Chapter 20: Construction

A. INTRODUCTION

As described in detail in Chapter 1, “Project Description,” the Applicant is seeking discretionary approvals (the “Proposed Actions”) to facilitate the development of the Western Rail Yard site (Block 676, Lots 1 and 5) in the Hudson Yards neighborhood of Manhattan (the “WRY Site” or the “Development Site”) with approximately 6.2 million gross square feet (gsf) of new mixed use development including residential, commercial, and community facility space, a hotel resort with gaming, and new public open space (the “Proposed Project”). The Proposed Actions include a City Map Amendment to adjust the grade of West 33rd Street between Eleventh and Twelfth Avenues, which falls outside the boundaries of the Development Site, as well as a revocable consent for a staircase and elevator in the West 33rd Street sidewalk at Twelfth Avenue to provide access for the public and visitors to the Development Site. There is a state process underway to designate locations for downstate gaming licenses; therefore, the Applicant is also presenting for environmental analysis purposes an Alternative Scenario that reflects a similar density and the same open space configuration as the Proposed Project but includes residential, commercial, and hotel buildings without gaming. Where applicable, the scenario that would result in the more conservative analysis is analyzed for the technical areas presented below.

This chapter summarizes the anticipated construction phasing and schedule for the Proposed Project and the Alternative Scenario and assesses the potential for significant adverse impacts during the construction period. The City, state, and federal regulations and policies that govern construction are described, followed by a description of the preliminary construction schedule and the types of activities likely to occur during construction. The types of construction equipment are also discussed, along with the number of workers and truck deliveries. Finally, the potential impacts from construction activity are assessed.

PRINCIPAL CONCLUSIONS

Construction associated with the Proposed Project or the Alternative Scenario would result in temporary disruptions in the surrounding area. As described below, construction would result in temporary significant adverse traffic and noise impacts. Findings specific to each of the key technical areas are summarized below.

TRANSPORTATION

Transportation-related significant adverse impacts during construction have been identified for roadway traffic for the morning and mid-afternoon peak construction hours. Potential measures that may be implemented to mitigate these impacts are described in Chapter 22, “Mitigation.” No significant adverse impacts during construction were identified for transit, pedestrians, or parking, although a parking shortfall is anticipated during certain periods of construction when construction worker travel via autos exceeds the available parking resources in the surrounding area.

AIR QUALITY

Measures would be taken to reduce pollutant emissions during construction of the Proposed Project or the Alternative Scenario in accordance with all applicable laws, regulations, and building codes. These include the use of ultra-low sulfur diesel (ULSD) fuel, dust suppression measures, idling restrictions, and diesel equipment reduction. In addition, construction of the Proposed Project or the Alternative Scenario would use newer equipment (i.e., equipment meeting at least the U.S. Environmental Protection Agency's [EPA] Tier 3 emission standard) and best available tailpipe reduction technologies to further reduce air pollutant emissions. With the implementation of these emission reduction measures, 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 National Air Quality Ambient Standards (NAAQS) or *de minimis* thresholds, respectively. Therefore, construction of the Proposed Project or the Alternative Scenario would not result in significant adverse air quality impacts due to construction sources.

NOISE

Construction under the Proposed Actions would have the potential to result in significant adverse impacts related to noise. At some receptors, construction under the Proposed Actions would result in increments that would be considered objectionable (i.e., 15 dBA or greater) or very objectionable (i.e., 20 dBA or greater). The potential for significant adverse impacts at these receptors was determined by evaluating the duration of these increments and whether City Environmental Quality Review (CEQR) interior noise level thresholds would be exceeded or not. Construction under the Proposed Actions is anticipated to result in significant adverse impacts at ten receptors under either With Action scenario (i.e., The High Line north of West 30th Street, Hudson Yards Public Square and Gardens, the Vessel, Hudson River Park between West 26th Street and West 30th Street, Bella Abzug Park, 311 Eleventh Avenue, 606 West 30th Street, the west façade of 553 West 30th Street, the west façade of 34 Hudson Yards, and the west façade of 380 Eleventh Avenue) and one additional receptor (i.e., Site C1) under the Alternative Scenario. However, building construction would typically occur during weekday daytime hours and would therefore not produce noise during nighttime hours when residents would be most sensitive to noise, and platform construction occurring between 3:30 PM and 12 AM was determined not to result in significant adverse noise impacts at any residential or hotel receptors. Further, construction would comply with *New York City Noise Control Code* regulations and abide by Project Components Related to the Environment (PCREs) to not utilize impact pile driving and to incorporate additional path controls for concrete operations. Per *New York City Noise Control Code* regulations, construction under the Proposed Actions would be required to prepare a Construction Noise Mitigation Plan, which may identify more control measures that would further reduce construction noise levels. This is discussed further in Chapter 22, "Mitigation." Additional refinements to the construction noise analysis to be conducted between the

Draft and Final EIS, including detailed modeling of additional analysis time periods and existing condition noise levels, may result in elimination of predicted significant adverse construction noise impacts at some receptors.

