Chapter 18: Construction

A. INTRODUCTION

As described in Chapter 1, "Project Description," the Proposed Project would redevelop and re-tenant Industry City with a mixed-use project containing manufacturing, commercial, retail, hospitality, academic, and other community facility uses. The Project Area comprises Industry City, approximately 30 acres of existing buildings owned and operated by the Applicant, and certain immediately adjacent properties that the Applicant does not currently control but plans to acquire and redevelop as part of the Proposed Project. The Project Area consists of warehouse structures contained in two primary clusters, which are referred to as the Finger Buildings and the 39th Street Buildings. The cluster of structures known as the Finger Buildings is composed of 10 buildings and a powerhouse structure. The Finger Buildings are situated between 2nd and 3rd Avenues, 32nd to 37th Streets. The cluster of structures known as the 39th Street Buildings is located in the area bounded by 39th Street to the north, 41st Street to the south, 2nd Avenue to the east, and the waterfront to the west. Also within the Project Area are several smaller parcels that are not currently controlled by the Applicant but are anticipated to be acquired by the Applicant to facilitate the proposed development.

As described in Chapter 1, "Project Description," in order to assess the possible effects of the Proposed Actions, three Reasonable Worst Case Scenarios (RWCDS) were composed for the future With Action condition: the Baseline Scenario, the Density-Dependent Scenario, and the Overbuild Scenario. For the purposes of the construction analysis, the Density-Dependent Scenario has the greatest potential to result in significant adverse impacts as it is likely to generate the most overall site activity compared with the other two scenarios and is therefore used to determine potential construction impacts from the Proposed Project.

In addition to the ongoing renovation and re-tenanting at the Finger Buildings and the 39th Street Buildings, this chapter assesses the construction of three buildings (Buildings 11 and 21, and the Gateway Building) which could be developed over an approximately eight-year construction period through 2027. Construction activities, as is the case with most construction projects, could result in temporary disruptions in the surrounding area. For analysis purposes, a conceptual construction phasing and schedule for the development anticipated to occur under the Density-Dependent Scenario was established to illustrate how development could occur over the next approximately eight years. The conceptual construction schedule conservatively accounts for overlapping of re-tenanting and new building construction activities and simultaneously operating construction equipment, thus capturing the cumulative nature of greatest potential construction impacts that could result from construction of the Proposed Project.

For each of the various technical areas presented below, appropriate construction analysis years were selected to represent reasonable worst-case conditions relevant to that technical area, which can occur at different times for different analyses. For example, the noisiest part of construction may not be at the same time as the heaviest construction traffic. The construction noise analysis examines the periods with the most the significant construction noise sources (impact equipment such as jackhammers, pile drivers, and paving breakers that would be employed during excavation and foundation activities for each of the new buildings, as well as the movement of trucks), while the peak construction transportation analysis examines the period when the highest combined construction worker and truck incremental trip estimates are projected, which is anticipated to be 2022 when Building 21 is under construction. Therefore, the analysis periods differ for different analysis areas. Where appropriate, the analysis accounts for the effects of those components of the project that would be completed and operational during the selected construction analysis years.

An assessment of potential construction impacts was prepared in accordance with the guidelines of the 2014 *City Environmental Quality Review (CEQR) Technical Manual*, and is presented in this chapter. The assessment of potential impacts of construction activity focuses on transportation, air quality, noise and vibration, as well as consideration of other technical areas including land use and neighborhood character, socioeconomic conditions, open space, historic and cultural resources, and hazardous materials.

PRINCIPAL CONCLUSIONS

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

TRANSPORTATION

Traffic and Parking

The projected construction activities would yield less total traffic than the amount of traffic projected for the Proposed Project. However, significant adverse traffic impacts could still occur at some of the study area locations during construction, similar to the impacts identified in Chapter 11, “Transportation.” Construction activities would generate 130 construction worker auto trips, eight construction worker taxi trips, and 22 construction truck trips during the AM construction peak hour, and 130 construction worker auto trips, eight construction worker taxi trips, and four construction truck trips during the PM construction peak hour. Construction trucks would be required to use the New York City Department of Transportation (DOT)-designated truck routes to get to the Project Area and would then use local streets to access the construction sites.

In addition, a portion of the Finger Buildings would be renovated and re-tenanted by the 2022 construction peak year. These operational trips (351 vehicle trips during the AM construction peak hour and 1,023 vehicle trips during the PM construction peak hour) were also incorporated into the 2022 With Action with Construction analysis.

Eight key intersections were analyzed for potentially significant traffic impacts during the peak construction traffic hours. Three intersections were found to be significantly impacted in the AM construction peak hour, and five intersections were identified to be significantly impacted in the PM construction peak hour. Where impacts during construction may occur, measures similar to the ones recommended in Chapter 20, “Mitigation,” could be implemented early to aid in alleviating congested traffic conditions. Significant impacts at the intersections of 2nd Avenue and 41st Street, 3rd Avenue and 32nd Street, and 4th Avenue and 39th Street could not be fully mitigated, similar to With Action conditions. The implementation of mitigation measures would result in the loss of approximately 21 parking or “standing” spaces during the AM and PM construction peak periods.

Construction workers would generate an estimated maximum daily parking demand for up to 163 spaces during the peak construction phase. This parking demand could be accommodated by Industry City's existing off-street facilities along the west side of 2nd Avenue, which would be reorganized and include stackers to maximize the number of parking spaces. In addition, the existing powerhouse structure at the Building 11 site would be demolished and the site would be resurfaced to provide parking.

Transit and Pedestrians

Based on the 2000 Census reverse journey to work data for the Construction industry, it is anticipated that approximately 29 percent of construction workers would commute to the Project Area by subway, 7 percent would commute by bus, and 6 percent would walk to the Project Area; the remaining 58 percent of construction workers would drive or take taxis to the Project Area. It is expected that the vast majority of workers (80 percent) would arrive between 6 AM and 7 AM, and depart between 3 PM and 4 PM. Construction activities would be expected to generate 20 worker trips by bus, 82 worker trips by subway, and 16 walk only trips during the peak hours. The total number of transit and pedestrian trips generated would be 118 trips per peak hour. Since the number of transit and walk trips generated would be below the *CEQR Technical Manual* threshold of 200 pedestrian trips, construction activities are not expected to result in transit or pedestrian impacts.

AIR QUALITY

An emissions reduction program would be implemented to minimize the effects of construction activities on the surrounding community. Measures would include—to the extent practicable—dust suppression measures, idling restrictions, clean fuel, diesel equipment reduction, and the implementation of *Best Available Tailpipe Reduction Technologies.* With the implementation of these emission reduction measures, the dispersion modeling analysis of construction-related air emissions for both non-road and on-road sources determined that particulate matter ($PM_{2.5}$ and PM_{10}), annual-average nitrogen dioxide (NO_2), and carbon monoxide (CO) concentrations would be below their corresponding *de minimis* thresholds or National Air Quality Ambient Standards (NAAQS), respectively. Therefore, construction under the Proposed Actions would not result in significant adverse air quality impacts due to construction sources.

NOISE AND VIBRATION

Construction under the Proposed Actions is expected to result in elevated noise levels at the nearest receptors and noise due to construction that would at times be noticeable and potentially intrusive. However, at most receptors analyzed, noise from construction (including renovation and re-tenanting) would be intermittent and of limited duration, and interior noise levels would generally not exceed recommended interior noise levels, according to *CEQR Technical Manual* noise exposure guidelines for extended periods. Consequently, noise produced by construction associated with the Proposed Actions would not rise to the level of a significant adverse impact at these receptors.

However, absent additional noise controls or a more refined analysis of construction noise, noise levels due to construction-related activities are predicted to result in noise levels at two receptors in the vicinity of the Proposed Project's work areas that would constitute a potential significant adverse construction-period noise impact. These receptors are the academic uses in Industry City Buildings 9 and 10 and the residential building at 968 3rd Avenue. At these receptors, construction could produce noise level increases that would be noticeable and potentially intrusive over the course of construction at the nearest construction work areas. The predicted construction noise levels at these locations have a magnitude and duration that would constitute a significant adverse impact.

Because construction associated with the Proposed Actions would not have the potential to result in vibration at a level that could result in architectural or structural damage to adjacent buildings and because construction would result in vibration at a level that would have the potential to be noticeable or annoying only for limited periods, vibration produced by construction associated with the Proposed Actions would not rise to the level of a significant adverse impact.

HISTORIC AND CULTURAL RESOURCES

In a letter dated December 12, 2017, the New York City Landmarks Preservation Commission (LPC) determined that the sites to be redeveloped by the applicant (i.e., the Project Area) do not possess archaeological sensitivity. Therefore, the Proposed Project would have no significant adverse impact on archaeological resources.

The Project Area included portions of the State and National Historic Registers (S/NR)-eligible Bush Terminal Historic District. The three-story factory building that would be demolished in both the Baseline and Overbuild Scenarios of the With Action condition is considered a contributing building to the Bush Terminal Historic District. Therefore, demolition of this building would constitute a significant adverse impact on the S/NR-eligible Bush Terminal Historic District, requiring that the Applicant develop appropriate measures to partially mitigate the adverse impact with LPC. In addition to the S/NR-eligible Bush Terminal Historic District, additional architectural resources have been identified in the study area. Construction-related activities in connection with the Baseline and Overbuild Scenarios for Projected Buildings 11 and 21, the Gateway Building, as well as the construction of rooftop additions floors on Buildings 3 through 8, 19, and 22 through 24 could result in significant adverse direct impacts on the architectural resources in the Project Area and study area. Therefore, to avoid inadvertent construction-related impacts to these architectural resources, a Construction Protection Plan (CPP) would be prepared in coordination with a licensed professional engineer.

B. GOVERNMENTAL COORDINATION AND OVERSIGHT

Construction oversight involves several city, state, and federal agencies. **Table 18-1** lists the primary involved agencies and their areas of responsibility. For projects in New York City, primary construction oversight lies with the New York City Department of Buildings (DOB), which oversees compliance with the New York City Building Code. The areas of oversight include installation and operation of equipment such as cranes, sidewalk bridges, safety netting, and scaffolding. In addition, DOB enforces safety regulations to protect workers and the general public during construction. The New York City Department of Parks and Recreation (NYC Parks) is responsible for the oversight, enforcement, and permitting of the replacement of street trees that are lost due to construction. The New York City Department of Environmental Protection (DEP) enforces the New York City Noise Code, reviews and approves any needed Remedial Action Plan (RAP) and associated Construction Health and Safety Plan (CHASP), water and sewer connections, as well as any necessary abatement of hazardous materials. The New York City Fire Department (FDNY) has primary oversight of compliance with the New York City Fire Code and the installation of tanks containing flammable materials. DOT's Office of Construction Mitigation and Coordination (OCMC) reviews and approves any traffic lane and sidewalk closures. The New York City Transit (NYCT) is responsible for subway access and, if necessary, bus stop relocations. NYCT also regulates vibrations that might affect the subway system. LPC approves the CPP and monitoring measures established to prevent damage to historic structures. New York City maintains a 24-hour-a-day telephone hotline (311) so that construction concerns can be registered with the City.

Table 18-1
Summary of Primary Agency Construction Oversight

Agency	Areas of Responsibility
New York City	
Department of Buildings	Building Code, site safety, and public protection
Department of Parks and Recreation	Street trees
Department of Environmental Protection	Noise Code, RAPs/CHASPs, water and sewer connections, hazardous materials
Fire Department	Compliance with Fire Code, fuel tank installation
Department of Transportation	Lane and sidewalk closures
New York City Transit	Subway access, bus stop relocation
Landmarks Preservation Commission	Archaeological and architectural protection
New York State	
Department of Labor	Asbestos Workers
Department of Environmental Conservation	Hazardous materials and fuel/chemical storage tanks
United States	
Environmental Protection Agency	Air emissions, noise, hazardous materials, poisons (for rodent control)
Occupational Safety and Health Administration	Worker safety

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

C. CONCEPTUAL CONSTRUCTION PHASING AND SCHEDULE

As described in Chapter 1, "Project Description," in order to assess the possible effects of the Proposed Actions, three RWCDS were composed for the future With Action condition: the Baseline Scenario, the Density-Dependent Scenario, and the Overbuild Scenario. As previously stated, for the purposes of the construction analysis, the Density-Dependent Scenario has the greatest potential to result in significant adverse impacts as it is likely to generate the most overall site activity compared with the other two scenarios and is therefore used to determine potential construction impacts from the Proposed Project. Under the Density-Dependent Scenario, a total of three 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 eight-year construction period through 2027. At this time, there are no specific construction programs or finalized designs for the Proposed Project. Actual construction methods and materials may vary, depending on how the construction contractors choose to implement their work to be most cost effective, within the requirements set forth in bid, contract, and construction documents. Construction specifications will require that construction contractors comply with applicable environmental regulations and obtain necessary permits for the duration of construction. Construction of each development site would follow all applicable federal, state, and local laws for building and safety, as well as local noise ordinance, as appropriate.

