^3$.

## NOISE

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

Noise level increases that would be considered “objectionable” (i.e., equal to or greater than 15 dBA) lasting 12 consecutive months or more and noise level increases that would be considered “very objectionable” (i.e., equal to or greater than 20 dBA)[4] lasting three consecutive months or more could also be considered significant impacts.

*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

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

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.

*MOBILE SOURCE CONSTRUCTION NOISE ANALYSIS METHODOLOGY*

Construction delivery truck trips and worker auto trips would be concentrated to the intersections immediately adjacent to the Development Sites under construction. The roadways adjacent to the Development Sites along which noise receptors are located are generally moderately to heavily trafficked, and construction-generated worker auto and delivery truck trips would not be sufficient to result in an "objectionable" noise level increase (i.e., would not result in a six-time increase in Noise Passenger Car Equivalents) at such receptors. Since the cumulative analysis evaluates impacts at receptors immediately adjacent to the analyzed development sites (see description below), the construction traffic would not have the potential to result in significant adverse noise impacts at any additional locations during the 6 AM to 7 AM hour.

Construction truck trips that would occur during the construction workday (i.e., after 7 AM) are included in the modeling of construction noise as discussed below.

*CUMULATIVE TRUCK AND ON-SITE EQUIPMENT NOISE ANALYSIS METHODOLOGY*

*General Construction Noise Analysis Methodology*

The methodology for construction noise analysis includes the following steps:

1. Select projected representative development sites for detailed construction noise modeling.

2. Establish existing noise levels at noise receptors. Noise levels were measured at several locations near development sites. To be conservative, the lowest noise level during typical construction work hours (i.e., during AM, MD, or School PM periods) documented in the vicinity of each development site was assigned the respective development site and were used to represent existing condition noise levels at all nearby receptors that would experience noise from construction at that development site. The 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.
3. Calculate construction noise levels for each construction phase. 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, a CadnaA model for each construction phase was created for the representative development sites. All models include each of the construction noise sources during the construction phase, a building extent, including relevant geometries for a construction pit as applicable, appropriately set back from the development site property line, as well as the noise control measures that would be used on the site, as described below. The models were used to establish the maximum distance from the site at which each noise level in the potential range that would constitute significant adverse impacts would occur.
4. Based on the existing noise levels assigned to receptors near each development site and the construction noise levels modeled as described above, determined the maximum distance from each representative development at which an "objectionable" or "very objectionable" noise level increase would occur.
5. Based on the duration of each phase of construction for each projected development site and the radii of "objectionable" and "very objectionable" noise level increases as described above, establish radii of potential significant adverse construction noise impacts for each projected development site.
6. Show potential significant adverse construction noise impacts graphically.

*Representative Site Selection*

Projected development sites whose construction duration is expected to be short-term (i.e., less than 24 months) are assumed not to have the potential to result in significant adverse construction noise impact. For the projected development sites whose construction duration is expected to be 24 months or longer, a detailed modeling analysis will be conducted to quantify potential construction noise effects at existing noise receptors (e.g., residences and commercial offices, etc.) near projected development sites as well as at other projected development sites assuming they could be completed and occupied while construction is ongoing at other sites.

A noise-sensitive receptor is defined in Chapter 19, "Noise," Section 114 of the 2021 *CEQR Technical Manual* and includes indoor receptors such as residences, hotels, motels, health care facilities, nursing homes, schools, houses of worship, court houses, public meeting facilities, museums, libraries, and theaters. Outdoor sensitive receptors include parks, outdoor theaters, golf courses, zoos, campgrounds, and beaches.

The results of the detailed modeling of individual construction phases at select development sites were used to represent construction noise from all projected

development sites of similar size. Projected Development Site 67A was selected as a representative construction site for detailed modeling. Additionally, quantitative construction noise modeling conducted for the *Jamaica Rezoning EIS* was used to represent construction noise effects from projected development sites assessed as part of the Proposed Actions. Specifically, the quantitative construction noise analysis of Jamaica Rezoning Sites 48, 67, and 29 were incorporated into the construction noise analysis for the Proposed Actions. To avoid confusion between development site numbering, those sites will be referred to in this document as development sites J48, J67, and J29, respectively. The selected representative development sites are shown in **Table 20-13**, which also provides the square footage of each Long Island City development site.