B. GOVERNMENTAL COORDINATION AND OVERSIGHT

Construction oversight involves several city, state, and federal agencies. **Table 20-1** lists the primary involved agencies and their areas of responsibility.

Table 20-1
Construction Oversight in New York City

Agency	Areas of Responsibility
New York City	
Department of Buildings	Primary oversight for Building Code and site safety
Department of Environmental Protection	Noise, dewatering, construction near DEP water and sewer infrastructure.
Office of Environmental Remediation	Hazardous materials(contaminated soil/groundwater/soil vapor)
Department of Sanitation	Storage, transport, and disposal of asbestos waste
Fire Department	Compliance with Fire Code
Department of Transportation	Traffic lane and sidewalk closures
Landmarks Preservation Commission	Historic and archaeological resources
New York State	
Department of Labor	Asbestos Workers
Department of Environmental Conservation	Hazardous materials and fuel/chemical storage tanks
Office of Parks, Recreation and Historic Preservation	High Line
Long Island Rail Road	Work at the Development Site within 200 feet of LIRR property/structures
New York City Transit	Work at the Development Site within 200 feet of NYCT property/structures
United States	
Environmental Protection Agency	Air emissions, noise, hazardous materials, poisons
Occupational Safety and Health Administration	Worker safety
Amtrak	Work at the Development Site within 200 feet of Amtrak property/structures

For projects in New York City, primary construction oversight lies with the New York City Department of Buildings (DOB), which ensures that construction projects meet the requirements of the New York City Building Code and that buildings are structurally, electrically, and mechanically safe. In addition, DOB enforces safety regulations to protect workers and the general public during construction: the areas of oversight include installation and operation of equipment such as cranes, sidewalk sheds, and safety netting and scaffolding. The New York City Department of Environmental Protection (DEP) enforces the New York City Noise Code and regulates water disposal into the sewer system. The New York City Office of Environmental Remediation (OER)[1] reviews and approves any Phase I Environmental Site Assessments (ESAs), Phase II subsurface investigations, and remediation, where appropriate. The City of New York Department of Sanitation (DSNY) has regulatory and enforcement oversight of the storage, transport, and disposal of asbestos waste. The New York City Fire Department (FDNY) has primary oversight of compliance with the New York City Fire Code. The New York City Department of Transportation (DOT) Office of Construction Mitigation and Coordination (OCMC) reviews and approves any traffic lane and sidewalk closures. The New York City Landmarks Preservation Commission (LPC) reviews any archaeological testing or monitoring that may be required. LPC also reviews and approves construction protection plans (CPPs) and any monitoring measures necessary to prevent damage to historic structures.

At the state level, the New York State Department of Labor (DOL) licenses asbestos workers. The New York State Department of Environmental Conservation (DEC) regulates disposal of hazardous materials, and construction and operation of bulk petroleum and chemical storage tanks. Consistent with the requirements of the Letter of Resolution for the WRY Site executed pursuant to Section 14.09 of the New York State Historic Preservation Act ("Section 14.09") at the time of the 2009 FEIS, consultation would be undertaken with the New York State Office of Parks, Recreation and Historic Preservation (OPRHP) regarding aspects of the Proposed Project's design that could affect the High Line (specifically, review of preliminary and pre-final design plans). Coordinating with Long Island Rail Road (LIRR) and New York Transit is required where work at the Development Site is within 200 feet of railroad property or structures; the Development Site also contains LIRR facilities that support the daily operation of LIRR, including a railroad-interior cleaning facility, train storage, and buildings that house other operational functions.

At the federal level, the U.S. Environmental Protection Agency (EPA) has wide-ranging authority over environmental matters, including air emissions, noise, hazardous materials, and the use of poisons, although much of the responsibility is delegated to the state level. The Occupational Safety and Health Administration (OSHA) sets standards for work site safety and construction equipment. Coordinating work with Amtrak is required where work at the Development Site is within 200 feet of railroad property or structures. The Development Site also contains Amtrak facilities that support the daily operation of Amtrak, including ventilation and egress.