Since the RWCDS presented in Chapter 1, "Project Description," does not describe the sequence in which buildings would be developed and/or re-tenanted, for analysis purposes, a conceptual construction phasing and schedule for the development anticipated to occur under the Density-Dependent Scenario was established to illustrate how development could occur over approximately the next eight years. Market considerations would ultimately determine the demand for development, but the conceptual construction schedule assumes that Building 21 would be constructed first, followed by Building 11, and finally the Gateway Building

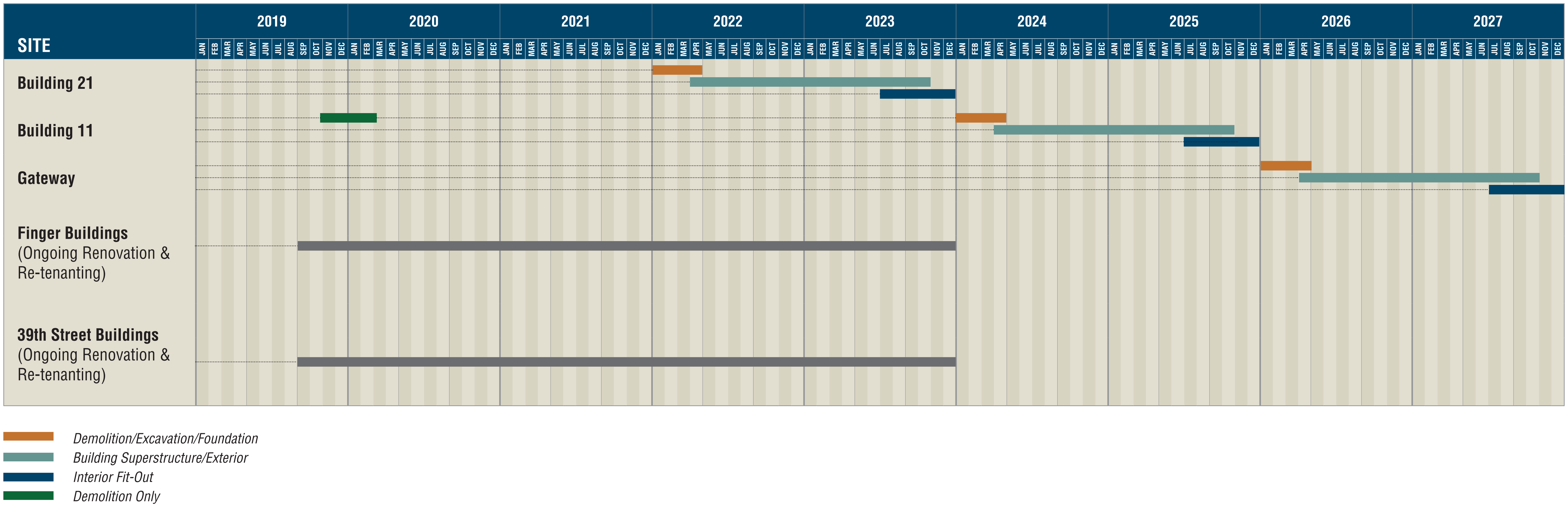
Figure 18-1 presents the conceptual construction sequencing for use in the analysis of the Proposed Project. In the conceptual construction schedule, construction activities are assumed to begin in 2019 and take place over an approximately eight-year period. It is assumed that the ongoing renovation and re-tenanting at the Finger Buildings and the 39th Street Buildings would be completed by 2023 and construction of all projected development would be completed by the end of the 2027 analysis year. The conceptual construction schedule conservatively assumes that most of the re-tenanting activities would occur prior to new construction, thus presenting a conservatively high amount of activity at Industry City when construction of new buildings commences. As presented in **Figure 18-1**, construction of each of the three new buildings is anticipated to last up to approximately two years and is considered short-term (i.e., less than 24 months) in accordance with the *CEQR Technical Manual*. The existing powerhouse structure, located on the corner of 32nd Street and 2nd Avenue, is slated for demolition; removal of the powerhouse is necessary for construction of Building 11 and is anticipated to occur during the early portion of the construction period (i.e., by 2020) such that temporary parking can be provided in this location.

D. CONSTRUCTION DESCRIPTION

In addition to the ongoing renovation and re-tenanting at the Finger and 39th Street Buildings, the Proposed Actions would also facilitate the development of three new buildings, which are proposed to be developed as part of the Proposed Project:

- A new 12-story Gateway Building would be developed on land at the southeastern end of the Finger Buildings, the majority of which would be acquired between 3rd Avenue and the eastern edges of Buildings 1 and 2.
- A new 13-story Building 11 would be developed at the northwestern end of the Finger Buildings. Building 11 would also include three levels of parking. The existing powerhouse structure at the Building 11 site is slated for demolition to allow for the construction of the new structure.
- A new 10-story Building 21 would be developed between existing Buildings 19/20 and 1st Avenue, 39th to 41st Streets. The building would include parking on the third through fifth floors as well as one level below grade. The existing building at the Building 21 site would be demolished to allow for the construction of the new structure.

Building construction in New York City typically follows a general pattern. The first task is construction startup, which would involve the installation of public safety measures (i.e., signs and fences) and siting of work trailers. Then, if there are existing buildings on the development site, any potential hazardous materials such as asbestos would first be abated and then the buildings would be demolished. Excavation of the soils would be next along with the construction of the foundations. When the below-grade construction is completed, construction of the core and shell of the new buildings would begin. The core is the central part of the building and is the main part of the structural system. It contains the elevators and the mechanical systems for heating,



Conceptual Construction Schedule for Assessment of Construction Impacts

Figure 18-1

ventilation, and air conditioning (HVAC). The shell is the outside of the building. As the core and floor decks of the building are being erected, installation of the mechanical and electrical internal networks would start. As the building progresses upward, the exterior façade would be placed, and interior fit-out activities would begin. These typical activities for building construction are described in greater detail below.

GENERAL CONSTRUCTION STAGES—RENOVATION AND RE-TENANT ACTIVITIES

The current work to renovate and re-tenant Industry City would continue through the first two years of new building construction (i.e., 2022 and 2023). This work includes the modernization and retrofitting of interior building space that has suffered from deferred maintenance. As described in Chapter 8, "Hazardous Materials," renovation work could increase pathways for human exposure to hazardous materials, however the following measures would reduce the possibility of impacts to the health and safety of workers, the community, and future occupants:

- Any renovation activities with the potential to disturb lead-based paint (LBP) would be performed in accordance with the applicable OSHA regulation (OSHA 29 CFR 1926.62—*Lead Exposure in Construction*).
- Prior to any renovation activities with the potential to disturb suspect asbestos-containing materials (ACMs), an asbestos survey would be conducted to determine whether these materials are ACMs. If these materials prove to contain asbestos, they would be properly removed and disposed of in accordance with all state and federal regulations.
- Unless there is labeling or test data that indicates that florescent lights, other electrical equipment, and hydraulic fluid are not mercury- and/or poly-chlorinated biphenyls (PCB)-containing, if disposal is required, it would be performed in accordance with applicable federal, state, and local regulations and guidelines.

Following remedial activities, renovation and re-tenanting work would include the removal of any economically salvageable materials. Work would then include a disassembly of non-structural elements and interior partitions. Then such interior work as the construction of interior partitions, installation of lighting fixtures, and interior finishes (e.g., flooring, painting, etc.) would commence. A variety of handheld tools would generally be used for renovation.

GENERAL CONSTRUCTION STAGES—NEW BUILDING CONSTRUCTION

DEMOLITION

Construction would begin with the demolition of existing buildings where applicable. First, demolition scaffolds would be erected around these buildings. The buildings to be demolished would be abated of any hazardous materials before the start of demolition. A New York City-certified asbestos investigator would inspect the building for 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 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 PCB-containing equipment (such as fluorescent light ballasts) that would be disturbed would be evaluated prior to disturbance. Unless labeling or test data indicate the contrary, such equipment would be assumed to contain PCBs, and would be removed and disposed of at properly licensed facilities in accordance with all applicable regulatory requirements.

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

EXCAVATION AND FOUNDATION

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

Dewatering

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

SUPERSTRUCTURE AND EXTERIOR

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

INTERIOR FIT-OUT

Interior fit-out activities would typically include the construction of interior partitions, installation of lighting fixtures, and interior finishes (e.g., flooring, painting, etc.), and mechanical and electrical work, such as the installation of elevators, and lobby finishes. Final cleanup and building system (e.g., electrical system, fire alarm, plumbing, etc.) testing and inspections would also be part of this stage of construction. Equipment used during interiors and finishing would generally include hoists, forklifts, scissor lifts, delivery trucks, and a variety of small hand-held tools.

GENERAL CONSTRUCTION PRACTICES

HOURS OF WORK

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

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

ACCESS, STAGING AREAS, AND SITE SAFETY

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

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

RODENT CONTROL

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

NUMBER OF CONSTRUCTION WORKERS AND MATERIAL DELIVERIES

The number of workers varies with the general construction task and/or building size. Likewise, material deliveries and removals generate truck trips, and the number also varies depending on the task and/or the building size. Workers and truck projections were based on representative sites of similar sizes and uses from prior Environmental Impact Statement (EIS) documents and information for similar known construction projects in the City. 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 three projected development sites was then assigned to the appropriate size category, and worker and truck projections were scaled on a per square foot basis.

As presented in **Figure 18-1**, new building construction activities are anticipated to begin in 2022. The resultant estimate of the number of trucks and workers per quarter are summarized in **Table 18-2**. As indicated in the table, the number of workers would peak in the second quarter of 2022, with an estimated 352 workers and an estimated 44 trucks per day. During this peak construction worker and truck period, construction would occur on Building 21 in addition to the ongoing renovations and re-tenanting at the Finger Buildings and the 39th Street Buildings.

Table 18-2
Average Incremental Number of Daily Construction Workers and Trucks by Year and Quarter

Year	2022				2023				2024			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	163	352	352	352	352	352	352	291	104	225	225	225
Trucks	46	44	43	43	43	43	43	26	29	28	28	28
Year	2025				2026				2027			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	225	225	225	186	51	87	87	87	87	87	87	71
Trucks	28	28	28	17	10	10	10	10	10	10	10	7
Average					Peak							
202					352							
26					46							

Note: The renovation and re-tenanting is ongoing and would continue in both the No Action and With Action conditions. While the No Action condition assumes the overall vacancy and under-utilization of Industry City will continue, the Proposed Actions would facilitate the re-tenanting of a substantial portion of the existing buildings and would include the development of new construction buildings or enlargements of existing structures. Therefore, this table presents estimates beginning in 2022, when new building construction activities are anticipated.

E. THE FUTURE WITHOUT THE PROPOSED ACTIONS

As described in Chapter 1, "Project Description," in the future without the Proposed Actions (the No Action condition), it is expected that no new construction would take place within the Project Area (see Figure 1-9). With respect to construction, the one-story building that abuts Building 9 to the west and the former Bush Terminal powerhouse at 2nd Avenue and 32nd Street would be demolished in order to accommodate new parking spaces and stacked parking under the No Action condition. Additional stacked parking also would be created on Block 706 (Lots 20 and 101).

F. THE FUTURE WITH THE PROPOSED ACTIONS

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, open space, historic and cultural resources, and hazardous materials.

3.6.19

Project Area

Noise Receptor

Noise Measurement Location

1 Noise Receptor Number

0 500 FEET

Construction Noise Receptor Locations

Figure 18-2

INDUSTRY CITY

TRANSPORTATION

TRAFFIC AND PARKING

Construction activity for the construction of new buildings would extend from 2022 to 2027 and would generate construction worker and truck traffic. Because of the lengthy duration of these activities, an evaluation of construction sequencing and worker/truck projections was completed in order to identify potential construction traffic impacts. As described below, the projected construction activities would yield less total traffic than projected for the Proposed Project. However, significant adverse traffic impacts could still occur at some of the study area locations during construction, similar to the impacts identified in Chapter 11, "Transportation." Therefore, construction trip projections were developed and assigned through the study area through key access routes to the project site, and a detailed traffic construction analysis was performed for eight key intersections within the traffic study area. The conclusions of this analysis are presented below. This analysis would also incorporate operational trips generated by components of the Proposed Project that has been completed by the peak quarter of construction.

CONSTRUCTION TRAFFIC PROJECTIONS

Average daily construction worker and truck activities by quarter were projected for six years of construction. These projections were further refined to account for worker modal splits and vehicle occupancy, and arrival and departure distribution.

Daily Workforce and Truck Deliveries

For a reasonable worst-case analysis of potential transportation-related impacts during construction, the daily workforce and truck trip projections in the peak quarter of the peak construction year were used as the basis for estimating peak hour construction trips. Based on a schedule of new building construction commencing in 2022, the combined construction worker and truck traffic peak would occur in the second quarter of 2022. As shown in **Table 18-2**, the daily average number of construction workers and truck deliveries during the peak quarter was estimated at 352 workers and 44 truck deliveries per day. These estimates of construction activities are further discussed below.

Construction Worker Modal Splits

Based on the 2000 Census reverse journey to work data for the construction industry, it is anticipated that approximately 56 percent of construction workers would drive to and from the Project Area. Approximately 2 percent of construction workers would take taxi, 7 percent would take the bus, 29 percent would take the subway, and 6 percent would walk. The average vehicle occupancy would be 1.21 workers per vehicle.

Peak Hour Construction Worker Vehicle and Truck Trips

Site activities would mostly take place during the typical construction shift of 7 AM to 3 PM. While construction truck trips would be made throughout the day (with more trips made during the early morning), and most trucks would remain in the area for short durations, construction worker travel would typically take place during the hours before and after the work shift. For analysis purposes, each worker vehicle was assumed to arrive in the morning and depart in the afternoon, whereas each truck delivery was assumed to result in two truck trips during the same hour (one "in" and one "out").

The estimated daily vehicle trips were distributed throughout the workday based on projected work shift allocations and conventional arrival/departure patterns of construction workers and trucks. For construction workers, the majority (80 percent) of the arrival and departure trips would take place during the hour before and after each shift (6 AM to 7 AM for arrivals and 3 PM to 4 PM for departures). For construction trucks, deliveries would occur throughout the day when the construction site is active. Construction truck deliveries typically peak during the hour before the regular day shift (25 percent of the daily total), overlapping with construction worker arrival traffic. Based on these assumptions, peak hour construction traffic was estimated for the entire construction period. The peak construction hourly trip projections for the second quarter of 2022 are summarized in **Table 18-3**.

Table 18-3
Peak Construction Vehicle Trip Projects – Second Quarter of 2022

Time	Autos In	Autos Out	Taxis In	Taxis Out	Trucks In	Trucks Out	Vehicles In	Vehicles Out
6 AM to 7 AM	130	0	4	4	11	11	145	15
7 AM to 8 AM	33	0	1	1	5	5	39	6
8 AM to 9 AM	0	0	0	0	5	5	5	5
9 AM to 10 AM	0	0	0	0	5	5	5	5
10 AM to 11 AM	0	0	0	0	4	4	4	4
11 AM to 12 PM	0	0	0	0	4	4	4	4
12 PM to 1 PM	0	0	0	0	4	4	4	4
1 PM to 2 PM	0	0	0	0	2	2	2	2
2 PM to 3 PM	0	8	0	0	2	2	2	10
3 PM to 4 PM	0	130	4	4	2	2	6	136
4 PM to 5 PM	0	25	1	1	0	0	1	26
5 PM to 6 PM	0	0	0	0	0	0	0	0
6 PM to 7 PM	0	0	0	0	0	0	0	0

TRAFFIC

As discussed above and shown in **Table 18-3**, construction activities would result in maximum combined auto and truck traffic of 160 and 142 vehicle trips during the 6 AM to 7 AM and 3 PM to 4 PM construction peak hours, respectively. In comparison, the Proposed Project would generate 988, 2,089, and 2,408 vehicle trips during typical weekday AM (7:45 AM to 8:45 AM), midday (11 AM to 12 PM), and PM (4:45 PM to 5:45 PM) peak hours, respectively, as shown in **Table 18-4**.