**Table 20-13**
**Representative Sites for Detailed Quantitative Construction Noise Modeling**

| Development Site | Size (gsf) | Size of Development Sites Represented (gsf) |
|---|---|---|
| Jamaica Projected Site 29 | 588,257 | < 590,000 |
| Jamaica Projected Site 67 | 879,811 | 590,000 – 999,999 |
| Long Island City Site 67A | 1,208,428 | 999,999 – 2,000,000 |
| Jamaica Projected Site 48 | 2,136,458 | > 2,000,000 |

*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 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 adjacent building footprints and heights, locations of streets, and locations of sensitive receptors. For each analysis period at each representative development site, the geographic location and operational characteristics—including equipment usage rates (percentage of time operating at full power) for each piece of construction equipment operating at the sites, as well as noise control measures—were input to the model. A construction pit was modeled for the Demolition/Excavation/Foundations phase while an onsite building was modeled for the Superstructure/Exteriors and Interior Fit-Out In addition, shielding by barriers erected on the construction site and buildings were accounted for in the model, and construction-related vehicles were assigned to the adjacent roadways. Construction equipment source strengths were determined by the $L_{max}$ levels presented in Table 22-1 of the 2021 *CEQR Technical Manual.* For construction equipment not included in this table, manufacturer specifications or field measured noise levels were used. The model produced contour lines showing A-weighted $L_{eq(1)}$ noise levels between 70 dBA and 100 dBA (based on

measured existing noise levels) for heights representing floors between grade level (5 feet) and the tenth floor of a building (95 feet). The maximum horizontal distance from the site at which each $L_{eq(1)}$ noise level was predicted to occur at any elevation was determined to be the radius within which construction on the development site would generate that noise level.

*Analysis Time Period Selections*

At each of the four analyzed projected development sites, construction noise emissions were analyzed within the surrounding area for each major construction phase (i.e., demolition/excavation/foundation work, superstructure work, and interior fit-out work) using a representative construction schedule and equipment list. The noise analysis examined the reasonable worst-case peak hourly noise levels that would result from each major construction phase and consequently is conservative in predicting significant increases in noise levels. The noise emission levels and extent of potential impacts during each construction phase were used to represent noise effects from the other representative projected development sites included in the proposed project.

*Determination of Non-Construction Noise Levels*

As described in Chapter 17, "Noise," a noise survey was conducted at 21 locations throughout the Project Area, and noise exposure at each development site is represented by one or more of the measurement locations. The minimum $L_{eq}$ noise level measured during the AM and midday (MD) time periods at any of the representative noise survey locations assigned to a development site was used to represent existing condition noise levels at receptors that would experience noise from construction at that development site. The existing noise levels used to establish construction noise increments for each projected development site are shown in **Table 20-14**.

**Table 20-14**
**Non-Construction Noise Levels per Development Site in dBA**

| Development Site[1] | Associated Noise Measurement Site(s)[2] | Minimum Measured AM or MD $L_{eq(1)}$ |
|---|---|---|
| 1 | 12,13,15 | 58.2 |
| 3 | 15 | 58.2 |
| 4 | 14 | 59.2 |
| 7 | 12,14 | 59.2 |
| 10 | 12,14 | 59.2 |
| 13 | 12 | 66.8 |
| 17 A | 18 | 70.0 |
| 17 B | 18 | 70.0 |
| 19 A | 18 | 75.7 |
| 19 B | 18 | 75.7 |
| 20 | 19 | 80.7 |
| 21 | 20 | 74.8 |
| 22 | 19 | 80.7 |
| 25 | 11 | 68.8 |
| 26 | 7,10 | 60.6 |
| 28 | 10,12 | 60.6 |
| 29 | 1,2 | 63.8 |
| 30 | 2 | 63.8 |
| 31 | 2,3 | 62.4 |
| 32 | 3 | 62.4 |
| 38 | 7 | 63.9 |

**Table 20-14**
**Non-Construction Noise Levels per Development Site in dBA**

| Development Site[1] | Associated Noise Measurement Site(s)[2] | Minimum Measured AM or MD $L_{eq(1)}$ |
|---|---|---|
| 39 | 7 | 63.9 |
| 40 | 7 | 63.9 |
| 42 | 6 | 69.1 |
| 46 | 4,5,17 | 64.0 |
| 49 | 4 | 69.0 |
| 50 | 5 | 64.0 |
| 51 | 4 | 69.0 |
| 52 | 5 | 64.0 |
| 54 | 19 | 80.7 |
| 59 | 7 | 63.9 |
| 61 | 8 | 64.6 |
| 62 | 8 | 64.6 |
| 63 A | 9 | 56.9 |
| 63 B | 9 | 56.9 |
| 63 C | 9 | 56.9 |
| 63 D | 9 | 56.9 |
| 64 A | 13 | 59.7 |
| 64 B | 13 | 59.7 |
| 65 | 12 | 66.8 |
| 66 | 8,9 | 56.9 |
| 67 A | 8,9 | 56.9 |
| 67 B | 8,9 | 56.9 |
| 67 C | 8,9 | 56.9 |
| 68 | 9 | 56.9 |
| 69 A | 8 | 64.6 |
| 69 B | 8 | 64.6 |
| 69 C | 8 | 64.6 |
| 69 D | 8 | 64.6 |
| 71 | 12 | 66.8 |

**Notes:**
[1] Development sites that would be constructed in less than 24 months are excluded.
[2] Noise Measurement Sites are described in Chapter 17, "Noise."