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[1] The 2009 and 2021 FEISs identified the potential for contamination within the Development Site from current and past usage based on soil and groundwater sampling. R-230 was recorded against the Development Site as a result of the 2009 FEIS. The Restrictive Declaration, which is regulated like an E-designation, requires that prior to obtaining DOB permits for the redevelopment, the property owner must conduct Phase I Environmental Site Assessments (ESAs) and Phase II subsurface investigations, and prepare and implement site-specific remedial action plans (RAPs) and construction-related health and safety plans (CHASPs), where appropriate, to the satisfaction of the New York City Office of Environmental Remediation (OER). These plans would include the proposed development plans and outline any remediation that would be required. The Restrictive Declaration would also require that any necessary post-construction measures required by OER be implemented.

C. CONSTRUCTION PHASING AND SCHEDULE

Table 20-2 presents the anticipated construction schedule for the Proposed Project. Construction of the Proposed Project is anticipated to begin in 2026 and be complete by 2031, over an approximately 66-month period. As shown in **Table 20-2**, the construction of the Proposed Project would include the following components, some of which would overlap: Platform Construction (44 months); Podium (26 months); Site A (40 months); Site B (48 months); and Site C (34 months).

Table 20-2
Anticipated Construction Schedule – Proposed Project

Construction Component	Start Month	Finish Month	Approximate Duration (months)
OVERALL	**March 2026**	**August 2031**	**66**
Platform	March 2026	October 2029	44
Podium	March 2027	April 2029	26
Site A	April 2027	July 2030	40
Site B	September 2027	August 2031	48
Site C	May 2028	February 2031	34
Source: Related, June 2024.			

To allow for construction or maintenance in the rail yard while maintaining operations, LIRR would grant track outages which temporarily remove tracks from LIRR service. Although there would be temporary track outages, there would be no disruption to LIRR passenger service. Platform construction is also likely to require the temporary closure of West 33rd Street between Eleventh and Twelfth Avenues, which is currently reserved for the New York City Police Department (NYPD) operations and staging and turnaround of the New York City Transit (NYCT) M34 SBS buses.

Table 20-3 presents the anticipated construction schedule for the Alternative Scenario. Construction of the Alternative Scenario is also anticipated to begin in 2026 and be complete by 2031, over an approximately 66-month period. As shown in **Table 20-3**, the construction of the Alternative Scenario would include the following components, some of which would overlap: Platform Construction (44 months); Site A (40 months); Site B (48 months); Site C1 (36 months); Site C2 (41 months); and Site C3 (40 months). LIRR coordination for the Alternative Scenario construction would be as described above for the Proposed Project.

Table 20-3
Anticipated Construction Schedule – Alternative Scenario

Construction Component	Start Month	Finish Month	Approximate Duration (months)
OVERALL	**March 2026**	**August 2031**	**66**
Platform	March 2026	October 2029	44
Site A	November 2027	February 2031	40
Site B	September 2027	August 2031	48
Site C1	November 2027	October 2030	36
Site C2	January 2028	May 2031	41
Site C3	April 2028	July 2031	40
Source: Related, June 2024.			

The concrete casing on the Development Site that was the subject of the 2021 *Western Rail Yard Infrastructure Project Combined FEIS/Record of Decision and Final Section 4(f) Evaluation* (2021 Infrastructure FEIS) has commenced, and there is the potential for some minor overlapping activities between the final stage of that work and the beginning stages of the work identified above for the Proposed Project and the Alternative Scenario. Construction managers are expected to coordinate to avoid delays and inefficiencies that may arise due to simultaneous construction activities occurring on the Development Site.

D. CONSTRUCTION DESCRIPTION

The following provides a description of the general construction practices and activities, which would occur during the construction of either the Proposed Project or the Alternative Scenario.

GENERAL CONSTRUCTION PRACTICES

This section describes the construction practices that would likely be employed during construction of either the Proposed Project or the Alternative Scenario, including hours of work, access, deliveries, and staging areas, public safety, and rodent control.

HOURS OF WORK

Construction work would typically begin at 7:00 AM on weekdays, 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 critical tasks (e.g., finishing concrete placement for a floor deck), the workday may be extended beyond normal work hours. 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. Platform construction activities, however, would generally be accomplished in one shift per day either from 7 AM to 3:30 PM or 3:30 PM to 12 AM, five days a week, depending on the work required.

In addition, weekend or night work may also be required for certain platform construction activities and/or to meet the project construction schedule due to weather delays or other circumstances. Appropriate work permits from DOB would be obtained for any necessary work outside of the permissible construction hours (7:00 AM to 6:00 PM on weekdays) for weekend or night work.