Table 18-4
Comparison of Vehicle Trips – Construction Phase vs. With Action Conditions

Construction Phase (Second Quarter of 2022)				With Action Condition (2027 Proposed Project)			
Weekday Peak Period	In	Out	Total	Weekday Peak Period	In	Out	Total
6 AM to 7 AM Arrival Peak Hour	145	15	160	7:45 AM to 8:45 AM AM Peak Hour	579	409	988
3 PM to 4 PM Departure Peak Hour	6	136	142	11 AM to 12 PM Midday Peak Hour	1,115	974	2,089
				4:45 PM to 5:45 PM PM Peak Hour	1,080	1328	2,408

Vehicle trips generated by construction activities were assigned to the roadway network, and eight key study area intersections with a potential for significant impacts were selected for analysis during the AM and PM construction peak hours:

1. 2nd Avenue and 32nd Street
2. 2nd Avenue and 39th Street
3. 2nd Avenue and 41st Street
4. 3rd Avenue and 32nd Street
5. 3rd Avenue and 37th Street
6. 3rd Avenue and 39th Street
7. 4th Avenue and 38th Street
8. 4th Avenue and 39th Street

Construction Peak Hour Traffic Volumes and Condition—Existing

Based on the Automatic Traffic Recorder (ATR) traffic volume data, background traffic volumes during the 6 AM to 7 AM construction peak hour are approximately 33 percent lower than the 7:45 AM to 8:45 AM commuter peak hour. Therefore, there would likely be fewer significant traffic impacts during the peak construction hour.

During the 3 PM to 4 PM construction peak hour, background traffic volumes are approximately 15 percent lower than the 5:15 to 6:15 PM commuter peak hour volumes. Since the background traffic volumes are lower in the construction peak hour than in the commuter peak hour, it would be expected that there would be fewer significant traffic impacts as well.

Each of the eight intersections identified for analysis were evaluated. All eight intersections currently operate at an overall acceptable level of service during the 6 AM to 7 AM and 3 PM to 4 PM construction peak hours. Of the approximately 38 traffic movements analyzed during the construction peak hours, none of the movements would operate at unacceptable levels of services (i.e., mid-LOS D or worse) during the AM construction peak hour, and two movements would operate at unacceptable levels of service during the PM construction peak hour. Detailed descriptions of the existing conditions traffic levels of service are provided in **Table 18-5**.

Table 18-5
Traffic Levels of Service
2016 Existing Condition

Intersection and Approach		Weekday AM Peak Hour (6–7 AM) Mvt.	V/C	Control Delay	LOS	Weekday PM Peak Hour (3–4 PM) Mvt.	V/C	Control Delay	LOS
Signalized Intersections									
2nd Avenue and 39th Street									
39th Street	EB	LTR	0.20	29.4	C	LTR	0.43	34.5	C
	WB 1	LTR	0.32	29.1	C	LTR	0.48	31.1	C
39th Street (ramp)	WB 2	L	0.69	35.2	D	L	0.48	29.0	C
		TR	0.27	25.3	C	TR	0.22	24.6	C
2nd Avenue	NB	LTR	0.52	28.5	C	LTR	0.38	26.5	C
	SB	LTR	0.20	24.3	C	LTR	0.41	27.5	C
Overall Intersection		-	0.53	30.0	C	-	0.46	28.8	C
3rd Avenue and 32nd Street									
32nd Street	EB	LR	0.10	34.9	C	LR	0.13	37.5	D
	WB	LTR	0.17	35.9	D	LTR	0.27	40.4	D
3rd Avenue	NB	LT	0.61	2.3	A	LT	0.42	4.9	A
	SB	LTR	0.14	7.7	A	LTR	0.53	2.2	A
Overall Intersection		-	-	4.8	A	-	-	5.0	A
3rd Avenue and 37th Street									
37th Street	EB	LTR	0.10	33.6	C	LTR	0.29	37.0	D
3rd Avenue	NB	TR	0.59	5.6	A	TR	0.40	8.4	A
	SB	LT	0.17	8.1	A	LT	0.58	6.6	A
Overall Intersection		-	-	7.2	A	-	-	9.7	A
3rd Avenue and 39th Street									
39th Street	EB	LTR	0.27	36.6	D	LTR	0.33	38.4	D
	WB	LTR	0.47	42.6	D	LTR	0.61	47.7	D
3rd Avenue	NB	LTR	0.55	1.8	A	LTR	0.34	6.1	A
	SB	TR	0.15	5.4	A	TR	0.52	3.5	A
Overall Intersection		-	-	8.8	A	-	-	11.1	B
4th Avenue and 38th Street									
38th Street	EB	L	0.55	43.8	D	L	0.55	43.6	D
		LT	0.55	43.9	D	LT	0.58	44.6	D
		R	0.19	35.7	D	R	0.29	37.4	D
4th Avenue	NB	TR	0.54	11.8	B	TR	0.42	15.8	B
	SB	T	0.36	15.2	B	T	0.63	13.2	B
Overall Intersection		-	0.54	20.4	C	-	0.61	21.1	C
4th Avenue and 39th Street									
39th Street	EB	L	0.08	34.2	C	L	0.12	35.3	D
		TR	0.47	41.6	D	TR	0.56	43.9	D
	WB	L	0.25	38.0	D	L	0.41	43.5	D
		TR	0.52	44.3	D	TR	0.74	55.3	E
4th Avenue	NB	TR	0.52	8.6	A	TR	0.41	13.3	B
	SB	L	0.19	13.3	B	L	0.10	6.4	A
		TR	0.41	13.4	B	TR	0.75	11.9	B
Overall Intersection		-	0.51	16.2	B	-	0.75	19.7	B

Table 18-5 (cont'd)
Traffic Levels of Service
2016 Existing Condition

Intersection and Approach		Weekday AM Peak Hour (6–7 AM) Mvt.	V/C	Control Delay	LOS	Weekday PM Peak Hour (3–4 PM) Mvt.	V/C	Control Delay	LOS
Unsignalized Intersections									
2nd Avenue and 32nd Street									
2nd Avenue	NB	LTR	-	7.4	A	LTR	-	8.3	A
	SB	LTR	-	8.3	A	LTR	-	7.5	A
32nd Street	EB	LTR	-	9.0	A	LTR	-	9.0	A
	WB	LTR	-	11.1	B	LTR	-	10.4	B
Overall Intersection		-	-	1.7	A	-	-	2.4	A
2nd Avenue and 41st Street									
2nd Avenue	NB	LT	-	7.7	A	LT	-	7.8	A
	SB	TR	-	0.0	A	TR	-	0.0	A
41st Street	EB	LR	-	10.8	B	LR	-	13.8	B
	WB	LTR	-	13.0	B	LTR	-	14.4	B
Overall Intersection		-	-	2.0	A	-	-	3.1	A

Notes:
(1) Control delay is measured in seconds per vehicle.
(2) Overall intersection V/C ratio is the critical lane groups' V/C ratio.

Construction Peak Hour Traffic Volumes and Conditions—2022 No Action without Construction

An annual growth rate of 0.50 percent was assumed for the first five years (year 2016 to year 2021) and an additional 0.25 percent growth was assumed for the remaining year (year 2022) as per the *CEQR Technical Manual* and was used to estimate the background volumes for the 2022 No Action without Construction condition. The No Action background development sites expected to be developed in the area, as discussed in Chapter 11, "Transportation," that are expected to be completed by year 2022 and vehicle trips generated from these sites were assigned to the roadway network. This conservatively assumes the entirety of the development within Industry City that would occur without the Proposed Project (additional innovation economy, retail, and warehouse space) would be in place by the year 2022. It is also expected that the roadway improvement projects identified in Chapter 11, "Transportation," would also be completed by year 2022.

Under future No Action conditions in year 2022, seven of the eight intersections would continue to operate at acceptable overall levels of service during the AM and PM construction peak hours. The intersection of 2nd Avenue and 39th Street would operate at LOS E during the AM and PM construction peak hours. The number of traffic movements operating at unacceptable levels of service would increase by three during the AM and PM construction peak analysis hours during the No Action condition. Detailed descriptions of the No Action without Construction conditions traffic levels of service are provided in **Table 18-6**.

Table 18-6
Traffic Levels of Service
2022 No Action Condition

Intersection and Approach		Weekday AM Peak Hour (6–7 AM) Mvt.	V/C	Control Delay	LOS	Weekday PM Peak Hour (3–4 PM) Mvt.	V/C	Control Delay	LOS
Signalized Intersections									
2nd Avenue and 39th Street									
39th Street	EB	LTR	0.37	33.4	C	LTR	0.86	66.0	E
	WB 1	LTR	0.99	66.8	E	LTR	1.21	146.5	F
39th Street (ramp)	WB 2	L	1.11	105.2	F	L	0.63	33.0	C
		TR	0.30	26.0	C	TR	0.19	24.2	C
2nd Avenue	NB	LTR	0.57	29.6	C	LTR	0.47	28.3	C
	SB	LTR	0.25	24.9	C	LTR	0.58	31.8	C
Overall Intersection		-	0.88	63.5	E	-	0.77	59.3	E
3rd Avenue and 32nd Street									
32nd Street	EB	LR	0.13	35.5	D	LR	0.19	38.5	D
	WB	LTR	0.18	36.1	D	LTR	0.29	41.1	D
3rd Avenue	NB	LT	0.66	2.5	A	LT	0.51	4.8	A
	SB	LTR	0.18	7.7	A	LTR	0.56	2.2	A
Overall Intersection		-	-	5.2	A	-	-	5.1	A
3rd Avenue and 37th Street									
37th Street	EB	LTR	0.12	33.8	C	LTR	0.32	37.5	D
3rd Avenue	NB	TR	0.66	6.3	A	TR	0.51	8.8	A
	SB	LT	0.21	7.5	A	LT	0.63	7.3	A
Overall Intersection		-	-	7.7	A	-	-	10.3	B
3rd Avenue and 39th Street									
39th Street	EB	LTR	0.70	52.7	D	LTR	1.02	111.0	F
	WB	LTR	0.66	49.8	D	LTR	0.63	48.1	D
3rd Avenue	NB	LTR	0.58	1.9	A	LTR	0.41	6.1	A
	SB	TR	0.19	5.6	A	TR	0.57	3.6	A
Overall Intersection		-	-	12.0	B	-	-	19.5	B
4th Avenue and 38th Street									
38th Street	EB	L	0.54	43.0	D	L	0.57	44.3	D
		LT	0.53	42.8	D	LT	0.58	44.5	D
		R	0.45	40.9	D	R	0.40	39.6	D
4th Avenue	NB	TR	0.62	12.9	B	TR	0.49	16.9	B
	SB	T	0.41	15.8	B	T	0.67	13.8	B
Overall Intersection		-	0.60	21.7	C	-	0.65	21.9	C
4th Avenue and 39th Street									
39th Street	EB	L	0.10	34.7	C	L	0.14	35.8	D
		TR	0.51	42.7	D	TR	0.68	48.6	D
	WB	L	0.26	38.5	D	L	0.49	48.6	D
		TR	0.57	46.4	D	TR	0.80	60.8	E
4th Avenue	NB	TR	0.54	8.8	A	TR	0.45	13.8	B
	SB	L	0.24	14.8	B	L	0.17	7.3	A
		TR	0.53	15.1	B	TR	0.81	13.7	B
Overall Intersection		-	0.56	17.2	B	-	0.82	22.0	C

Table 18-6 (cont'd)
Traffic Levels of Service
2022 No Action Condition

Intersection and Approach		Weekday AM Peak Hour (6–7 AM) Mvt.	V/C	Control Delay	LOS	Weekday PM Peak Hour (3–4 PM) Mvt.	V/C	Control Delay	LOS
Unsignalized Intersections									
2nd Avenue and 32nd Street									
2nd Avenue	NB	LTR	-	7.4	A	LTR	-	8.3	A
	SB	LTR	-	8.4	A	LTR	-	7.6	A
32nd Street	EB	LTR	-	9.0	A	LTR	-	9.0	A
	WB	LTR	-	11.7	B	LTR	-	11.3	B
Overall Intersection		-	-	1.8	A	-	-	2.9	A
2nd Avenue and 41st Street									
2nd Avenue	NB	LT	-	8.2	A	LT	-	8.5	A
	SB	TR	-	0.0	A	TR	-	0.0	A
41st Street	EB	LR	-	12.8	B	LR	-	19.6	C
	WB	LTR	-	15.0	B	LTR	-	18.0	C
Overall Intersection		-	-	2.1	A	-	-	3.9	A

Notes:
(1) Control delay is measured in seconds per vehicle.
(2) Overall intersection V/C ratio is the critical lane groups' V/C ratio.

Construction Peak Hour Traffic Volumes and Conditions—2022 With Action with Construction

Construction activities would generate 130 construction worker auto trips, eight construction worker taxi trips, and 22 construction truck trips during the AM construction peak hour, and 130 construction worker auto trips, eight construction worker taxi trips, and four construction truck trips during the PM construction peak hour. Construction trucks would be required to use DOT-designated truck routes to get to the Project Area and would then use local streets to access the construction sites.

In addition, a portion of the Finger Buildings would be renovated and re-tenanted by the 2022 construction peak year. For the purpose of the analysis, it was assumed that 75 percent of the buildings being renovated would be re-tenanted. These operational trips (351 vehicle trips during the AM construction peak hour and 1,023 vehicle trips during the PM construction peak hour) were also incorporated into the 2022 With Action with Construction analysis.

As indicated in **Tables 18-7 and 18-8**, the intersection of 4th Avenue and 38th Street would be significantly impacted during the AM construction peak hour. The intersections of 2nd Avenue and 41st Street, 3rd Avenue and 32nd Street, and 4th Avenue and 39th Street would be significantly impacted during the PM construction peak hour. The intersections of 2nd Avenue and 39th Street and 3rd Avenue and 39th Street would be significantly impacted in both the AM and PM construction peak hours.

The significant impact at the intersection of 4th Avenue and 38th Street could be mitigated with signal timing modifications. Significant impacts at the intersections of 2nd Avenue and 39th Street and 3rd Avenue and 39th Street could be mitigated with standard mitigation measures typically implemented by DOT such as parking prohibitions and lane restriping. Significant impacts at the intersection of 4th Avenue and 39th Street could only be partially mitigated with signal timing modifications during the PM construction peak hour. Significant impacts during the PM construction peak hour to the intersections of 2nd Avenue and 41st Street and 3rd Avenue and 32nd Street would remain unmitigated. The implementation of these measures would result in the loss of approximately 21 parking or "standing" spaces during the weekday AM and PM construction peak periods. Detailed descriptions of the Construction traffic levels of service and all traffic mitigation measures are presented in **Tables 18-7 and 18-8**.

DELIVERIES

Construction trucks would be required to use DOT-designated truck routes, including the Gowanus Expressway, 3rd Avenue, and 39th Street. Trucks would then use local streets to access the construction sites. Trucks would service the construction sites at its designated loading zones.

CURB LANE CLOSURES AND STAGING

During construction, long-term parking lane closures may be required. In the case where a travel lane closure is necessary, the closure would not be in effect for the entire block length. Lane closures would be delineated such that there would be enough space for a travel lane at the intersection approach to maintain the roadway capacity. It is anticipated that sidewalk closures may be required to the extent practicable. Short-term roadway closures and temporary sidewalk narrowings could occur along the sides at development sites during the construction period. Sidewalk and lane closures will be finalized as the MPT plans are developed and reviewed with DOT.