*Evaluation of Construction Noise Levels*

For each of the major representative projected development sites, the detailed quantitative modeling of construction noise determined the distance at which $L_{eq}$ noise levels between 70 dBA and 100 dBA would occur during each of the major construction phases. These modeled sound level distances, along with the non-construction noise levels shown in **Table 20-14**, were used to determine the distance from each projected development site property line at which construction noise levels would exceed the impact thresholds described previously. Using these impact threshold distances and the duration of each major construction phase at each development site as established in the conceptual construction schedule, the distance from each development site within which noise-sensitive receptors would experience significant adverse noise impacts was determined.

*NOISE REDUCTION MEASURES*

Construction at projected and potential development sites would be required to follow the *New York City Noise Control Code* for construction noise control measures. Specific noise control measures would be incorporated in noise mitigation plan(s) required under the *New York City 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 New York regulations:

- Equipment that meets the sound level standards specified in Subchapter 5 of the New York City Noise Control Code would be utilized from the start of construction. Table 20-15 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 electric-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 New York City Administrative Code.
- Contractors and subcontractors would be required to properly maintain their equipment and mufflers.

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 construction from plywood or other materials would be utilized to provide shielding (e.g., the construction sites would have a minimum 8-foot-tall barrier around the perimeter); and
- Path noise control measures (i.e., portable noise barriers, panels, enclosures, and acoustical tents, where feasible) for certain equipment as necessary to remain consistent with **Table 20-15**. The details to construct portable noise barriers, enclosures, tents, etc. are shown in DEP's "Rules for Citywide Construction Noise Mitigation."[5]

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

**Table 20-15**
**Construction Equipment Noise Emissions in dBA**

| Equipment List | Typical $L_{max}$ Noise Level at 50 feet[1] |
|---|---|
| Bar Bender | 80 |
| Concrete Mixer Truck | 85 |
| Concrete Pump Truck | 82 |
| Concrete Trowel | 70[2] |
| Concrete Vibrator | 76[3] |
| Crane | 85 |
| Dozer | 85 |
| Excavator | 85 |
| Forklift | 64[4] |
| Front End Loader | 80 |
| Generator | 82 |
| Hoist | 75[2] |
| Impact Pile Driver | 95 |
| Jackhammer | 85 |
| Pumps | 77 |
| Vibratory Concrete Mixer | 80 |
| Welder / Torch | 73 |

**Notes:**
[1] Rules for Citywide Construction Noise Mitigation, Chapter 28, DEP, 2007, except where noted.
[2] Previous project equipment noise certification.
[3] Federal Transit Administration (FTA), Report No. 0123 September 2018, Table 7-1 Construction Equipment Noise Emission Levels.
[4] Forklift Noise Emission (Model 9000 Dan Truck)

*CONSTRUCTION NOISE ANALYSIS RESULTS*

*Construction Mobile Sources (6 AM to 7 AM)*

As described above in the "Traffic" section, the volume of traffic resulting from construction worker vehicles and deliveries would be less than that of the With Action operational condition in the 2035 build year and would be concentrated to the intersections immediately adjacent to the largest projected development sites. Since the cumulative analysis identified impacts at receptors immediately adjacent to the analyzed development sites as described above, the construction traffic would not have the potential to result in significant adverse noise impacts at any additional locations during the 6 AM to 7 AM hour. Construction vehicles traveling to and from construction sites during the construction workday are included the detailed construction noise analysis described below.

*Cumulative On-Site Equipment and Construction Truck Noise Analysis Results*

Using the methodology described above, and considering the noise abatement measures specified above, noise levels resulting from construction on projected development sites 67A, J29, J48, and J67 were calculated in order to represent the potential construction noise effects from each of the projected development sites throughout the Project Area where construction would be at least 24 months long (i.e., not "short-term"). Based on the level of noise from construction at each projected development site and the duration of construction at each site, the significance of construction noise effects from each projected development site was determined.

Specifically, construction at these development sites was predicted to produce noise levels up to approximately 100 dBA $L_{eq(1)}$ at locations up to 27 feet from the site boundaries. Noise levels from construction would be lower with increased distance from the work areas. Measured existing noise levels in the study area were between 57 and 81 dBA, resulting in maximum potential construction noise level increments of 19 to 43 dBA.