ACCESS, DELIVERIES, AND STAGING AREAS

During construction, access to the construction site would be fully controlled. Work areas would be fenced off and limited access points for workers and trucks would be provided. Material deliveries to the construction site would be controlled and scheduled. As is typical with New York City construction in a confined urban environment, parking lanes and sidewalks immediately adjacent to the construction site (i.e., West 30th Street, West 33rd Street, Eleventh Avenue, and Twelfth Avenue) may need to be closed or narrowed for varying periods of time during the construction period. Platform and grade change construction activities will require the temporary closure of West 33rd Street between Eleventh and Twelfth Avenues. Maintenance and Protection of Traffic (MPT) plans would be developed for any required temporary sidewalk and lane narrowing and/or closures to protect the safety of the construction workers and the public passing through the area. Approval of these plans and implementing the closures would be coordinated with DOT's OCMC. Anticipated MPT measures would include parking lane closures, safety signs, safety barriers, and construction fencing. Construction staging of materials and equipment would primarily occur within the construction site and, where applicable, the adjacent curb lanes.

Although temporary construction for the Proposed Project or the Alternative Scenario would occur near the High Line and could be visible from the park, construction activities would not be staged from, result in physical alterations to, or result in occupation of the park. The Applicant would coordinate with NYC Parks and Friends of the High Line to maintain pedestrian access to the High Line during construction.

PUBLIC SAFETY

A variety of measures would be employed to protect public safety during the construction, including the safety of users of the High Line. As discussed in detail in Chapter 7, "Historic and Cultural Resources," a Construction Protection Plan (CPP) would be developed and implemented to protect the High Line during adjacent project construction. In addition, there would be construction-period coordination between the Applicant, NYC Parks, and Friends of the High Line to ensure that construction activities on the Development Site protects users and minimizes disruption to the use and enjoyment of the High Line to the maximum extent feasible. Other public safety measures would include: sidewalk bridges to provide overhead protection; safety signs to alert the public about active construction work; safety barriers to protect the safety of the public passing by construction areas; flag persons to control trucks entering and exiting the construction areas and/or to provide guidance for pedestrians and bicyclists safety; and safety nettings as the superstructure work advances upward to prevent debris from falling to the ground. All DOB safety requirements would be followed to ensure the safety of the community and the construction workers.

RODENT CONTROL

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

DESCRIPTION OF CONSTRUCTION ACTIVITIES

PLATFORM CONSTRUCTION

The construction areas would be fenced off to minimize interference between passersby and the construction work. Additional public safety measures, such as signs, would be installed. Access points to the construction area would also be established and portable toilets and dumpsters for trash would be brought to the site and installed. Construction trailers for on-site workers and staff would also be located at various locations within the Development Site.

In order to minimize impacts on LIRR train operations, platform construction would be sequenced to optimize track outages and site conditions. The construction sequence would provide the required isolation between construction activities and railroad operations, while also allowing a staging area for construction of the remaining caissons and deck sections to be built. Although there would be temporary track outages, there would be no disruption to LIRR passenger service. Each section of the platform construction would generally consist of the following stages: excavation and caisson drilling, concrete shear walls and column installation, precast superstructure erection, and underdeck MEP system installation. Platform construction would also include the construction of replacement structures for LIRR support facilities and a new LIRR electrical facility. Construction of each of these structures would consist of the following construction stages: excavation and foundation; superstructure construction; exteriors; MEP system installation; and architectural fit-out.

Equipment used for platform construction is anticipated to include cranes, excavators, drill rigs, compressors, generators, rebar benders, concrete pumps, concrete vibrators, concrete finishers, and a variety of hand tools.

VERTICAL CONSTRUCTION

Construction of vertical structures in New York City typically follows a general pattern. The first task is construction startup, which involves the siting of work trailers, installation of temporary power and communication lines, and the erection of site perimeter fencing. Access points to the construction area and measures specified in the MPT, where applicable, are also established. After the below-grade construction is complete (the proposed buildings at Sites A and B would also involve the construction of cellar areas), construction of the core and shell of the new building begins. The core is the central part of the building and is the main part of the structural system. It contains the elevators and the mechanical systems for heating, ventilation, and air conditioning (HVAC). The shell is the outside of the building. As the core and floor decks of the building are being erected, installation of the mechanical and electrical internal networks starts. As the building progresses upward, the exterior cladding is placed, and the interior fit out work begins. During the busiest time of construction, the buildings’ upper cores and structures are built while the mechanical/electrical connections, exterior cladding, and interior finishing progress on lower floors. Finally, sitework (i.e., sidewalks, landscaping, etc.) is undertaken.