All lane and sidewalk closures during construction would be coordinated with DOT's OCMC. Traffic control agents may need to be deployed at times to facilitate traffic flow near the Project Area.

PARKING

Construction workers would generate an estimated maximum daily parking demand for up to 163 spaces during the peak construction phase. This parking demand could be accommodated by the Industry City existing off-street facilities along the west side of 2nd Avenue which would be reorganized and would implement stackers to maximize the number of parking spaces, and the resurfaced Building 11 site. The parking capacities at these locations are detailed below.

1. Lot D (northwest corner of 2nd Avenue and 39th Street, known as Lot C in existing conditions) – 163 parking space capacity
2. Lot C (west side of 2nd Avenue between 32nd Street and 37th Street, known as Lot B in existing conditions) – 548 parking space capacity
3. Lot B (west side of 2nd Avenue between 30th Street and 32nd Street, part of Lot B in existing conditions) – 224 parking space capacity
4. Building 11 lot – 392 parking spaces

Peak construction activities during the second quarter of 2022 would be focused on the construction of Building 21; as such it would be expected that worker auto trips would be expected to find parking at the two parking facilities closest to this site—Lots C and D.

Table 18-7
No Action vs. Construction Traffic Levels of Service Comparison: Weekday AM Peak Hour

Intersection and Approach		2022 No Action				2022 Construction				2022 Construction w/ Improvements				Mitigation Measures
		Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	
Signalized Intersections														
2nd Avenue and 39th Street														- Install "No Standing Anytime" regulations along the south curb of the EB approach for 250 feet to allow for an additional travel lane. - Install "No Standing Anytime" regulations along the north curb of the WB receiving side. - Install "No Standing Anytime" regulations along the west curb of the SB approach for 250 feet to allow for an additional travel lane. - Restripe the EB approach from one 12-foot travel lane and one 9-foot parking lane to one 10-foot through lane and one 11-foot through-right lane. Restripe the WB receiving side from one 120 foot travel lane and on 9-foot parking lane to one 10-foot travel lane and one 11-foot travel lane. - Shift the WB approach centerline 5 feet to the south. - Restripe the WB approach from one 12-foot travel lane and one 18-foot parking lane to two 11-foot travel lanes and one 13-foot parking lane. Restripe the EB receiving side from one 12-foot travel lane and one 18-foot parking lane to one 12-foot travel lane and one 13-foot travel lane. - Shift the SB approach centerline 5 feet to the east. - Restripe the SB approach from one 16-foot travel lane to two 11-foot travel lanes.
39th Street	EB	LTR	0.37	33.4	C	LTR	0.39	33.9	C	LTR	0.18	28.4	C	
	WB 1	LTR	0.99	66.8	E	LTR	1.29	174.1	F	LTR	0.64	33.4	C	
39th Street (ramp)	WB 2	L	1.11	105.2	F	L	1.11	107.0	F	L	1.11	107.0	F	
		TR	0.30	26.0	C	TR	0.73	43.3	D	TR	0.73	43.3	D	
2nd Avenue	NB	LTR	0.57	29.6	C	LTR	0.70	33.5	C	LTR	0.68	32.6	C	
	SB	LTR	0.25	24.9	C	LTR	0.49	30.3	C	LTR	0.25	24.7	C	
Overall Intersection		-	0.88	63.5	E		1.01	83.8	F	-	0.82	56.3	E	
3rd Avenue and 32nd Street														- Mitigation not needed
32nd Street	EB	LR	0.13	35.5	D	LR	0.38	41.5	D					
	WB	LTR	0.18	36.1	D	LTR	0.24	37.0	D					
3rd Avenue	NB	LT	0.66	2.5	A	LT	0.69	6.3	A					
	SB	LTR	0.18	7.7	A	LTR	0.20	7.7	A					
Overall Intersection		-	-	5.2	A	-	-	9.3	B					
3rd Avenue and 37th Street														- Mitigation not needed
37th Street	EB	LTR	0.12	33.8	C	LTR	0.12	33.8	C					
3rd Avenue	NB	TR	0.66	6.3	A	TR	0.68	6.9	A					
	SB	LT	0.21	7.5	A	LT	0.23	7.2	A					
Overall Intersection		-	-	7.7	A	-	-	8.0	A					
3rd Avenue and 39th Street														- Install "No Standing Anytime" regulations along the south curb of the EB approach. - Install "No Standing Anytime" regulations along the south curb of the WB approach for 250 feet. - Shift the centerline on the EB approach 5 feet to the south. - Restripe the EB approach from one 12-foot travel lane and one 18-foot parking lane to one 12-foot through lane and one 13-foot right-turn lane. Restripe the WB receiving side from one 12-foot travel lane and one 18-foot parking lane to two 11-foot travel lanes and one 13-foot parking lane. - Shift the centerline on the WB approach 7 feet to the south. - Restripe the WB approach from one 14-foot travel lane to one 10-foot through lane and one 11-foot right-turn lane for 150 feet. Restripe the EB receiving side from one 18-foot travel lane with parking to one 11-foot travel lane for 250 feet.
39th Street	EB	LTR	0.70	52.7	D	LTR	0.76	80.2	F	LT	0.58	47.4	D	
		-	-	-	-	-	-	-	-	R	0.15	36.3	D	
	WB	LTR	0.66	49.8	D	LTR	0.92	76.7	E	LT	0.55	45.1	D	
		-	-	-	-	-	-	-	-	R	0.43	42.7	D	
3rd Avenue	NB	LTR	0.58	1.9	A	LTR	0.59	2.1	A	LTR	0.59	2.1	A	
	SB	TR	0.19	5.6	A	TR	0.20	5.7	A	TR	0.20	5.7	A	
Overall Intersection		-	-	12.0	B	-	-	19.7	C	-	-	12.2	B	

Table 18-7 (cont'd)
No Action vs. Construction Traffic Levels of Service Comparison: Weekday AM Peak Hour

Intersection and Approach		2022 No Action				2022 Construction				2022 Construction w/ Improvements				Mitigation Measures
		Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	
Signalized Intersections														
4th Avenue and 38th Street														- Modify signal timing. Shift 1 sec of green time from the NB/SB phase to the EB phase. (NB/SB green time shifts from 67 sec to 66 sec; EB green time shifts from 31 sec to 32 sec)
38th Street	EB	L	0.54	43.0	D	L	0.56	43.7	D	L	0.54	42.3	D	
		LT	0.53	42.8	D	LT	0.55	43.3	D	LT	0.53	42.0	D	
		R	0.45	40.9	D	R	0.63	46.6	D	R	0.61	44.9	D	
4th Avenue	NB	TR	0.62	12.9	B	TR	0.64	13.1	B	TR	0.65	13.9	B	
	SB	T	0.41	15.8	B	T	0.42	16.0	B	T	0.43	16.6	B	
Overall Intersection		-	0.60	21.7	C	-	0.64	23.0	C	-	0.64	23.1	C	
4th Avenue and 39th Street														- Mitigation not needed
39th Street	EB	L	0.13	35.2	D	L	0.12	35.1	D					
		TR	0.51	42.7	D	TR	0.58	44.5	D					
	WB	L	0.26	38.3	D	L	0.28	39.2	D					
		TR	0.57	46.4	D	TR	0.70	52.7	D					
4th Avenue	NB	TR	0.54	8.8	A	TR	0.56	9.0	A					
	SB	L	0.24	14.8	B	L	0.27	15.7	B					
		TR	0.53	15.1	B	TR	0.61	16.6	B					
Overall Intersection		-	0.56	17.2	B	-	0.63	19.1	B					
Unsignalized Intersections														
2nd Avenue and 32nd Street														- Mitigation not needed
2nd Avenue	NB	LTR	-	7.4	A	LTR	-	7.5	A					
	SB	LTR	-	8.4	A	LTR	-	8.6	A					
32nd Street	EB	LTR	-	9.0	A	LTR	-	11.6	B					
	WB	LTR	-	11.7	B	LTR	-	16.1	C					
Overall Intersection		-	-	1.7	A	-	-	4.1	A					
2nd Avenue and 41st Street														- Mitigation not needed
2nd Avenue	NB	LT	-	8.2	A	LT	-	8.4	A					
	SB	TR	-	0.0	A	TR	-	0.0	A					
41st Street	EB	LR	-	12.8	B	LR	-	17.5	C					
	WB	LTR	-	15.0	B	LTR	-	18.3	C					
Overall Intersection		-	-	2.1	A	-	-	3.9	A					

Notes:
(1) Control delay is measured in seconds per vehicle.
(2) Overall intersection V/C ratio is the critical lane groups' V/C ratio.
(3) Movement delay and overall delay cannot be calculated; exceeds the HCS software threshold.
[yellow box] Denotes a significantly impacted movement.

Table 18-8
No Action vs. Construction Traffic Levels of Service Comparison: Weekday PM Peak Hour

Intersection and Approach		2022 No Action				2022 Construction				2022 Construction w/ Improvements				Mitigation Measures
		Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	
Signalized Intersections														
2nd Avenue and 39th Street														- Install "No Standing Anytime" regulations along the south curb of the EB approach for 250 feet to allow for an additional travel lane. - Install “No Standing Anytime” regulations along the north curb of the WB receiving side. - Install “No Standing Anytime” regulations along the west curb of the SB approach for 250 feet to allow for an additional travel lane. - Restripe the EB approach from one 12-foot travel lane and one 9-foot parking lane to one 10-foot through lane and one 11-foot through-right lane. Restripe the WB receiving side from one 120 foot travel lane and on 9-foot parking lane to one 10-foot travel lane and one 11-foot travel lane. - Shift the WB approach centerline 5 feet to the south. - Restripe the WB approach from one 12-foot travel lane and one 18-foot parking lane to two 11-foot travel lanes and one 13-foot parking lane. Restripe the EB receiving side from one 12-foot travel lane and one 18-foot parking lane to one 12-foot travel lane and one 13-foot travel lane. - Shift the SB approach centerline 5 feet to the east. - Restripe the SB approach from one 16-foot travel lane to two 11-foot travel lanes.
39th Street	EB	LTR	0.86	66.0	E	LTR	1.00	94.4	F	LTR	0.42	31.9	C	
	WB 1	LTR	1.21	146.5	F	LTR	1.60	313.9	F	LTR	0.77	37.5	D	
39th Street (ramp)	WB 2	L	0.63	33.0	C	L	0.63	33.0	C	L	0.63	33.0	C	
		TR	0.19	24.2	C	TR	0.66	43.9	D	TR	0.66	43.9	D	
2nd Avenue	NB	LTR	0.47	28.3	C	LTR	0.68	34.3	C	LTR	0.65	32.7	C	
	SB	LTR	0.58	31.8	C	LTR	1.57	300.4	F	LTR	0.74	35.0	C	
Overall Intersection		-	0.77	59.3	E	-	1.25	171.8	F	-	0.72	35.0	F	
3rd Avenue and 32nd Street														- **Unmitigatable**
32nd Street	EB	LR	0.19	38.5	D	LR	0.92	79.0	E					
	WB	LTR	0.29	41.1	D	LTR	0.60	52.6	D					
3rd Avenue	NB	LT	0.51	4.8	A	LT	0.60	5.9	A					
	SB	LTR	0.56	2.2	A	LTR	0.59	2.3	A					
Overall Intersection		-	-	5.1	A	-	-	12.3	B					
3rd Avenue and 37th Street														- Mitigation not needed
37th Street	EB	LTR	0.32	37.5	D	LTR	0.38	38.4	D					
3rd Avenue	NB	TR	0.51	8.8	A	TR	0.55	8.9	A					
	SB	LT	0.63	7.3	A	LT	0.70	9.1	A					
Overall Intersection		-	-	10.3	B	-	-	11.5	B					
3rd Avenue and 39th Street														- Install “No Standing Anytime” regulations along the south curb of the EB approach. - Install “No Standing Anytime” regulations along the south curb of the WB approach for 250 feet. - Shift the centerline on the EB approach 5 feet to the south. - Restripe the EB approach from one 12-foot travel lane and one 18-foot parking lane to one 12-foot through lane and one 13-foot right-turn lane. Restripe the WB receiving side from one 12-foot travel lane and one 18-foot parking lane to two 11-foot travel lanes and one 13-foot parking lane. - Shift the centerline on the WB approach 7 feet to the south. - Restripe the WB approach from one 14-foot travel lane to one 10-foot through lane and one 11-foot right-turn lane for 150 feet. Restripe the EB receiving side from one 18-foot travel lane with parking to one 11-foot travel lane for 250 feet.
39th Street	EB	LTR	1.02	111.0	F	LTR	1.26	176.7	F	LT	1.00	103.8	F	
		-	-	-	-	-	-	-	-	R	0.21	37.4	D	
	WB	LTR	0.63	48.1	D	LTR	0.87	80.4	F	LT	0.63	48.9	D	
		-	-	-	-	-	-	-	-	R	0.42	41.8	D	
3rd Avenue	NB	LTR	0.41	6.1	A	LTR	0.43	6.1	A	LTR	0.43	6.1	A	
	SB	TR	0.57	3.6	A	TR	0.61	3.7	A	TR	0.61	3.7	A	
Overall Intersection		-	-	19.5	B	-	-	32.9	C	-	-	19.4	B	

Table 18-8 (cont'd)
No Action vs. Construction Traffic Levels of Service Comparison: Weekday PM Peak Hour

Intersection and Approach		2022 No Action Mvt.	V/C	Control Delay	LOS	2022 Construction Mvt.	V/C	Control Delay	LOS	2022 Construction w/ Improvements Mvt.	V/C	Control Delay	LOS	Mitigation Measures
Signalized Intersections (cont'd)														
4th Avenue and 38th Street														- Mitigation not needed
38th Street	EB	L	0.57	44.3	D	L	0.60	45.1	D					
		LT	0.58	44.5	D	LT	0.60	45.0	D					
		R	0.40	39.6	D	R	0.51	42.4	D					
4th Avenue	NB	TR	0.49	16.9	B	TR	0.51	17.3	B					
	SB	T	0.67	13.8	B	T	0.70	14.4	B					
Overall Intersection		-	0.65	21.9	C	-	0.66	22.8	C					
4th Avenue and 39th Street														**- Partially mitigated** - Modify signal timing. Shift 4 sec of green time from NB/SB phase to EB/WB phase. (NB/SB green time shifts from 72 sec to 68 sec; EB/WB green time shifts from 31 sec to 35 sec.)
39th Street	EB	L	0.14	35.8	D	L	0.22	38.8	D	L	0.16	33.7	C	
		TR	0.68	48.6	D	TR	0.90	67.3	E	TR	0.79	51.8	D	
	WB	L	0.49	48.6	D	L	0.80	90.6	F	L	0.61	56.8	E	
		TR	0.80	60.8	E	TR	1.01	96.1	F	TR	0.88	65.6	E	
4th Avenue	NB	TR	0.45	13.8	B	TR	0.47	14.2	B	TR	0.50	16.6	B	
	SB	L	0.17	7.3	A	L	0.21	7.7	A	L	0.23	10.1	B	
		TR	0.81	13.7	B	TR	0.89	16.8	B	TR	0.94	24.5	C	
Overall Intersection		-	0.82	22.0	C	-	0.92	31.5	C	-	0.92	30.2	C	
Unsignalized Intersections														
2nd Avenue and 32nd Street														- Mitigation not needed
2nd Avenue	NB	LTR	-	8.3	A	LTR	-	8.6	A					
	SB	LTR	-	7.6	A	LTR	-	7.7	A					
32nd Street	EB	LTR	-	9.0	A	LTR	-	12.5	B					
	WB	LTR	-	11.3	B	LTR	-	22.2	C					
Overall Intersection		-	-	2.9	A	-	-	9.3	A					
2nd Avenue and 41st Street														**- Unmitigatable** - Eastbound approach carries less than 90 passenger car equivalents, therefore no significant impacts were identified for this approach.
2nd Avenue	NB	LT	-	8.5	A	LT	-	9.3	A					
	SB	TR	-	0.0	A	TR	-	0.0	A					
41st Street	EB	LR	-	19.6	C	LR	-	42.7	E					
	WB	LTR	-	18.0	C	LTR	-	35.5	E					
Overall Intersection		-	-	3.9	A	-	-	7.6	A					

Notes:
(1) Control delay is measured in seconds per vehicle.
(2) Overall intersection V/C ratio is the critical lane groups' V/C ratio.
(3) Movement delay and overall delay cannot be calculated; exceeds the HCS software threshold.
[yellow box] Denotes a significantly impacted movement.