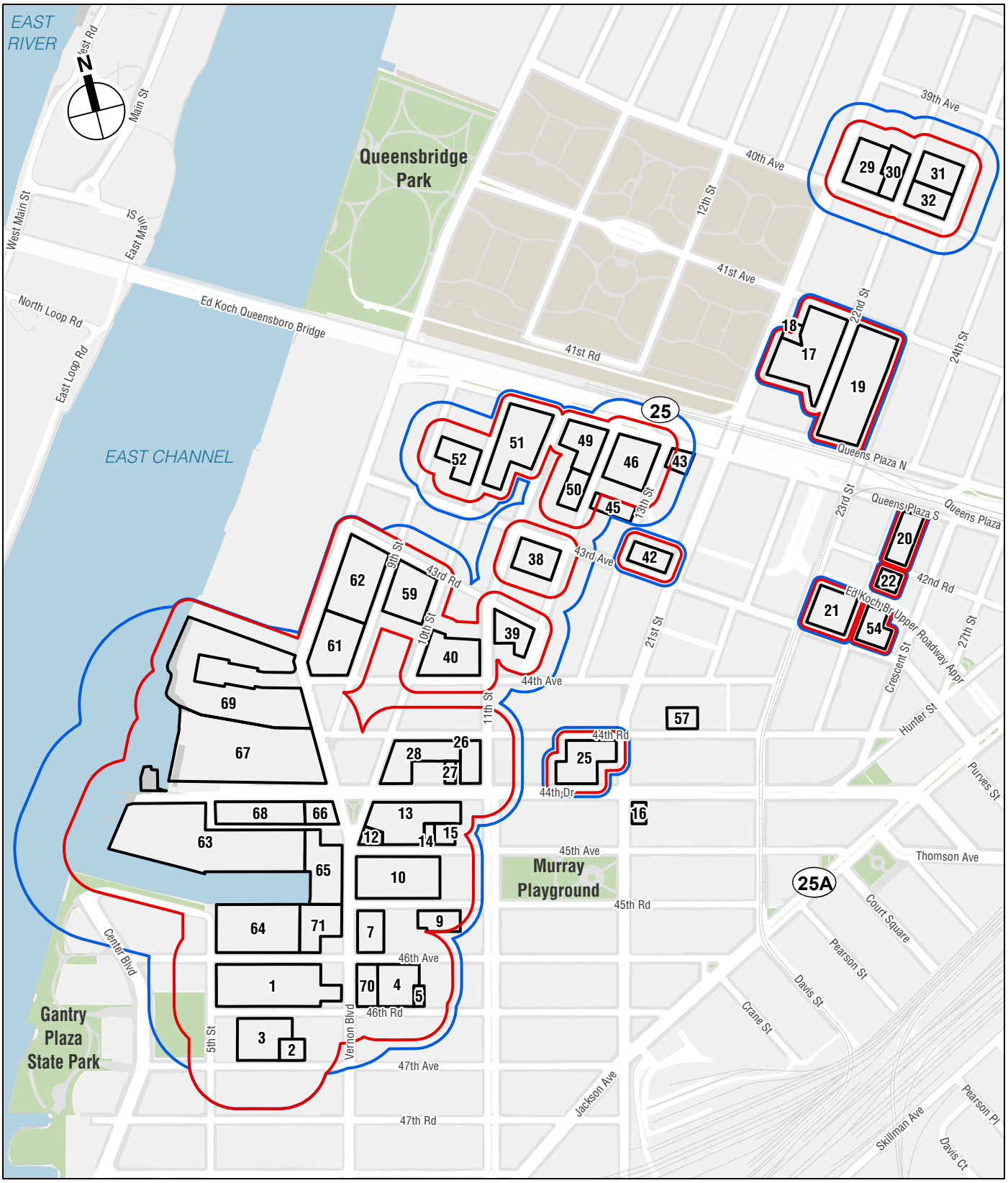
At receptors that would experience construction noise level increments less than 15 dBA, construction under the Proposed Actions may, for some portion of the construction period, result in noise level increases that would be perceptible to noticeable. However, at these receptors, maximum noise level increases would not result in "objectionable" or "very objectionable" noise level increases. Consequently, while construction noise at these receptors may be perceptible at times, it would not rise to the level of a significant impact according to the impact criteria described above.

At receptors where construction under the Proposed Actions would result in "objectionable" noise level increases (i.e., greater than or equal to 15 dBA over existing levels), the impacts were considered to be significant only if the increment would be in the "objectionable" range for 12 or more consecutive months.

At receptors where construction under the Proposed Actions would result in "very objectionable" noise level increases (i.e., greater than or equal to 20 dBA over existing levels), it is assumed that such increases would occur for a minimum of three months and therefore result in a significant adverse impact.

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 each major construction phase and consequently is conservative in predicting significant increases in noise levels. Typically, the loudest hourly noise level during each phase of construction would not persist throughout the entire phase.

**Table 20-16** summarizes the construction noise analysis conclusions. As shown in this table, there are areas surrounding each of the analyzed development sites where construction noise would result in a significant adverse impact. At some sites, the impacts would occur only within 27 feet, although some development sites would have the potential to result in significant adverse construction noise impacts at a distance of up to 475 feet from the site. The impact areas around each analyzed development site are shown in **Figure 20-2**. Noise-sensitive uses (i.e., residences, open space, community facilities, and commercial office) within the impact zones would have the potential to experience significant adverse construction noise impacts under the Proposed Actions.