The primary stages for the vertical construction activities for the podium and the proposed buildings at Sites A, B, and C are described in greater detail below.

Core and Shell

The superstructure of the proposed buildings would include the building’s framework (beams and columns) and floor decks. Construction of the interior structure, or core, of the buildings would include elevator shafts; vertical risers for mechanical, electrical, and plumbing systems; electrical and mechanical equipment rooms; core stairs; and restroom areas. Cranes would first be brought onto the construction site during the superstructure task and would be used to lift structural components, façade elements, and other large materials. The crane would be on-site for the core and shell stage of construction. Core and shell activities would also require the use of compressors, generators, rebar benders, concrete pumps, concrete vibrators, concrete finishers, and a variety of trucks. In addition, temporary construction elevators (hoists) would be used for the delivery of materials and vertical movement of workers during core and shell activities.

Interior Fit-Out

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

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

E. NUMBER OF CONSTRUCTION WORKERS AND TRUCK DELIVERIES

Tables 20-4 and 20-5 show the estimated average daily number of workers and deliveries to the Development Site by calendar quarter for all construction activities under the for the Proposed Project and the Alternative Scenario, respectively.

Table 20-4
Average Number of Daily Workers and Trucks by Quarter – Proposed Project

Year	**2026**				**2027**				**2028**			
Quarter	**1st**	**2nd**	**3rd**	**4th**	**1st**	**2nd**	**3rd**	**4th**	**1st**	**2nd**	**3rd**	**4th**
Workers	4	24	26	49	69	194	644	1,214	1,604	1,862	**2,044**	1,982
Trucks	2	4	8	15	21	38	49	65	87	110	**131**	114
Year	**2029**				**2030**				**2031**			
Quarter	**1st**	**2nd**	**3rd**	**4th**	**1st**	**2nd**	**3rd**	**4th**	**1st**	**2nd**	**3rd**	**4th**
Workers	1,990	1,978	1,912	1,635	1,313	1,280	1,240	1,137	510	93	40	0
Trucks	119	122	123	115	107	100	87	80	53	27	13	0
Year												
Quarter					**Peak**				**Average**			
Workers					2,044				341			
Trucks					131				24			
Source: Related, June 2024												

For the Proposed Project, the combined peak construction worker vehicle and truck trip generation would occur during the third quarter of 2028. The average number of workers throughout the construction period would be 341 per day with a peak of 2,044 per day in the third quarter of 2028. For truck trips, the average number of trucks would be 24 per day with a peak of 131 per day in the third quarter of 2028.

Table 20-5
Average Number of Daily Workers and Trucks by Quarter – Alternative Scenario

Year	2026				2027				2028			
Quarter	**1st**	**2nd**	**3rd**	**4th**	**1st**	**2nd**	**3rd**	**4th**	**1st**	**2nd**	**3rd**	**4th**
Workers	4	24	26	37	61	61	86	244	790	1,948	2,685	3,062
Trucks	2	4	8	15	18	18	29	53	70	90	114	137
Year	**2029**				**2030**				**2031**			
Quarter	**1st**	**2nd**	**3rd**	**4th**	**1st**	**2nd**	**3rd**	**4th**	**1st**	**2nd**	**3rd**	**4th**
Workers	3,110	**3,165**	3,132	3,055	2,967	2,517	1,967	1,260	603	193	60	0
Trucks	165	189	**198**	187	195	192	173	140	100	60	20	0
Year												
Quarter					**Peak**				**Average**			
Workers					3,165				464			
Trucks					198				32			
Source: Related, June 2024												

For the Alternative Scenario, the combined peak construction worker vehicle and truck trip generation would occur during the third quarter of 2029. The average number of workers throughout the construction period would be 464 per day with a peak of 3,165 per day in the second quarter of 2029. For truck trips, the average number of trucks would be 32 per day with a peak of 198 per day in the third quarter of 2029.

F. THE FUTURE WITHOUT THE PROPOSED ACTIONS

In the No Action condition, it is assumed that the Development Site will be developed with 5,009,725 gsf of residential, commercial, and community facility space at the time of the build year (2031). This scenario is based on the Maximum Commercial Scenario analyzed in the 2009 FEIS and is allowable under the Development Site's current zoning. **Table 20-6** shows the estimated average daily number of workers and deliveries to the Development Site by calendar quarter for all construction activities under the No Action condition. For the No Action condition, the combined peak construction worker vehicle and truck trip generation would occur during the fourth quarter of 2029. The average number of workers throughout the construction period would be 305 per day with a peak of 1,973 per day in the fourth quarter of 2028. For truck trips, the average number of trucks would be 22 per day with a peak of 127 per day in the fourth quarter of 2029.