TRANSIT AND PEDESTRIANS

Based on the 2000 Census reverse journey to work data for the Construction industry, it is anticipated that approximately 29 percent of construction workers would commute to the Project Area by subway, 7 percent would commute by bus, and 6 percent would walk to the Project Area.

It is expected that the vast majority of workers (80 percent) would arrive between 6 AM and 7 AM, and depart between 3 PM and 4 PM. Construction activities would be expected to generate 20 worker trips by bus, 82 worker trips by subway, and 16 walk only trips during the peak hours. The total number of transit and pedestrian trips generated would be 118 trips per peak hour. Since the number of transit and walk trips generated would be below the *CEQR Technical Manual* threshold of 200 pedestrian trips, construction activities are not expected to result in transit or pedestrian impacts.

AIR QUALITY

INTRODUCTION

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

Emissions from non-road construction equipment and on-road vehicles have the potential to affect air quality. In addition, emissions from dust-generating construction activities (i.e., truck loading and unloading operations) also have the potential to affect air quality.

A quantitative analysis was performed to determine the potential for significant adverse impacts from these sources of air emissions generated during construction under the Proposed Actions. The *CEQR Technical Manual* procedures were used for the analysis.

CRITERIA POLLUTANTS

As required by the Clean Air Act, primary and secondary NAAQS have been established for six major criteria air pollutants: CO, NO_2, ozone, respirable PM (both $PM_{2.5}$ and PM_{10}), sulfur dioxide (SO_2), and lead. The NAAQS and associated averaging times are presented in Table 13-1, in Chapter 13, "Air Quality." In general, much of the heavy equipment used in construction is powered by diesel engines that have the potential to produce relatively high levels of nitrogen oxides (NO_x) and PM emissions. Dust generated by construction activities is also a source of PM emissions, and gasoline engines produce relatively high levels of CO. Since EPA mandates the use of ultra-low sulfur diesel (ULSD)[1] fuel for all highway and non-road diesel engines, sulfur oxides (SO_x) emitted from the Proposed Actions' construction activities would be negligible. Therefore, the pollutants analyzed for the construction period were NO_2, the component of NO_x that is a regulated pollutant, along with PM_{10}, $PM_{2.5}$, and CO.

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

NO_2, CO, $PM_{2.5}$, and PM_{10} emissions from on-site construction equipment were evaluated. CO and PM_{10}/$PM_{2.5}$ emissions from on-road vehicles and PM_{10}/$PM_{2.5}$ emissions from dust generating activities were also evaluated.

CONSTRUCTION ACTIVITY ASSESSMENT

Analysis Period

Overall, construction under the Proposed Actions is conservatively assumed to occur over a period of approximately eight years. Because the level of construction activities would vary among the development sites and the stages of construction, a determination of the reasonable worst-case analysis period for the construction air quality analysis was selected based on the estimated monthly construction work schedule, equipment to be employed and their usage factors, and equipment emission rates. The periods of highest emissions nearest to sensitive receptor locations are expected to be the periods of greatest impacts. Construction-related emissions were calculated for each calendar year throughout the duration of construction on a rolling annual and peak day basis for $PM_{2.5}$. $PM_{2.5}$ is selected for determining the worst-case periods for all pollutants analyzed because the ratio of predicted $PM_{2.5}$ incremental concentrations to impact criteria is anticipated to be higher than for other pollutants, based on previous analyses of construction air emissions. Therefore, 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 (hp). CO emissions may have a somewhat different pattern but would also be anticipated to be highest during periods when the most activity would occur.

Based on the construction emission profiles and the proximity of construction activities to receptors, two worst-case annual and short-term (i.e., 24-hour, 8-hour, and 1-hour) averaging periods were selected for analysis. The selected analysis periods are April 2022 and April 2026 for the short-term analysis periods. The 12-month periods between January 2022 to December 2022 and January 2026 to December 2026 were selected for the annual time periods.

The dispersion modeling analysis was performed for the reasonable worst-case annual and short-term (i.e., 24-hour, 8-hour, and 1-hour) averaging periods. The potential for significant adverse impacts was determined by comparing modeled NO_2, CO, and PM_{10} concentrations to the NAAQS, and modeled $PM_{2.5}$ and CO increments to applicable *de minimis* thresholds in the context of magnitude, duration, and locations and the size of the area affected by the concentration increment. Details on the relevant air quality regulations, standards, and guidance thresholds are presented in Chapter 13, "Air Quality."

Other less intensive construction phases are discussed qualitatively, based on the reasonable worst-case analysis period results.

Construction Emission Sources

Construction emissions sources include non-road construction equipment, on-road vehicles, and dust-generating construction activities. This information was used to calculate the emissions generated from the likely construction activities during the reasonable worst-case analysis period.

Non-road Construction Equipment

Non-road construction equipment includes equipment operating on-site, such as cranes, loaders, excavators, and dozers. **Table 18-9** presents the construction equipment modeled for each of the construction stages. Emission rates for NO_x, CO, PM_{10}, and $PM_{2.5}$ from non-road construction equipment engines were developed using the EPA's NONROAD2008 emission model (NONROAD).[2]

Table 18-9
Modeled Construction Equipment Sources

Demolition/Excavation/Foundation
Excavator
Compressor-Jackhammer
Generator
Pile Driver
Bulldozer
Wheeled Front End Loader
Crawler Crane
Concrete Pump
Building Superstructure/Exterior
Generator
Troweling Machine
Crawler Crane
Concrete Pump
Interior Fit-Out
Forklift
Crawler Crane

On-Road Vehicles

On-road vehicles include construction worker vehicles and construction trucks arriving to and from the construction sites, as well as operating on-site. Since emissions from non-road construction equipment and on-road vehicles may contribute to concentration increments concurrently, both non-road construction equipment and on-road vehicles were modeled together to address all local project-related construction emissions.

Vehicular engine emission factors were computed using the EPA Motor Vehicle Emission Simulator (MOVES2014a) emission model.[3]

Dust Generating Activities

In addition to engine emissions, fugitive dust emissions are generated from operations (e.g., transferring excavated materials into dump trucks), vehicle travel on-site, and excavated soil stockpiles. Fugitive dust emissions from operations were calculated using EPA procedures provided in AP-42 Table 13.2.3-1.[4] Road dust emissions from vehicle travel on-site were calculated using equations from EPA's AP-42, Section 13.2.1 for paved roads, and dust emissions from stockpiles were calculated using equations from EPA's AP-42, Section 13.2.4.

As discussed below under "Emissions Reduction Measures," the construction under the Proposed Actions would be required to follow the DEP Construction Dust Rules regarding construction-

[2] NONROAD Model (NONROAD Engines, Equipment, and Vehicles) User Guide, EPA420-R-05-013, December 2005.

[3] EPA, Motor Vehicle Emission Simulator (MOVES), User Guide for MOVES2014a, EPA-420-B-15-095, November 2015

[4] EPA Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources, Chapter 13: Miscellaneous Sources.

related dust emissions.[5] Therefore, a 50 percent reduction in particulate emissions from fugitive dust was conservatively assumed in the calculations to account for required dust control measures that would be employed at the development sites, such as wet suppression.

Emissions Reduction Measures

Measures would be taken to reduce pollutant emissions during construction under the Proposed Actions in accordance with all applicable laws, regulations, and building codes. These include the following dust suppression measures, idling restrictions, clean fuel, and diesel equipment reduction:

- *Dust Control.* All measures required by the DEP's *Construction Dust Rules*[6] regulating construction-related dust emissions would be implemented. The rules require implementation of a dust control plan including a robust watering program. For example, all trucks hauling loose material would be equipped with tight-fitting tailgates and their loads securely covered prior to leaving the development sites. Water sprays would be used for all demolition, excavation, and transfer of soils to ensure that materials would be dampened as necessary to avoid the suspension of dust into the air. Loose materials would be watered, stabilized with a chemical suppressing agent, or covered.
- *Idling Restriction.* In accordance with Title 24, Chapter 1, Subchapter 7, Section 24-163 of the New York City Administrative Code, the local law restricting unnecessary idling on roadways, vehicle idle time would be restricted to 3 minutes except for vehicles using their engines to operate a loading, unloading, or processing device (e.g., concrete mixing trucks).
- *Clean Fuel*. In accordance with diesel fuel standards established by EPA (40 Codes of Federal Regulations 80, Subpart I), ULSD[7] fuel would be used exclusively for all diesel on-road and non-road engines.
- *Diesel Equipment Reduction*. In accordance with the New York City Noise Control Code as discussed below in "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 the grid power in lieu of diesel engines includes, but may not be limited to, hoists, the tower cranes that would be employed during construction, and small equipment such as welders.

In addition, construction activities for the Applicant Sites are anticipated to implement the following measures to further reduce air pollutant emissions during construction.

- *Best Available Tailpipe Reduction Technologies*. Non-road diesel engines with a power rating of 50 hp or greater and controlled truck fleets (i.e., truck fleets under long-term contract with the project) including but not limited to concrete mixing and pumping trucks would utilize BAT technology for reducing DPM emissions. Diesel particulate filters (DPFs) have been identified as being the tailpipe technology currently proven to have the highest reduction capability. Construction contracts would specify that all diesel non-road engines rated at 50

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[5] http://www.nyc.gov/html/dep/html/air/construction_dust_debris.shtml

[6] http://www.nyc.gov/html/dep/html/air/construction_dust_debris.shtml

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

hp or greater would utilize DPFs, either installed by the original equipment manufacturer or retrofitted. Retrofitted DPFs must be verified by EPA or the California Air Resources Board. Active DPFs or other technologies proven to achieve an equivalent reduction may also be used.

The analysis took into account the emissions reduction measures listed above that would be implemented during construction under the Proposed Actions.

Dispersion Model

Potential impacts from the Proposed Actions' non-road construction equipment, on-road vehicles, and dust-generating activities were evaluated using the EPA/AMS AERMOD model (version 16216r), a refined dispersion model. AERMOD is a state-of-the-art dispersion model, applicable to rural and urban areas, flat and complex terrain, surface and elevated releases, and multiple sources (including point, area, and volume sources). AERMOD is a steady-state plume model that incorporates current concepts about flow and dispersion in complex terrain and includes updated treatments of the boundary layer theory, understanding of turbulence and dispersion, and handling of terrain interactions.

Source Simulation

For short-term model scenarios (predicting concentration averages for periods of 24 hours or less), non-road construction sources which would likely remain at a single location on a given day, were simulated as point sources in the model. Other non-road construction sources, such as excavators or loaders, which would move around a site on any given day, as well as on-road vehicles, were simulated as area sources in the model. For the annual analysis all sources are anticipated to move around each site throughout the year and therefore these sources were simulated as area sources in the model.

Meteorological Data

The meteorological data set consists of five consecutive years of meteorological data: surface data collected at LaGuardia Airport (2012–2016), and concurrent upper air data collected at Brookhaven, New York. The meteorological data provide hour-by-hour wind speeds and directions, stability states, and temperature inversion elevation over the five-year period. These data sets were processed using the EPA AERMET program (version 16216) to develop data in a format which can be readily processed by the AERMOD model. The land uses around the site where meteorological surface data is available was classified using categories defined in digital United States Geological Survey (USGS) maps to determine surface parameters used by the AERMET program.

Receptor Locations

Receptors were placed at publicly accessible locations, at adjacent sidewalk locations, and at building façades where residential uses were located above commercial uses.

In addition, a ground-level receptor grid extending 1 kilometer from the Rezoning Area was placed to enable extrapolation of concentrations at locations more distant from construction activities.

Background Concentrations

To estimate the maximum expected total pollutant concentrations, the modeled impacts from the emission sources were added to an ambient background value that accounts for existing pollutant concentrations from other sources. The background levels were based on concentrations monitored at the nearest NYSDEC ambient air monitoring stations, consistent with the background concentrations used for the operational stationary source air quality analysis (see Chapter 13, "Air Quality").

PROBABLE IMPACTS OF THE PROPOSED ACTIONS

Maximum predicted concentrations during the representative worst-case construction period for the Proposed Actions are presented in **Table 18-10**. To estimate the maximum total pollutant NO_2, CO, and PM_{10} concentrations, the modeled concentrations from construction for the Proposed Actions were added to a background value that accounts for existing pollutant concentrations from other nearby sources. As shown in **Table 18-10**, the maximum predicted total concentrations of NO_2, CO, and PM_{10} are below the applicable NAAQS.