*Projected Development Site*

*Very Objectionable Significant Adverse Impact Radius*

*Objectionable Significant Adverse Impact Radius*

0 0.25 MILE

Note: Above impacts are conservatively assumed using the maximum distance at which exceedance of impact criteria may occur. When implementing these maximum distances onto above Figure, conservation for line of sight was limited and, as a result, actual resultant construction noise levels may be greatly reduced if any building were to completely block the line of sight between receptor and construction noise sources.

## Construction Noise Impacts

**Table 20-16**

## Construction Noise Results – Radii of Significant Adverse Impacts in Feet

| Development Site | Total Construction Duration (Months) | Demolition/Excavation/ Foundations | | | Superstructure/Exteriors | | | Interior Fit-Out | | | Radii of Significant Adverse Impacts | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Duration (Months) | Radius of Objectionable Increments | Radius of Very Objectionable Increments | Duration (Months) | Radius of Objectionable Increments | Radius of Very Objectionable Increments | Duration (Months) | Radius of Objectionable Increments | Radius of Very Objectionable Increments | Objectionable Impacts | Very Objectionable Impacts |
| 1 | 43 | 14 | 326 | 204 | 20 | 218 | 151 | 9 | 112 | 74 | 326 | 204 |
| 3 | 32 | 6 | 337 | 233 | 12 | 204 | 166 | 14 | 83 | 63 | 233 | 233 |
| 4 | 24 | 5 | 337 | 161 | 10 | 204 | 86 | 9 | 83 | 43 | 204 | 161 |
| 7 | 24 | 5 | 337 | 161 | 10 | 204 | 86 | 9 | 83 | 43 | 204 | 161 |
| 10 | 36 | 10 | 337 | 161 | 16 | 204 | 86 | 10 | 83 | 43 | 204 | 161 |
| 13 | 38 | 11 | 161 | 58 | 18 | 86 | 56 | 9 | 43 | 20 | 86 | 58 |
| 17 A | 38 | 11 | 58 | 43 | 18 | 56 | 41 | 9 | 20 | 14 | 56 | 43 |
| 17 B | 38 | 11 | 50 | 39 | 18 | 50 | 39 | 9 | 23 | 17 | 50 | 39 |
| 19 A | 47 | 17 | 39 | 26 | 22 | 39 | 26 | 8 | 17 | 11 | 39 | 26 |
| 19 B | 47 | 17 | 39 | 26 | 22 | 39 | 26 | 8 | 17 | 11 | 39 | 26 |
| 20 | 36 | 10 | 27 | 19 | 16 | 27 | 19 | 10 | 9 | 5 | 27 | 19 |
| 21 | 43 | 14 | 39 | 26 | 20 | 39 | 26 | 9 | 17 | 11 | 39 | 26 |
| 22 | 29 | 6 | 27 | 19 | 12 | 27 | 19 | 11 | 9 | 5 | 27 | 19 |
| 25 | 32 | 6 | 82 | 43 | 12 | 63 | 41 | 14 | 29 | 14 | 63 | 43 |
| 26 | 24 | 5 | 337 | 161 | 10 | 204 | 86 | 9 | 83 | 43 | 204 | 161 |
| 28 | 29 | 6 | 337 | 161 | 12 | 204 | 86 | 11 | 83 | 43 | 204 | 161 |
| 29 | 27 | 5 | 233 | 82 | 11 | 166 | 63 | 11 | 63 | 29 | 166 | 82 |
| 30 | 24 | 5 | 233 | 82 | 10 | 166 | 63 | 9 | 63 | 29 | 166 | 82 |
| 31 | 24 | 5 | 233 | 82 | 10 | 166 | 63 | 9 | 63 | 29 | 166 | 82 |
| 32 | 24 | 5 | 233 | 82 | 10 | 166 | 63 | 9 | 63 | 29 | 166 | 82 |
| 38 | 24 | 5 | 233 | 82 | 10 | 166 | 63 | 9 | 63 | 29 | 166 | 82 |
| 39 | 24 | 5 | 233 | 82 | 10 | 166 | 63 | 9 | 63 | 29 | 166 | 82 |
| 40 | 27 | 5 | 233 | 82 | 11 | 166 | 63 | 11 | 63 | 29 | 166 | 82 |
| 42 | 24 | 5 | 82 | 43 | 10 | 63 | 41 | 9 | 29 | 14 | 63 | 43 |
| 46 | 32 | 6 | 233 | 82 | 12 | 166 | 63 | 14 | 63 | 29 | 166 | 82 |
| 49 | 26 | 5 | 82 | 43 | 11 | 63 | 41 | 10 | 29 | 14 | 63 | 43 |
| 50 | 24 | 5 | 233 | 82 | 10 | 166 | 63 | 9 | 63 | 29 | 166 | 82 |
| 51 | 38 | 11 | 82 | 43 | 18 | 63 | 41 | 9 | 29 | 14 | 63 | 43 |
| 52 | 24 | 5 | 233 | 82 | 10 | 166 | 63 | 9 | 63 | 29 | 166 | 82 |
| 54 | 26 | 5 | 27 | 19 | 11 | 27 | 19 | 10 | 9 | 5 | 27 | 19 |
| 59 | 27 | 5 | 233 | 82 | 11 | 166 | 63 | 11 | 63 | 29 | 166 | 82 |
| 61 | 36 | 10 | 161 | 82 | 16 | 86 | 63 | 10 | 43 | 29 | 86 | 82 |
| 62 | 36 | 10 | 161 | 82 | 16 | 86 | 63 | 10 | 43 | 29 | 86 | 82 |
| 63 A | 47 | 17 | 453 | 215 | 22 | 277 | 125 | 8 | 124 | 62 | 453 | 215 |
| 63 B | 47 | 17 | 453 | 215 | 22 | 277 | 125 | 8 | 124 | 62 | 453 | 215 |
| 63 C | 47 | 17 | 453 | 215 | 22 | 277 | 125 | 8 | 124 | 62 | 453 | 215 |
| 63 D | 47 | 17 | 453 | 215 | 22 | 277 | 125 | 8 | 124 | 62 | 453 | 215 |
| 64 A | 38 | 11 | 337 | 161 | 18 | 204 | 86 | 9 | 83 | 43 | 204 | 161 |
| 64 B | 43 | 14 | 301 | 102 | 20 | 188 | 89 | 9 | 88 | 44 | 301 | 102 |
| 65 | 43 | 14 | 102 | 50 | 20 | 89 | 50 | 9 | 44 | 23 | 102 | 50 |
| 66 | 24 | 5 | 486 | 233 | 10 | 360 | 166 | 9 | 166 | 63 | 360 | 233 |
| 67 A | 47 | 17 | 475 | 204 | 22 | 310 | 151 | 8 | 165 | 74 | 475 | 204 |