It is assumed that work will continue on the Hudson Tunnel project in the No Action condition. The Hudson Yards Concrete Casing is an essential rail right-of-way (ROW) preservation project on the west side of Manhattan that will clear the way for the Hudson Tunnel project's full construction. Once complete, this casing will provide the vital link that connects the new Hudson Tunnel to New York Penn Station. Section 3 (HYCC-3) is the final segment and will provide the connection for the Hudson River Tunnel into New York Penn Station. This step involves extending the casing on a diagonal alignment through the southeast corner of the Development Site, from Eleventh Avenue to West 30th Street, where it will link up with the new tunnel.

Table 20-6
Average Number of Daily Workers and Trucks by Quarter – No Action Condition

Year	2026				2027				2028			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	7	26	42	86	86	86	94	219	760	1,481	1,860	**1,973**
Trucks	2	4	15	18	18	18	21	38	60	67	77	99
Year	**2029**				**2030**				**2031**			
Quarter	**1st**	**2nd**	**3rd**	**4th**	**1st**	**2nd**	**3rd**	**4th**	**1st**	**2nd**	**3rd**	**4th**
Workers	1,930	1,930	1,930	1,935	1,845	1,762	980	247	160	100	0	0
Trucks	107	122	122	**127**	125	125	113	73	53	33	0	0
Year												
Quarter					**Peak**				**Average**			
Workers					1,973				305			
Trucks					127				22			
Source: Related, June 2024												

It is also anticipated that the “interim walkway” portion of the High Line extending through the Development Site will be redesigned and enhanced by NYC Parks and Friends of the High Line in the No Action condition, and that a connection from the new publicly accessible open space on the Development Site to the High Line will be created by the Applicant as part of the No Action development.

G. CONSTRUCTION EFFECTS OF THE PROPOSED ACTIONS

Construction can be disruptive to the surrounding area for periods of time. The following analyses describe the potential impacts that could result from construction of the Proposed Project or the Alternative Scenario with respect to transportation, air quality, and noise and vibration as well as land use and neighborhood character, socioeconomic conditions, community facilities, open space, historic and cultural resources, and hazardous materials. For construction transportation, air quality, and noise, the With Action scenario (i.e., the Proposed Project or Alternative Scenario) that would result in the more conservative analysis is analyzed in detail and presented below.

TRANSPORTATION

The construction transportation analysis assesses the potential for construction activities to result in significant adverse impacts on traffic, parking conditions, and transit and pedestrian facilities based on the peak construction-generated worker and truck traffic. Corresponding with the construction sequencing and worker/truck projections, detailed trip generation estimates were developed to identify the construction-related peak hour trip-making activities. These estimates were then used as the basis for assessing the potential transportation-related impacts during construction.

TRAFFIC

As detailed below, the most active construction activities of the Proposed Project and Alternative Scenario are expected to occur during the third quarter of 2028 and third quarter of 2029, respectively. A few blocks away south of the Development Site, construction of the Hudson Tunnel project is also expected to be active at that time, most notably anticipated to result in the closure of West 29th Street between Eleventh and Twelfth Avenues to through traffic.[2] The likely effects from this temporary closure were incorporated into the future baseline of this EIS's construction traffic impact analyses.

Construction Trip Generation

As discussed in Section D above, "Construction Phasing and Schedule," the Proposed Project would be developed from 2026 to 2031 and would generate construction worker and truck traffic during that time. Average daily construction worker and truck activities by month were projected for the entire construction period. Worker and truck trip projections, aggregated by quarter, were refined to account for worker modal splits and vehicle occupancy, arrival and departure distribution, and passenger car equivalent (PCE) factors for construction truck traffic.

Construction Worker Modal Splits and Vehicle Occupancy

Based on the 2000 U.S. Census reverse journey-to-work (RJTW) data, the modal split profile for construction and excavation occupations is as follows.

- Auto – 40.5 percent;
- Taxi – 0.7 percent;
- Subway – 37.7 percent;
- Railroad – 9.8 percent;
- Bus – 9.9 percent; and
- Walk – 1.4 percent.