Table 18-10
Maximum Pollutant Concentrations from the Proposed Actions

Pollutant	Averaging Period	Units	Maximum Modeled Impact	Background Concentration[1]	Total Concentration	Criterion
NO_2	Annual	$\mu g/m^3$	18.4	32.9	51.3	100[2]
CO	1-hour	$\mu g/m^3$	21,089	2,176	23,265	40,000[2]
	8-hour	$\mu g/m^3$	4,652	2,023	6,675	10,000[2]
PM_{10}	24-hour	$\mu g/m^3$	12	38	50	150[2]
$PM_{2.5}$	24-hour	$\mu g/m^3$	7.0	N/A	7.0	7.7[3]
	Annual—Local	$\mu g/m^3$	0.24	N/A	0.24	0.3[4]
	Annual—Neighborhood	$\mu g/m^3$	0.07	N/A	0.07	0.1[4]

Notes:
N/A—Not Applicable
[1] The background levels are based on the most representative concentrations monitored at DEC ambient air monitoring stations (see Table 15-5 in Chapter 13, "Air Quality").
[2] NAAQS
[3] $PM_{2.5}$ *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 $\mu g/m^3$
[4] $PM_{2.5}$ *de minimis* criterion—annual (local and neighborhood scale)

The maximum predicted $PM_{2.5}$ concentrations would not exceed the applicable CEQR *de minimis* thresholds in the 24-hour[8] and annual averaging periods.

Emissions from the other less intensive construction stages would be less than the emissions during the peak construction period. The resulting concentrations from the non-peak periods of construction are expected to be less than the concentrations presented in **Table 18-10**. Therefore, there would be no significant adverse air quality impacts as a result of the construction under the Proposed Actions.

NOISE

INTRODUCTION

Potential impacts on community noise levels could result from construction equipment operation as well as construction vehicles and delivery vehicles traveling to and from the site. Noise and vibration levels at a given location are dependent on the kind and number of pieces of construction equipment being operated, 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

[8] The CEQR 24-hour $PM_{2.5}$ *de minimis* criterion is equal to half the difference between the 24-hour background concentration (23.9 $\mu g/m^3$) and the 24-hour standard (35 $\mu g/m^3$).

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 significant construction noise sources are expected to be impact equipment such as jackhammers, pile drivers, and paving breakers, as well as the movements of trucks.

Construction noise is regulated by the New York City Noise Control Code (Chapter 24 of the Administrative Code of the City of New York, or Local Law 113) and the DEP Rules for Citywide Construction Noise Mitigation (Chapter 28 of Title 15 of the Rules of the City of New York). These requirements mandate that specific construction equipment and motor vehicles meet specified noise emission standards; that, absent special permission, construction activities be limited to weekdays between the hours of 7:00 AM and 6:00 PM; and that construction materials be handled and transported in such a manner as not to create unnecessary noise. As described above, for weekend and after hours work, permits would be required to be obtained, as specified in the New York City Noise Control Code. As required under the New York City Noise Control Code, a site-specific noise mitigation plan or plans for construction pursuant to the Proposed Actions would be required and implemented that may include source controls, path controls, and receiver controls.

CONSTRUCTION NOISE IMPACT CRITERIA

Chapter 22, Section 100 of the *CEQR Technical Manual* breaks construction duration into "short-term" and "long-term" and states that construction noise is not likely to require analysis unless it "affects a sensitive receptor over a long period of time." Consequently, the construction noise analysis considers both the potential for construction 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 produce noise ("receptors") in evaluating potential construction noise effects.

The noise impact criteria described in Chapter 19, Section 410 of the *CEQR Technical Manual* serve as a screening-level threshold for potential construction noise impacts. If construction of a proposed project would not result in any exceedances of these criteria at a given receptor, then that receptor would not have the potential to experience a construction noise impact. However, if construction of a proposed project could result in exceedances of these noise impact criteria, then further consideration of the intensity and duration of construction noise at that receptor is warranted. The screening level noise impact criteria for mobile and on-site construction activities are as follows:

- If the No Action noise level is less than 60 dBA $L_{eq(1)}$, a 5 dBA $L_{eq(1)}$ or greater increase would require further consideration.
- If the No Action noise level is between 60 dBA $L_{eq(1)}$ and 62 dBA $L_{eq(1)}$, a resultant $L_{eq(1)}$ of 65 dBA or greater would require further consideration.
- If the No Action noise level is equal to or greater than 62 dBA $L_{eq(1)}$, or if the analysis period is a nighttime period (defined in the CEQR criteria as being between 10:00 PM and 7:00 AM), the threshold requiring further consideration would be 3 dBA $L_{eq(1)}$.

NOISE ANALYSIS FUNDAMENTALS

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

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.

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

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

CONSTRUCTION NOISE MODELING

Noise effects from construction activities were evaluated using the CadnaA model, a computerized model developed by DataKustik for noise prediction and assessment. The model can be used for the analysis of a wide variety of noise sources, including stationary sources (e.g., construction equipment, industrial equipment, power generation equipment) and transportation sources (e.g., roads, highways, railroad lines, busways, waterways, airports). The model takes into account the reference sound pressure levels of the noise sources at 50 feet, attenuation with distance, ground contours, reflections from barriers and structures, attenuation due to shielding, etc. The CadnaA model is based on the acoustic propagation standards promulgated in International Standard ISO 9613-2. 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 to be used with the CadnaA model includes CAD drawings defining planned site work areas, adjacent building footprints and heights, locations of streets, and locations of sensitive receptors. For each analysis period, the geographic location and operational characteristics of each piece of construction equipment were input to the model. Reflections and shielding by barriers and project elements erected on the construction site and shielding from adjacent buildings were also accounted for in the model. The model produces A-weighted $L_{eq(1)}$ noise levels at each receptor location for each analysis period, as well as the contribution from each noise source.

NOISE ANALYSIS METHODOLOGY

The construction noise methodology involved the following process:

1. Select analysis hour for cumulative on-site equipment and construction truck noise analysis. The 7:00 AM to 8:00 AM hour was selected as the analysis hour because this would be the hour when the highest number of truck trips to and from the construction site would overlap with on-site equipment operation.
2. Select receptor locations for construction noise analysis. Selected receptors were representative of open space, residential, or other noise-sensitive uses potentially affected by the construction pursuant to the Proposed Actions during operation of on-site construction equipment and/or along routes taken to and from the projected development sites by construction trucks, as shown in **Figure 18-2**.
3. Select analysis hour for construction mobile source noise analysis. The 6:00 AM to 7:00 AM hour was selected as the analysis hour because this would be the hour when the highest number of worker vehicle and construction truck trips to and from the construction site would occur.
4. Conduct Noise PCE screening for construction mobile source noise. At each of the selected receptor locations, the construction worker vehicle and construction truck trips were converted to Noise PCEs and compared to the existing level of Noise PCEs to determine whether there would be a potential doubling, which would result in an exceedance of CEQR construction noise screening thresholds (i.e., a 3 dBA increase in noise levels).
5. Establish existing noise levels at selected receptors. Noise levels were measured at several at-grade locations, and calculated for the other noise receptor locations included in the analysis. **Figure 18-2** shows the construction noise measurement locations. Existing noise levels at noise receptors other than the selected noise measurement locations were established using the CadnaA model along with existing condition traffic information.
6. Establish worst-case noise analysis periods under the projected construction phasing schedule. The worst-case noise analysis periods are the periods during the conceptual construction schedule that would be expected to have the greatest potential construction noise effects. The selected time periods are described below in the “Analysis Periods” section. During each the periods when renovation and re-tenanting activities would be occurring, such activities were assumed to be occurring at a different location since those activities would occur for only approximately 3 months in any one location. The assumed location of renovation and re-tenanting activities in each analysis period was selected to provide the maximum overlap of construction noise from building construction and renovation and re-tenanting.
7. Calculate construction noise levels for each analysis period at each receptor location.[9] Given the on-site equipment and construction truck trips that are expected during each of the analysis periods, and the location of the equipment, which was based on construction logistics diagrams and construction truck trip assignments, a CadnaA model file for each analysis

[9] At receptors 2 and 10, a worst-case construction noise level of 85 dBA was assumed to occur through construction of Building 11 and the Gateway Building, respectively. 85 dBA represents the property-line noise level limit according to the New York City Noise Control Code. This is a very conservative estimate of construction noise at these receptors. A more refined analysis will be conducted between the Draft Environmental Impact Statement and Final Environmental Impact Statement to more precisely determine the construction noise effects at these receptors.

period was created. All model files included each of the construction noise sources during the analysis period and hour, calculation points representing multiple locations on various façades and floors of the associated receptors previously identified, as well as the noise control measures that would be used, as described below.

8. Determine total noise levels and noise level increments during construction. For each analysis period and each noise receptor, the calculated level of construction noise was logarithmically added to the existing noise level to determine the cumulative total noise level. The existing noise level at each receptor was then arithmetically subtracted from the cumulative noise level in each analysis period to determine the noise level increments.
9. Establish construction noise duration. For each receptor, the noise level increments in each analysis period were examined to determine the duration during construction that the receptor would experience substantially elevated noise levels.
10. Compare noise level increments with operational impact criteria as set forth in Chapter 19, Section 410 of the *CEQR Technical Manual*. Where exceedances of this screening threshold are predicted, based on the magnitude and duration of predicted noise level increases due to construction, a determination of whether the Proposed Actions would have the potential to result in significant adverse construction noise effects is made.

NOISE ANALYSIS PERIODS

The detailed construction noise analysis estimates construction noise levels based on projected activity and equipment usage for various phases of construction of the Proposed Project. Eleven time periods were selected for detailed construction noise analysis. These time periods were selected to capture each major construction phase (i.e., excavation/foundation work, superstructure work, interior fit-out work, etc.) at each proposed construction site as well as renovation and re-tenanting work throughout the Project Area, including major overlaps of construction stages between nearby sites. These are the time periods with the potential to result in the maximum construction noise at nearby receptors (i.e., time periods when multiple projected development sites would be under construction) and were chosen to represent maximum potential impacts across the spectrum of receptor locations. Each analysis time period conservatively represents 6 to 12 months of time based on the duration of activities that would be underway during the time period, with the exception of April 2020, which represents a longer period renovation and re-tenanting without any other construction. The 11 time periods selected for analysis are shown in **Table 18-11**.

Table 18-11
Construction Noise Analysis Periods

Analysis Period	Sites Under Construction	Completed and Occupied Sites
October 2019	Building 11 (demolition), Finger Buildings (renovation/re-tenanting), 39th Street Buildings (renovation/re-tenanting)	Finger Buildings, 39th Street Buildings
April 2020	Finger Buildings (renovation/re-tenanting), 39th Street Buildings (renovation/re-tenanting)	Finger Buildings, 39th Street Buildings
April 2022	Building 21 (Demolition/Excavation/Foundation/Superstructure/Exterior), Finger Buildings (renovation/re-tenanting)	Finger Buildings, 39th Street Buildings
April 2023	Building 21 (Superstructure/Exterior), Finger Buildings (renovation/re-tenanting), 39th Street Buildings (renovation/re-tenanting)	Finger Buildings, 39th Street Buildings
August 2023	Building 21 (Superstructure/Exterior/Interior Fit-Out), Finger Buildings (renovation/re-tenanting), 39th Street Buildings (renovation/re-tenanting)	Finger Buildings, 39th Street Buildings
April 2024	Building 11 (Excavation/Foundation/Superstructure/Exterior)	Finger Buildings, 39th Street Buildings, Building 21
August 2024	Building 11 (Superstructure/Exterior)	Finger Buildings, 39th Street Buildings, Building 21
August 2025	Building 11 (Superstructure/Exterior/Interior Fit-Out)	Finger Buildings, 39th Street Buildings, Building 21
April 2026	Gateway (Demolition/Excavation/Foundation/Superstructure/Exterior)	Finger Buildings, 39th Street Buildings, Building 21, Building 11
August 2026	Gateway (Superstructure/Exterior)	Finger Buildings, 39th Street Buildings, Building 21, Building 11
August 2027	Gateway (Superstructure/Exterior/Interior Fit-Out)	Finger Buildings, 39th Street Buildings, Building 21, Building 11

The specific stages of construction (i.e., demolition, excavation/foundation, superstructure, interior fit-out) that would occur within each of the selected analysis periods are presented in **Figure 18-2**.

NOISE REDUCTION MEASURES

Construction pursuant to the Proposed Actions would be required to follow the New York City Noise Control Code, which requires the implementation of 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), at a minimum, the following measures would be implemented in accordance with the New York City Noise Code:

- 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 18-12** shows the noise levels for typical construction equipment and the noise level emissions assumed for equipment that would be used for construction of the Proposed Actions.
- Where feasible and practicable, construction sites would be configured to minimize back-up alarm noise. In addition, trucks would generally not be allowed to idle more than three minutes at the construction site as mandated by 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.
- As early in the construction period as logistics would allow, diesel- or gas-powered equipment would be replaced with electrical-powered equipment such as welders, water pumps, bench saws, and table saws (i.e., early electrification) to the extent feasible and practicable.
- Noise barriers constructed from plywood or other materials would be utilized to provide shielding (e.g., the construction sites would have a minimum 8-foot barrier);
- Where logistics allow, truck deliveries would take place behind the noise barriers; and
- Path noise control measures (i.e., portable noise barriers, panels, enclosures, and acoustical tents, where feasible) would be used for certain dominant noise equipment to the extent feasible and practical based on the results of the construction noise calculations. The details to construct portable noise barriers, enclosures, tents, etc. are shown in DEP's "Rules for Citywide Construction Noise Mitigation."[10]

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

Table 18-12
Typical Construction Equipment Noise Emission Levels (dBA)

Equipment List	L_{max} Noise Level Limit at 50 feet[1]
Backhoe	80
Bar Bender	80
Circular Saw	69
Compactor (ground)	80
Compressor (air, less than or equal to 350 cfm)	53
Compressor (air, greater than 350 cfm)	80
Concrete Mixer Truck	85
Concrete Trowel	67[2]
Concrete Pump Truck	82
Concrete Saw	90
Concrete Vibrator	82
Crane	85
Dozer	85
Drill Rig Truck	84
Dump Truck	84
Dumpster/Rubbish Removal	78
Excavator	85
Flat Bed Truck	84
Forklift	60
Front End Loader	80
Generator	82
Generator (< 25 KVA, VMS signs)	70
Gradall	85
Hoist	75[3]
Impact Pile Driver	95
Jackhammer	73
Man Lift	85
Paver	85
Pickup Truck	55
Pumps	77
Roller	85
Soil Mix Drill Rig	80
Table Saw	69
Tractor	84
Welder / Torch	73

Sources:
[1] "Rules for Citywide Construction Noise Mitigation," Chapter 28, DEP, 2007.
[2] Columbia Manhattanville Noise Certification.
[3] "Noise Control for Construction Equipment…" Report for Hydro Quebec, 1985.

NOISE RECEPTOR SITES

Within the study area, receptor locations 1 to 83 (these are in addition to the measurement sites M1 to M8 as established in Chapter 15, "Noise") were selected to represent buildings or noise-sensitive open space locations close to the projected development sites for the construction noise analysis. These receptors were either located adjacent to planned areas of activity or streets where construction trucks would pass. At some buildings, multiple façades were analyzed as receptors. At high-rise buildings, noise receptors were selected at multiple elevations. At open space locations, e.g., waterfront open space, receptors were placed at grade. The receptor sites selected for detailed analysis are representative locations where maximum construction noise generated by the Proposed Actions could be expected. At-grade noise measurements were conducted at sites M1 through M6 to determine existing noise levels in the study area.