**Table 20-16**
**Construction Noise Results – Radii of Significant Adverse Impacts in Feet**

| Development Site | Total Construction Duration (Months) | Demolition/Excavation/ Foundations | | | Superstructure/Exteriors | | | Interior Fit-Out | | | Radii of Significant Adverse Impacts | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Duration (Months) | Radius of Objectionable Increments | Radius of Very Objectionable Increments | Duration (Months) | Radius of Objectionable Increments | Radius of Very Objectionable Increments | Duration (Months) | Radius of Objectionable Increments | Radius of Very Objectionable Increments | Objectionable Impacts | Very Objectionable Impacts |
| 67 B | 29 | 6 | 486 | 233 | 12 | 360 | 166 | 11 | 166 | 63 | 360 | 233 |
| 67 C | 38 | 11 | 486 | 233 | 18 | 360 | 166 | 9 | 166 | 63 | 360 | 233 |
| 68 | 38 | 11 | 486 | 233 | 18 | 360 | 166 | 9 | 166 | 63 | 360 | 233 |
| 69 A | 36 | 10 | 161 | 82 | 16 | 86 | 63 | 10 | 43 | 29 | 86 | 82 |
| 69 B | 47 | 17 | 102 | 69 | 22 | 89 | 65 | 8 | 44 | 31 | 102 | 69 |
| 69 C | 38 | 11 | 161 | 82 | 18 | 86 | 63 | 9 | 43 | 29 | 86 | 82 |
| 69 D | 36 | 10 | 161 | 82 | 16 | 86 | 63 | 10 | 43 | 29 | 86 | 82 |
| 71 | 32 | 6 | 161 | 58 | 12 | 86 | 56 | 14 | 43 | 20 | 86 | 58 |

**Note:** Development sites that would be constructed in less than 24 months are excluded from the results.

The noise analysis conservatively assumes all equipment operating concurrently throughout each construction phase. Therefore, predicted significant noise level increases are also conservative. Typically, the loudest hourly noise level would not be sustained throughout the entire month or duration of the construction phase. In addition, the analysis is based on conceptual site plans and construction schedules. Therefore, it is possible that actual construction noise may be less intense than the analysis predicts. It should be noted that the identified impacts in **Figure 20-2** are conservatively assumed using the maximum distance at which exceedance of impact criteria may occur. Presentation of these maximum distances in **Figure 20-2** does not account for shielding from intervening buildings or other obstacles at each individual Development Site since the impact distances are the maximum values at which each noise level would occur, which generally represent unobstructed corridors of noise radiation (e.g., along roadway corridors) and upper elevations (i.e., above the height of intervening buildings). As such, actual construction noise levels may be greatly reduced if a building or other obstacle were to completely block the line of sight between receptor and construction noise sources and worst-case noise emissions will be focused in areas near the dominant noise source.

Since certain projected developments are expected to include noise-sensitive uses (e.g., residential, community facility) that may be exposed to construction noise (i.e., when a building is completed and occupied, but other development assumed under the Proposed Actions would still be under construction), there is the potential that all of the projected development sites within the impact radii shown in **Figure 20-2** could experience significant construction noise impacts due to potential for construction to occur in a sequencing other than the conceptual schedule assumed for the purposes of the construction noise analysis.