With the rapid growth and transformation of the West Midtown and Hudson Yards area in recent years, there has likely been a shift in travel characteristics from autos to public transportation. To provide a conservative analysis and to maintain consistency with assumptions used in the 2009 FEIS, the higher vehicle-oriented travel profile was used in this EIS's evaluation of potential construction transportation impacts; however, for reasons stated in that 2009 FEIS, including (1) more opportunities within a large workforce for workers to commute together; (2) parking spaces have become more difficult to find; and (3) the cost of driving has escalated in recent years as a result of increases in tolls and in the price of gasoline and parking, a higher auto-occupancy of 1.90 was used to estimate the number of worker vehicle-trips.

Daily Workforce and Truck Deliveries

As shown above in **Table 20-4**, the construction of the Proposed Project would generate the highest amount of combined daily activities in the third quarter of 2028 with estimated averages of 2,044 workers and 130 truck deliveries per day. As shown above in **Table 20-5**, the Alternative Scenario would generate the highest amount of combined daily activities in the third quarter of 2029 with estimated averages of 3,132 workers and 198 truck deliveries per day.

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[2] West 29th Street would continue to remain open up to the midblock between Eleventh and Twelfth Avenues and would provide a shared emergency and essential maintenance access lane and bike lane extending through to Twelfth Avenue.

The peak daily workforce and truck trip projections during each peak period were used to estimate peak hour construction trips and to provide an assessment of the maximum transportation impacts during construction of the Proposed Project and the Alternative Scenario. Worker auto trips and truck delivery projections were refined to account for the daily distribution of arrival and departure trips to and from the Development Site.

Peak Hour Construction Worker Vehicle and Truck Trips and Traffic Study Area

Site activities would mostly take place on weekdays during the construction shift of 7:00 AM to 3:30 PM. Construction truck trips would be made throughout the day (with more trips made during the early morning), but most trucks would remain in the area for short durations, and construction workers would typically commute 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 or early evening, whereas each truck delivery was assumed to result in two truck trips during the same hour (one "in" and one "out"). Furthermore, in accordance with the *CEQR Technical Manual*, each truck is assumed to equate to two PCEs. Additionally, concurrent platform construction is expected to require a substantially smaller workforce and less deliveries than other project components. This construction effort is also expected to generally entail one shift of workers, however, the work shift could either be from 7:00 AM to 3:30 PM or 3:30 PM to 12 AM, depending on the activity. It is conservatively assumed that concurrent platform construction would occur during the daytime shift to account for maximum overlap with non-platform activities. Certain platform construction activities, which would take place under both the No Action and With Action conditions, could necessitate weekend work that is expected to yield substantially fewer workers and trucks than regular weekday work. Accordingly, the study of potential construction impacts resulting from the Proposed Actions take into account cumulative weekday activities (including aforementioned platform work), which are expected to peak during weekday early morning and mid-afternoon time periods.

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 (approximately 80 percent) of the arrival and departure trips would take place during the hour before and after each shift (between 6:00 AM and 7:00 AM and between 3:00 PM and 4:00 PM, respectively). Construction truck deliveries into the construction site typically peak (25 percent) during the hour before each shift (6:00 AM to 7:00 AM), overlapping with construction worker arrival traffic.

The above arrival and departure temporal distributions are summarized in **Table 20-7**. Correspondingly, the peak construction hourly trip projections for the Proposed Project and Alternative Scenario are presented in **Tables 20-8 and Table 20-9**, respectively.

Table 20-7
Construction Worker and Truck Trip Temporal Distributions

	Auto/Taxi In	Auto/Taxi Out	Truck In	Truck Out
6 AM – 7 AM	80%	0%	25%	25%
7 AM – 8 AM	20%	0%	10%	10%
8 AM – 9 AM	0%	0%	10%	10%
9 AM – 10 AM	0%	0%	10%	10%
10 AM – 11 AM	0%	0%	10%	10%
11 AM – 12 PM	0%	0%	10%	10%
12 PM – 1 PM	0%	0%	10%	10%
1 PM – 2 PM	0%	0%	5%	5%
2 PM – 3 PM	0%	5%	5%	5%
3 PM – 4 PM	0%	80%	2.5%	2.5%
4 PM – 5 PM	0%	15%	2.5%	2.5%
Daily Total	**100%**	**100%**	**100%**	**100%**