Figure 18-2 shows the locations of the nine noise receptor sites, and **Table 18-13** lists the eight noise measurement sites as well as the nine noise receptor sites and the associated land use at these sites.

Table 18-13
Noise Receptor Locations by Location and Associated Land Use

Receptor	Location	Associated Land Use
M1	41st Street, East of 1st Avenue	N/A (measurement location)
M2	39th Street, East of 1st Avenue	N/A (measurement location)
M3	36th Street, West of 3rd Avenue	N/A (measurement location)
M4	33rd Street, East of 2nd Avenue	N/A (measurement location)
M5	2nd Avenue between 33rd Street and 32nd Street	N/A (measurement location)
M6	32nd Street, West of 3rd Avenue	N/A (measurement location)
1	122 31st Street	Residential
2	Industry City Buildings 9 and 10	Industry City
3	114 32nd Street	Residential
4	911-929 3rd Avenue	Open Space
5	950-962 3rd Avenue	Residential
6	313 38th Street	Residential
7	166 41st Street	Residential
8	4124 2nd Avenue	Residential
9	225 43rd Street	Residential
10	968 3rd Avenue	Residential

NOISE MEASUREMENT RESULTS

Equipment Used During Noise Survey

Measurements were performed using Brüel & Kjær Sound Level Meters (SLMs) Type 2260 Brüel & Kjær ½-inch microphones Type 4189, and Brüel & Kjær Sound Level Calibrators Type 4231. The SLMs had a valid laboratory calibration within 1 year, as is standard practice. The Brüel & Kjær SLMs are a Type 1 instrument according to ANSI Standard S1.4-1983 (R2006). The microphones were mounted at a height of approximately five feet above the ground surface on a tripod and at least approximately five feet away from any large reflecting surfaces. The SLMs were calibrated before and after readings with Brüel & Kjær Type 4231 Sound Level Calibrators using the appropriate adaptor. Measurements were made on the A-scale (dBA). The data were digitally recorded by the sound level meters and displayed at the end of the measurement period in units of dBA. Measured quantities included L_{eq}, L_1, L_{10}, L_{50}, L_{90}, and $^1/_3$ octave band levels. A windscreen was used during all sound measurements except for calibration. All measurement procedures were based on the guidelines outlined in ANSI Standard S1.13-2005.

Noise Survey Results

The baseline noise levels at each of the noise survey locations during the AM construction noise peak hours (i.e., 7:00 AM to 9:00 AM) are shown in **Table 18-14**. At all noise measurement locations, roadway traffic was the dominant noise source, with contributions from rail traffic at sites M1, M4, and M5.

In terms of *CEQR Technical Manual* criteria, receptor Site M1 is in the "marginally acceptable" category, Sites M2, M3, M4, and M5 are in the "marginally unacceptable" category, and Site M6 is in the "acceptable" category.

Table 18-14
Noise Survey Results in dBA

Receptor	Measurement Location	L_{EQ}
M1	41st Street, East of 1st Avenue	62.5
M2	39th Street, East of 1st Avenue	68.7
M3	36th Street, West of 3rd Avenue	71.0
M4	33rd Street, East of 2nd Avenue	69.7
M5	2nd Avenue between 33rd Street and 32nd Street	67.1
M6	32nd Street, West of 3rd Avenue	62.0

CONSTRUCTION NOISE ANALYSIS RESULTS

As described in the methodology above, a mobile-source screening analysis was conducted for construction of the proposed project at each of the noise receptor locations. The mobile-source noise analysis examined the worst-case condition for project trip generation, which would occur during the 6 AM hour and consequently includes both worker auto trips to the project site as well as peak hourly construction truck trips to and from the site. It is the hour of the day that mobile-source construction noise effects would be mostly likely to occur. The mobile-source screening analysis showed that construction worker and truck trips would not have the potential to result in a doubling of Noise PCEs at any receptor locations, and consequently would not result in a significant adverse noise effect. The cumulative effects of construction vehicle trips and operation of on-site construction equipment are discussed below. The full construction mobile source noise screening analysis is shown in **Appendix G**, "Construction."

Using the methodology described above, and considering the noise abatement measures from path controls specified above, cumulative noise analyses were performed to determine maximum 1-hour equivalent ($L_{eq(1)}$) noise levels that would be expected during each of the 11 construction noise analysis periods (see **Table 18-11**) at each of the noise receptor locations. This resulted in a predicted range of peak hourly construction noise levels throughout the construction period.

The results of the detailed construction noise analysis are summarized in **Table 18-15** and the complete construction noise analysis is presented in **Appendix G**, "Construction."

Table 18-15
Construction Noise Analysis Results in dBA

Receptor	Location	Existing L_{eq}		Total L_{eq}		Change in L_{eq}	
		Min	Max	Min	Max	Min	Max
1	122 31st Street	72.8	82.3	72.8	82.3	0.0	0.1
2[1]	Industry City Buildings 9 and 10	69.7	83.9	74.6	85.0[1]	0.0	15.3
3	114 32nd Street	72.2	75.3	72.2	75.4	0.0	0.0
4	911-929 3rd Avenue	77.1	77.6	77.1	78.5	0.0	1.2
5	950-962 3rd Avenue	72.0	82.4	72.0	82.4	0.0	4.3
6	313 38th Street	74.1	77.1	74.1	77.5	0.0	0.7
7	166 41st Street	63.3	63.9	63.3	81.4	0.0	18.0
8	4124 2nd Avenue	63.3	68.6	63.3	71.4	0.0	3.8
9	225 43rd Street	63.3	67.0	63.3	67.1	0.0	0.3
10[1]	968 3rd Avenue	70.2	79.8	70.2	85.0[1]	0.0	14.8

Note:
[1] Construction noise at these receptors has been conservatively assumed to reach the maximum level allowable by the New York City Noise Control Code throughout the duration of construction at the nearest work area. A refined analysis will be conducted between the Draft and Final EIS to more precisely determine the construction noise levels at these receptors.

The maximum predicted noise levels shown in **Table 18-15** would occur during the most noise-intensive activities of construction at their closest distance to the receptors, which typically do not occur every day throughout the months that they occur and do not occur during every hour on days that they occur. During hours when the loudest pieces of construction equipment (e.g., pile driver, jackhammer, etc.) are not in use, receptors would experience lower construction noise levels. As described below, construction noise levels would fluctuate during the construction period at each receptor, with the greatest levels of construction noise occurring for limited periods during construction.

Receptors East of the Gowanus Expressway

At residences and open spaces located at least one block away from the new building construction and renovation/re-tenanting activities associated with the Proposed Actions—Receptors 1, 3, 4, and 6—the existing noise levels are in the low 60s to low 80s dBA depending on proximity to and shielding from the Gowanus Expressway and height above grade. New building construction and renovation/re-tenanting activities associated with the Proposed Actions are predicted to produce noise levels at these receptors up to the low 70s dBA, resulting in increases less than 2 dBA. Increases in this range would be considered imperceptible and would not exceed the CEQR construction noise impact screening threshold. Consequently, construction associated with the Proposed Actions would not have the potential to result in any significant adverse impacts at these receptors.

Residential Receptor at 166 41st Street

At the residences in 166 41st Street located on the south side of 41st Street Between 1st and 2nd Avenues—Receptor 7—the existing noise levels are in the low 60s dBA. New building construction and renovation/re-tenanting activities associated with the Proposed Actions are predicted to produce noise levels at this receptor up to the low 80s dBA, resulting in noise level increases of up to approximately 18 dBA during the most noise-intensive stages of construction (i.e., truck operations along 41st Street during the potential overlap of Building 21 superstructure and exterior façade installation with renovation and re-tenanting at Building 20), which would have a duration of up to approximately three months. The predicted noise level increases at these residential locations during the most intensive work would be noticeable and potentially intrusive. During the remainder of the construction period, noise levels at these receptors would be up to the mid 60s dBA, resulting in noise level increases of up to approximately 5 dBA at times during the 22 months of excavation, foundation, superstructure, and façade construction of Building 21; and noise levels would be up to the low 60s dBA, resulting in increases of less than 3 dBA throughout the remainder of construction. These noise levels would be in the range considered typical for Brooklyn at locations along heavily trafficked avenues such as 2nd Avenue. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these receptors would be in the "clearly unacceptable" range at times during three months of renovation and re-tenanting immediately adjacent to the receptor, but would be in the "marginally acceptable" to "marginally unacceptable" range during the remainder of construction.

The construction activity that would produce the highest noise levels at this receptor would be un-shielded deliveries and truck operations along 41st Street associated with renovation and re-tenanting at Building 20, which would occur over the course of approximately three months. Consequently, the maximum noise levels would not persist throughout the construction period. Construction noise levels occurring during activities other than renovation and re-tenanting at Building 20 would result in noise level increases up to approximately 5 dBA and exceedances of CEQR screening threshold for less than 24 months.

Based on field observations, the residences at 166 41st Street appear to have insulated glass windows. As described in Chapter 15, "Noise," these residences would experience a significant increase in noise in the future with the Proposed Actions as a result of increased traffic on 41st Street once the proposed parking facility in Building 21 is completed and operational. As a result, an alternative means of ventilation (i.e., window air conditioning units) will be offered to these residences. With the insulated glass windows and alternate means of ventilation, the building would be expected to provide approximately 25 dBA window/wall attenuation. Consequently, interior noise levels during worst-case construction in this area would be in the mid-40s to mid-50s dBA, up to approximately 13 dBA higher than the 45 dBA threshold recommended for residential use according to CEQR noise exposure guidelines.

Based on the prediction of construction noise levels up to the low 80s dBA with construction noise level increments up to approximately 17 dBA over the course of 3 months and a duration of CEQR screening threshold exceedances occurring over the course of approximately 22 months, construction noise associated with the Proposed Actions would not have the potential to result in a significant adverse impact at 166 41st Street (i.e., Receptor 7).

Residential Receptors on West Side of 3rd Avenue South of 36th Street

At the residences on the west side of 3rd Avenue south of 36th Street—Receptor 5—the existing noise levels are in the low 70s to low 80s dBA. Since these receptors would no longer be in place during construction of the Gateway Building (they are within the footprint of the proposed Gateway Building), they would not experience noise from new Building construction. Renovation/re-tenanting activities associated with the Proposed Actions are predicted to produce noise levels at this receptor up to the high 70s dBA, resulting in noise level increases of up to approximately 4 dBA during the most noise-intensive stages of construction (i.e., truck operations along 36th Street during renovation/re-tenanting at Buildings 2 and 3), which would have a duration of up to approximately six months. The predicted noise level increases at these residential locations during the most intensive work would be noticeable and potentially intrusive. During the remainder of the construction period, noise levels at these receptors would be up to the high 70s dBA, resulting in noise level increases less than 3 dBA. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these receptors would be in the "clearly unacceptable" range at times during 6 months of renovation and re-tenanting immediately adjacent to the receptor, but would be in the "marginally unacceptable" range during the remainder of construction (existing noise levels at these receptors are in the "marginally unacceptable" to "clearly unacceptable" range due to proximity to the Gowanus Expressway).

The construction activity that would produce the highest noise levels at this receptor would be un-shielded deliveries and truck operations along 36th Street associated with renovation and re-tenanting at Buildings 2 and 3, which would occur over the course of approximately six months. Consequently, the maximum noise levels would not persist throughout the construction period. Construction noise levels occurring during activities other than renovation and re-tenanting at Buildings 2 and 3 would not result in exceedances of CEQR screening threshold.

Based on the prediction of construction noise levels up to the high 70s dBA, with construction noise level increments up to approximately 4 dBA over the course of six months and no exceedances of the CEQR construction noise screening threshold occurring over the remainder of the construction period, construction noise associated with the Proposed Actions would not have the potential to result in a significant adverse impact at the residences on the west side of 3rd Avenue south of 36th Street (i.e., Receptor 5).

Residential Receptor at 968 3rd Avenue

At the residential receptor at 968 3rd Avenue on the west side of 3rd Avenue at 37th Street—Receptor 10—the existing noise levels are in the low 70s to low 80s dBA. New building construction and renovation/re-tenanting activities associated with the Proposed Actions are predicted to produce noise levels at this receptor up to the mid 80s dBA, resulting in noise level increases of up to approximately 15 dBA during the most noise-intensive stages of construction (i.e., construction of the Gateway Building), which would have a duration of up to approximately 24 months. The predicted noise level increases at this residential building during the most intensive work would be noticeable and potentially intrusive. During the remainder of the construction period, noise levels at these receptors would be up to the low 70s dBA, resulting in noise level increases less than 3 dBA. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these receptors would be in the "clearly unacceptable" range at times during 24 months of Gateway Building construction immediately adjacent to the receptor, but would be in the "marginally unacceptable" range during the remainder of construction (existing noise levels at this receptor are in the "marginally unacceptable" to "clearly unacceptable" range due to proximity to the Gowanus Expressway).

Based on the prediction of construction noise levels up to the mid 80s dBA, with construction noise level increments up to approximately 15 dBA over the course of 24 months, construction noise associated with the Proposed Actions would have the potential to result in a significant adverse impact at the residential building at 968 3rd Avenue (i.e., Receptor 10). As mitigation for this potential noise impact, upon construction of the Gateway Building, the Applicant would offer air conditioning units to residences of the affected building that do not currently have this alternative means of ventilation. With such measures and the building's existing insulated glass windows, the building façade would provide approximately 25 dBA window/wall attenuation, resulting in interior noise levels less than 45 dBA, which would be considered acceptable according to CEQR noise exposure guidelines. This proposed mitigation is described in Chapter 20, "Mitigation."

Receptors South of 41st Street

At residences located south of 41st Street—Receptors 8 and 9—the existing noise levels are in the low 60s to high 60s dBA depending on proximity to and shielding from the Gowanus Expressway and height above grade. New building construction and renovation/re-tenanting activities associated with the Proposed Actions are predicted to produce noise levels at these receptors in the high 30s to mid 60s dBA, resulting in increases less than 3 dBA. Increases in this range would be considered imperceptible and would not exceed the CEQR construction noise impact screening threshold. Consequently, construction associated with the Proposed Actions would not have the potential to result in any significant adverse impacts at these receptors.