As with the existing receptors, the predicted exceedances of acceptable noise levels at the completed and occupied projected development sites would be due primarily 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 and consequently is conservative in predicting significant increases in noise levels.

## VIBRATION

### *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 20-17** shows vibration source levels for typical construction equipment.

**Table 20-17**
**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:** FTA Transit Noise and Vibration Impact Assessment (2018). | | | |

The source vibration levels shown in **Table 20-17** 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 are historic buildings within 90 feet of projected and potential development sites. (See the discussion below in "Historic and Cultural Resources," for a list of historic structures within 90 feet of projected and potential development sites.) Vibration levels at these buildings and structures within 55 feet Dof a projected development site may exceed the 0.50 in/sec PPV during pile driving using an impact pile driver (upper range). Where historic buildings and structures would be within 90 feet of the projected development sites and are S/NR-listed, NYCLs, or NYCHDs, vibration monitoring would be required per DOB *TPPN #10/88* regulations, and PPV during construction would be prohibited from exceeding the 0.50 inches/second threshold. Historic buildings that have been determined eligible for S/NR listing are not afforded special protections under *TPPN #10/88*.

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. A typical range impact pile driver would have the potential to produce perceptible vibration levels (i.e., vibration levels exceeding 65 VdB) at receptor locations within a distance of approximately 500 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 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 at the 52 projected development sites would be spread out over a period of approximately 10 years, throughout an approximately 54-block rezoning area. As noted above, construction of most of the projected developments would be short-term (i.e., lasting up to 24 months), while construction of approximately 27 projected developments, some of which are assumed to include multiple buildings (e.g., Projected Development Sites 17, 19, 63, 64, 67, and 69), would be more intensive, and is conservatively estimated to last for approximately 29 to 47 months. Throughout the construction period, access to residences, businesses, and institutions in the area surrounding the development sites would be maintained. In addition, measures would be implemented to control air pollutant emissions, dust, noise, and vibration on construction sites, including the erection of construction fencing incorporating sound-reducing measures. Since none of these impacts would be continuous or ultimately permanent, they would not create significant impacts on land use patterns or neighborhood character in the area. Therefore, while construction of the new buildings resulting from the Proposed Actions would cause temporary disruptions, particularly related to noise, it is expected that such impacts 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 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 Actions 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. As noted above, construction of most of the projected development sites would be short-term (i.e., lasting up to 24 months), while the construction of approximately 27 projected developments, some of which are assumed to include multiple buildings (e.g., Projected

Development Sites 17, 19, 63, 64, 67, and 69), would be more intensive, and is conservatively estimated to last for approximately 29 to 47 months. During the construction period, construction activities would be dispersed throughout the 54-block rezoning area and would not affect access to particular businesses over an extended duration. Therefore, construction impacts to socioeconomic conditions are not expected.

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 at the project sites. 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 would be directly affected by construction (e.g., if construction would disrupt services provided at the facility or close the facility temporarily, etc.). While there are community facilities throughout the Project Area, as discussed in Chapter 4, "Community Facilities and Services," the Proposed Actions would not result in the direct displacement of any community facilities, as defined in the *CEQR Technical Manual*. While construction of the projected development sites would result in temporary increases in traffic during the construction period, access to and from any community facilities in the Project Area would not be affected during the construction period. In addition, each construction site would be surrounded by construction fencing and barriers as required by DOB, which 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, childcare facilities, and health care services. New York City Police Department (NYPD) and FDNY emergency services and response times would not be materially affected by construction due to 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, and a further preliminary assessment is not needed for the disclosure of potential construction impacts to community facilities.

*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. While several of the projected development sites are located in close proximity to existing open space resources, no open space resources would be located on any of the projected development construction sites, nor would any access to publicly accessible open space be impeded during construction within the Project Area. In addition, measures would be implemented to control air pollutant emissions, dust, noise, and vibration, including the erection of construction fencing incorporating sound reducing measures. Since none of these impacts would be continuous or ultimately permanent, they would not create significant impacts on open space in the area. Therefore, while construction of the new buildings due to the Proposed Actions would cause temporary disruption, particularly related to noise, it is expected that such impacts in any given area would be relatively short term, even under the worst-case

construction sequencing, and therefore would not create an open space impact. Therefore, no significant construction impacts to open space are expected.

*HISTORIC AND CULTURAL RESOURCES*

According to the guidelines in the *CEQR Technical Manual*, construction impacts may occur on historic and cultural resources if in-ground disturbances or vibration associated with the project's construction could undermine the foundation or structural integrity of nearby resources.