882 3rd Avenue, i.e., Industry City Buildings 9 and 10

At the academic uses contained in Industry City Buildings 9 and 10, located at 882 3rd Avenue—Receptor 2—the existing exterior noise levels are in the low 70s to low 80s dBA depending on proximity to and shielding from the Gowanus Expressway and height above grade. New building construction and renovation/re-tenanting activities associated with the Proposed Actions are predicted to produce noise levels at these receptors up to the mid 80s dBA, resulting in increases up to approximately 15 dBA during the most noise-intensive stages of construction (i.e., construction of the Gateway Building), which would have a duration of up to approximately 24 months. The predicted noise level increases at this residential building during the most intensive work would be noticeable and potentially intrusive. During the remainder of the construction period, noise levels at these receptors would be up to the low 70s dBA, resulting in noise level increases less than 3 dBA. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these receptors would be in the “clearly unacceptable” range at times during 24 months of Building 11 construction immediately adjacent to the receptors, but would be in the “marginally unacceptable” range during the remainder of construction (existing noise levels at these receptors are in the “marginally unacceptable” to “clearly unacceptable” range due to proximity to the Gowanus Expressway).

Based on the prediction of construction noise levels up to the mid 80s dBA, with construction noise level increments up to approximately 15 dBA over the course of 24 months, construction noise associated with the Proposed Actions would have the potential to result in a significant adverse impact at the academic uses contained in Buildings 9 and 10 (i.e., Receptor 20). These receptors are discussed further in Chapter 20 “Mitigation.”

CONSTRUCTION NOISE ANALYSIS CONCLUSIONS

Construction under the Proposed Actions is expected to result in elevated noise levels at the nearest receptors and noise due to construction that would at times be noticeable and potentially intrusive. However, at most receptors analyzed, noise from construction (including renovation and re-tenanting) would be intermittent and of limited duration, and interior noise levels would generally not exceed recommended interior noise levels, according to *CEQR Technical Manual* noise exposure guidelines for extended periods. Consequently, noise produced by construction associated with the Proposed Actions would not rise to the level of a significant adverse impact at these receptors.

However, absent additional noise controls or a more refined analysis of construction noise, noise levels due to construction-related activities are predicted to result in noise levels at two receptors in the vicinity of the Proposed Project’s work areas that would constitute a potential significant adverse construction-period noise impact. These receptors are the academic uses in Industry City Buildings 9 and 10 and the residential building at 968 3rd Avenue. At these receptors, construction could produce noise level increases that would be noticeable and potentially intrusive over the course of construction at the nearest construction work areas. The predicted construction noise levels at these locations have a magnitude and duration that would constitute a significant adverse impact.

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 projected development sites.

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 peak particle velocity (PPV) of 0.50 inches/second as specified in the DOB *Technical Policy and Procedure Notice (TPPN) #10/88*. For non-fragile buildings, vibration levels below 0.60 inches/second would 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 vibration decibels (VdB) would have the potential to result in significant adverse impacts if they were to occur for a prolonged period of time.

ANALYSIS METHODOLOGY

Table 18-16 shows vibration source levels for typical construction equipment.

Table 18-16
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
Hydromill (slurry wall)	In soil	0.008	66
	In rock	0.017	75
Clam shovel drop (slurry wall)		0.202	94
Vibratory Roller		0.210	94
Hydraulic Break Ram		0.089	87
Large bulldozer		0.089	87
Caisson drilling		0.089	87
Loaded trucks		0.076	86
Jackhammer		0.035	79
Small bulldozer		0.003	58

Source: *Transit Noise and Vibration Impact Assessment*, FTA-VA-90-1003-06, May 2006.

The source vibration levels shown in **Table 18-16** were projected to nearby receptors to estimate the levels of construction vibration that would occur in the study area.

CONSTRUCTION VIBRATION ANALYSIS CONCLUSIONS

The buildings of most concern with regard to the potential for structural or architectural damage due to vibration are the existing Industry City Buildings 9 and 10, which are located immediately east of the proposed Building 11 construction site. As described in Chapter 6, “Historic and Cultural Resources,” these buildings are S/NR-Eligible. Consequently, vibration monitoring would be required at these buildings for subsurface construction within 90 feet by DOB TPPN 10/88. The vibration monitoring program would ensure that construction, including pile driving, at the adjacent proposed Building 11 site would not result in PPV greater than 0.50 in/sec at Buildings 9 and 10. With such a program in place, construction vibration at the proposed Building 11 site would not have the potential to result in damage at Buildings 9 and 10.

The existing residential building on the south side of 41st Street between 1st and 2nd Avenues and the residential buildings on 3rd Avenue between 36th and 37th Streets. However, as a result of these structures’ distances from the pile driving locations on each projected i.e., at least 55 feet from pile driving activity), vibration levels at these buildings and structures would not be expected to exceed 0.50 in/sec PPV, which would be the most vibration intensive activity that could be associated with construction under the Proposed Actions. Additional receptors farther away from the projected development sites would experience even less vibration, which would not be expected to cause structural or architectural damage.

In terms of potential vibration levels that would be perceptible and annoying, the equipment that would have the most potential for producing levels that exceed the 65 VdB limit is also the pile driver. It would have the potential to produce perceptible vibration levels (i.e., vibration levels exceeding 65 VdB) at receptor locations within a distance of approximately 550 feet depending on soil conditions. However, the operation would only occur for limited periods of time at a particular location and therefore would not result in any significant adverse impacts.

Consequently, there is no potential for significant adverse vibration impacts from the Proposed Actions.

OTHER TECHNICAL AREAS

LAND USE AND NEIGHBORHOOD CHARACTER

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

Construction of the three projected development sites would be spread out over a period of approximately eight years, throughout an approximately 30-acre Project Area. As noted above, construction of the projected development sites would be short term (i.e., lasting up to 24 months each). The renovation and re-tenanting of the Finger Buildings and the 39th Street Buildings is anticipated to occur over a five-year period (from 2019 to 2023). Construction activities resulting from the Proposed Actions would affect land use on the development sites, but would not alter surrounding land uses. As is typical with construction projects, during periods of construction there would be some disruption, predominantly noise, to the nearby area. There would be construction trucks and construction workers travelling to the various development sites. There would also be noise, sometimes intrusive, from building construction as well as trucks and other vehicles backing up, loading, and unloading. These disruptions would be temporary in nature and would have limited effects on land uses within the study area, particularly as most construction activities would take place within each of the development sites or within portions of sidewalks, curbs, and travel lanes of public streets immediately adjacent to these sites.

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

SOCIOECONOMIC CONDITIONS

According to the *CEQR Technical Manual,* construction impacts to socioeconomic conditions are possible if the Proposed Project 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. Although there will be some disruption to the area during the renovation and re-tenanting activities, access to existing businesses would be maintained and therefore not affected.

Construction activities would not obstruct major thoroughfares used by customers or businesses. Because of the MPT measures required by DOT, businesses would not be significantly affected by any temporary reductions in the amount of pedestrian foot traffic or vehicular delays that could occur as a result of construction activities. Utility service would be maintained to all businesses, although very short-term interruptions (i.e., hours) may occur when new equipment (e.g., a transformer, or a sewer or water line) is put into operation. Overall, construction resulting from the Proposed Actions is not expected to result in any significant adverse impacts on surrounding businesses.

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

OPEN SPACE

According to the *CEQR Technical Manual*, construction impacts to open space are possible if the open space is taken out of service for a period of time during the construction process. As described in Chapter 4, "Open Space," there are no publicly accessible open spaces on any of the projected development sites. While several of the projected development sites are located close to existing open space resources, no open space resources are located on any of the projected development sites, nor would any access to publicly accessible open space be impeded during construction within the project area. In addition, measures would be implemented to control air emissions, dust, noise, and vibration on the construction sites. While construction under the Proposed Actions may cause temporary disruptions to the community, particularly related to noise, it is expected that such disruptions in any given area would be temporary and would not be ongoing for the full duration of the construction period. Therefore, no significant construction impacts are anticipated on open space.

HISTORIC AND CULTURAL RESOURCES

A detailed assessment of potential impacts on historic and cultural resources (including both archaeological and architectural resources) is described in Chapter 6, "Historic and Cultural Resources;" however, the analysis focused on the Baseline Scenario and the Overbuilt Scenario With Action conditions as there was greater potential to impact historic and cultural resources under those scenarios. This section summarizes the potential for significant adverse impacts on historic and cultural resources as presented in Chapter 6.

Archaeological Resources

In a letter dated December 12, 2017, the LPC determined that the sites to be redeveloped by the Applicant (the Project Area) do not possess archaeological sensitivity (see **Appendix C**, "Historic and Cultural Resources). Therefore, the Proposed Project would have no significant adverse impact on archaeological resources.

Architectural Resources

The Project Area included portions of the S/NR-eligible Bush Terminal Historic District. The three-story factory building that would be demolished in both the Baseline and Overbuild Scenarios of the With Action condition is considered a contributing building to the Bush Terminal Historic District. Therefore, demolition of this building would constitute a significant adverse impact on the S/NR-eligible Bush Terminal Historic District, requiring that the Applicant develop appropriate measures to partially mitigate the adverse impact with LPC.

In addition to the S/NR-eligible Bush Terminal Historic District, additional known and potential architectural resources have been identified in the study area. Without a CPP in place, construction-related activities in connection with the Baseline and Overbuild Scenarios for Projected Buildings 11 and 21, the Gateway Building, as well as the construction of rooftop additions floors on Buildings 3 through 8, 19, and 22 through 24 could result in significant adverse direct impacts on the architectural resources in the Project Area and study area. Therefore, to avoid inadvertent construction-related impacts to these architectural resources, a CPP would be prepared in coordination with a licensed professional engineer. It would describe the measures to be implemented during the redevelopment of the Bush Terminal buildings themselves, as well as measures to be taken to protect the Bush Terminal buildings within the Project Area, and those known and potential architectural resources in the study area during construction of the new mixed-use developments. The CPP would follow the guidelines set forth in the *CEQR Technical Manual,* including conforming to LPC's *New York City Landmarks Preservation Commission Guidelines for Construction Adjacent to a Historic Landmark* and *Protection Programs for Landmark Buildings*. The CPP would also comply with the procedures set forth in the DOB's *TPPN #10/88*.

With the implementation of a CPP, the Proposed Project would not result in any indirect impacts on architectural resources in addition to those direct impacts that have been described above and in Chapter 6, "Historic and Cultural Resources."

HAZARDOUS MATERIALS

An assessment of the potential presence of hazardous materials in soil, groundwater and soil vapor resulting from previous and existing uses at the Project Area is provided in Chapter 8, "Hazardous Materials." This section summarizes the potential for significant adverse impacts with respect to hazardous materials as presented in Chapter 8.

In the future with the Proposed Actions (the With Action condition), existing buildings in the project area would be renovated and re-tenanted as well as the development of new buildings, which could increase pathways for human exposure. Since Project Area lots could have been adversely affected by current or historical uses at, adjacent to, or within 400 feet of that site, lots that are projected to have soil disturbance during construction of the Proposed Project would have Hazardous materials (E) Designations placed on them. The Project Area lots with soil disturbance under the Proposed Action are as follows:

- Building 11 (Block 679, Lot 1);
- Building 21 (Block 706, Lots 1 and 20); and
- The Gateway Building (Block 695, Lots 37 to 43).

Construction-related activities anticipated for the Proposed Actions could increase pathways for exposure to hazardous materials. However, the possibility of impacts to the health and safety of workers, the community, and future occupants would be reduced by performing renovations and construction in accordance with the measures identified below:

- Prior to redevelopment, further investigation would be performed for each building, where necessary. Because a Phase I Environmental Site Assessment (ESA) and Phase I Update in accordance with American Society of Testing Materials (ASTM) Standard E1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Practice* have already been completed, this would start with preparation of a subsurface investigation protocol for agency review. The scope of the investigation would be determined by reviewing the findings of the Phase I ESA and Phase I ESA Update specific to the work area. Upon approval of the protocol, the investigation (typically including laboratory analysis of soil, groundwater, and soil vapor samples from the work area) would be implemented and a report prepared for the agency along with the proposed remediation plan (i.e., measures to be implemented prior to or as part of construction to avoid impacts to the health and safety of workers, the community, and future occupants) which would include a CHASP.
- Any renovation or demolition activities with the potential to disturb LBP would be performed in accordance with the applicable OSHA regulation (OSHA 29 CFR 1926.62—*Lead Exposure in Construction*).
- Prior to any renovation or demolition activities with the potential to disturb suspect ACMs, an asbestos survey would be conducted to determine whether these materials are ACMs. If these materials prove to contain asbestos, they would be properly removed and disposed of in accordance with all state and federal regulations.
- Unless there is labeling or test data that indicates that florescent lights, other electrical equipment, and hydraulic fluid are not mercury- and/or PCB-containing, if disposal is required, it would be performed in accordance with applicable federal, state, and local regulations and guidelines pertaining to disposal of materials that may contain mercury and/or PCBs.
- All excavated soil requiring off-site disposal would be managed in accordance with applicable regulatory requirements. All soil and any other materials intended for off-site disposal would be tested in accordance with the requirements of the intended receiving facility. Transportation of material leaving the site for off-site disposal would be in accordance with federal, state, and local requirements covering licensing of haulers and trucks, placarding, truck routes, manifesting, etc. All on-site petroleum storage tanks (and any unforeseen tanks encountered during redevelopment) would be properly closed and removed in accordance with applicable requirements.
- If dewatering is required for construction, testing would be performed to ensure compliance with DEP sewer discharge permit/approval requirements and, if necessary, pre-treatment world be conducted prior to discharge to the sewer.

To ensure the measures above are implemented, as warranted, an (E) Designation for hazardous materials would be placed on the privately owned sites identified in in **Table 18-17** as part of the proposed rezoning. Recommendations for (E) Designations are based on whether the sites may have been adversely affected by current or historical uses at, adjacent to, or within 400 feet. In determining whether a site is recommended for an (E) Designation, current site conditions were given priority, followed by the adjacent site use or history, and finally the conditions within a 400-foot radius.

Table 18-17
(E) Designation Listing

Block	Lot	Environmental Concern Prompting (E) Designation
679	1	Previous industrial use and tanks; Soil excavation anticipated for development
695	37	Previous industrial use; Soil excavation anticipated for development
	38	Previous industrial use; Soil excavation anticipated for development
	39	Previous industrial use; Soil excavation anticipated for development
	40	Previous industrial use; Soil excavation anticipated for development
	41	Previous industrial use; Soil excavation anticipated for development
	42	Previous industrial use; Soil excavation anticipated for development
	43	Previous industrial use; Soil excavation anticipated for development
706	1	Previous industrial use and tanks; Soil excavation anticipated for development
	20	Previous industrial use and tanks; Soil excavation anticipated for development

The (E) Designation would require that, prior to redevelopment, the property owner complete a current Phase I ESA in accordance with the ASTM E1527-13; and implement a soil, soil vapor, and groundwater testing protocol, and remediation where appropriate, to the satisfaction of the Mayor's Office of Environmental Review (OER) before issuance of construction-related DOB permits involving soil disturbance (pursuant to Section 11-15 of the *Zoning Resolution*—Environmental Requirements). The (E) Designation also mandates construction-related health and safety plans, which must be approved by OER. ✷