Chapter 7, "Historic and Cultural Resources," provides a detailed assessment of potential impacts on architectural resources. This section summarizes potential impacts to architectural resources during construction. (As discussed in Chapter 7, in comment letters dated November 4, 2024 and January 29, 2025, LPC determined that none of the projected or potential development sites have archaeological significance [see **Appendix D**]. Therefore, this section focuses on architectural resources only.)

The Proposed Actions would result in direct (physical) impacts to architectural resources. These impacts include:

- Development of Projected Development Site 40 in the With Action condition would result in the demolition of the S/NR-eligible M. Henry Chernay Building at 10-03 44th Avenue (Resource No. 15), and the S/NR-eligible Jerome Perlstein Building at 43-58 11th Street (Resource No. 16).
- Development of Projected Development Site 52 would result in the demolition of the S/NR-eligible former New York and Queens Electric Light and Power Substation Number 4 (Resource No. 2).
- Development of Projected Development Site 59 would result in the demolition of the S/NR-eligible Walter Lippmann Building at 43-42 10th Street (Resource No. 11) and the S/NR-eligible building at 43-50 10th Street (Resource No. 12).
- Development of Potential Development Site G would result in the demolition of 21-23 43rd Avenue, which has been identified as a potential architectural resource (Resource F).

The Proposed Actions could also result in construction-related impacts to 10 known and 8 potential architectural resources located within 90 feet of certain projected and potential development sites, listed below:

*Known Resources*

- Former New York and Queens Electric Light and Power Substation Number 4, 42-25 9th Street (S/NR-eligible)
- Steinway Van Storage, 42-45 12th Street (S/NR-eligible)
- Former Silvercup Bakery, 42-22 22nd Street (S/NR-eligible)
- Queensboro Bridge (S/NR-listed, NYCL)
- Walter Lippmann Building, 43-42 10th Street (S/NR-eligible)
- 43-50 10th Street (S/NR-eligible)
- 43-56 10th Street (S/NR-eligible)

- Tom Cat Bakery, 43-05 10th Street (S/NR-eligible)
- M. Henry Chernay Building, 10-03 44th Avenue (S/NR-eligible)
- Jerome Perlstein Building, 43-58 11th Street (S/NR-eligible)

*Potential Resources*

- 10-15 and 10-27 46th Avenue
- 40-18 22nd Street
- 40-15 22nd Street
- 44-02 23rd Street
- 44-01 21st Street
- 21-49 44th Drive
- 42-25 Vernon Boulevard
- 45-32 to 45-44 11th Street

It is expected that the DOB's *TPPN #10/88* would be implemented for the development on Projected Development Site 51, in relation to the NYCL and S/NR-listed Queensboro Bridge (Resource No. 7). The other resources listed above would be afforded limited protection under DOB regulations applicable to all buildings located adjacent to construction sites (C26-112.4); however, since these resources are not S/NR-listed or designated NYCLs or NYCHDs, they are not afforded special protections under *TPPN #10/88.* Since the projected and potential development sites within 90 feet of these resources are not City-owned and are not anticipated to be developed in accordance with City disposition or development agreements, there is no mechanism to require the implementation of *TPPN #10/88* or preparation of a Construction Protection Plan. Additional protective measures afforded under *TPPN #10/88* would only become applicable if the resources were listed on the S/NR or designated as NYCLs or NYCHDs in the future prior to the initiation of construction. If that does not occur, the resources would not be subject to *TPPN #10/88* and may therefore be adversely impacted by adjacent development resulting from the Proposed Actions.

*HAZARDOUS MATERIALS*

According to the guidelines in the *CEQR Technical Manual*, any impacts from in-ground disturbance that are identified in hazardous materials studies should be identified in this chapter as well. Institutional controls, such as (E) designations or restrictive declarations should be disclosed here as well. If the impact identified in hazardous materials studies is fully mitigated or avoided, no further analysis of the effects from construction activities on hazardous materials is needed.

As stated in Chapter 9, "Hazardous Materials," potential concerns as they relate to hazardous and contaminated materials were identified for all evaluated projected and potential sites. The potential for significant adverse impacts associated with hazardous materials resulting from the Proposed Actions would be precluded through compliance with existing regulatory requirements and the placement of an (E) Designation (E 848) on all projected and potential development sites. These measures are recommended to avoid or reduce exposure to future occupants and workers at projected and potential development sites as it relates to hazardous and contaminated materials. The (E)

Designation for hazardous materials requires that prior to change of use or redevelopment requiring ground disturbance, the owner of the property conduct a Phase I Environmental Site Assessment (ESA) and subsurface testing and remediation, where appropriate to the satisfaction of the New York City Mayor's Office of Environmental Remediation (OER). DOB permits associated with such actions cannot be issued without OER approval. Additionally, certain development sites are subject to an existing (E) Designation or restrictive declaration. These existing controls and the proposed (E) Designation included as part of the Proposed Actions would ensure protection of human health and the environment from known or suspected hazardous materials. With the above measures in place, the Proposed Actions would avoid the potential for significant adverse impacts related to hazardous materials. ✷