Table 20-8
Proposed Project Construction Vehicle Trip Projections

	Auto Trips			Taxi Trips			Truck Trips			Total (in PCEs)		
Hour	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
6 AM – 7 AM	349	0	349	6	6	12	33	33	66	421	72	493
7 AM – 8 AM	87	0	87	1	1	2	13	13	26	114	27	141
8 AM – 9 AM	0	0	0	0	0	0	13	13	26	26	26	52
9 AM – 10 AM	0	0	0	0	0	0	13	13	26	26	26	52
10 AM – 11 AM	0	0	0	0	0	0	13	13	26	26	26	52
11 AM – 12 PM	0	0	0	0	0	0	13	13	26	26	26	52
12 PM – 1 PM	0	0	0	0	0	0	13	13	26	26	26	52
1 PM – 2 PM	0	0	0	0	0	0	7	7	14	14	14	28
2 PM – 3 PM	0	21	21	0	0	0	6	6	12	12	33	45
3 PM – 4 PM	0	349	349	6	6	12	3	3	6	12	361	373
4 PM – 5 PM	0	66	66	1	1	2	3	3	6	7	73	80
Daily Total	**436**	**436**	**872**	**14**	**14**	**28**	**130**	**130**	**260**	**710**	**710**	**1420**

Notes: Hourly construction worker and truck trips were derived from an estimated quarterly average number of construction workers and truck deliveries per day, with each truck delivery resulting in two daily trips (arrival and departure).

Table 20-9
Alternative Scenario Construction Vehicle Trip Projections

Hour	Auto Trips			Taxi Trips			Truck Trips			Total (in PCEs)		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
6 AM – 7 AM	534	0	534	9	9	18	49	49	98	641	107	748
7 AM – 8 AM	133	0	133	2	2	4	21	21	42	177	44	221
8 AM – 9 AM	0	0	0	0	0	0	21	21	42	42	42	84
9 AM – 10 AM	0	0	0	0	0	0	20	20	40	40	40	80
10 AM – 11 AM	0	0	0	0	0	0	20	20	40	40	40	80
11 AM – 12 PM	0	0	0	0	0	0	20	20	40	40	40	80
12 PM – 1 PM	0	0	0	0	0	0	20	20	40	40	40	80
1 PM – 2 PM	0	0	0	0	0	0	10	10	20	20	20	40
2 PM – 3 PM	0	32	32	0	0	0	9	9	18	18	50	68
3 PM – 4 PM	0	534	534	9	9	18	4	4	8	17	551	568
4 PM – 5 PM	0	101	101	2	2	4	4	4	8	10	111	121
Daily Total	**667**	**667**	**1334**	**22**	**22**	**44**	**198**	**198**	**396**	**1,085**	**1,085**	**2,170**

Notes: Hourly construction worker and truck trips were derived from an estimated quarterly average number of construction workers and truck deliveries per day, with each truck delivery resulting in two daily trips (arrival and departure).

Construction associated with the Proposed Project would result in 493 PCEs between 6:00 AM and 7:00 AM and 373 PCEs between 3:00 PM and 4:00 PM during the third quarter of 2028. Construction activities associated with the Alternative Scenario would result in 748 PCEs between 6:00 AM and 7:00 AM and 568 PCEs between 3:00 PM and 4:00 PM during the third quarter of 2029. Absent the Proposed Actions, the Development Site would be developed in accordance with approvals from the 2009 FEIS. While the No Action development is based on the 2009 FEIS Maximum Commercial Scenario, it conservatively assumes less total development than permitted by that Scenario given the rate of absorption required for condominium development, and several buildings at the Site will not be completed by the 2031 build year. **Table 20-10** shows the peak construction trip projections for the No Action development scenario, and the differences in peak construction trips between the Proposed Project/Alternative Scenario and the No Action development scenario are presented in **Table 20-11**.

As shown, the anticipated levels of peak construction activities (i.e., worker and truck travel) between the Proposed Project and the No Action development scenario are very similar, with fewer than 30 construction trip PCEs separating the projected peak hours between the two scenarios. Slightly larger differences are anticipated between the Alternative Scenario and the No Action development scenario, with the Alternative Scenario expected to yield 200 to 300 more construction trip PCEs during peak hours than the No Action development scenario. When compared to the operational trips analyzed in Chapter 14, “Transportation,” both the peak hour construction PCEs of 400 to 500 for the Proposed Project and 550 to 750 for the Alternative Scenario would be substantially lower than the Proposed Project’s 1,200 to 2,100 operational vehicle trips and the Alternative Scenario’s 1,100 to 1,850 operational vehicle trips during the adjacent weekday AM and PM peak hours.

Table 20-10
No Action Condition Construction Vehicle Trip Projections

Hour	Auto Trips			Taxi Trips			Truck Trips			Total (in PCEs)		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
6 AM – 7 AM	330	0	330	5	5	10	32	32	64	399	69	468
7 AM – 8 AM	82	0	82	1	1	2	13	13	26	109	27	136
8 AM – 9 AM	0	0	0	0	0	0	13	13	26	26	26	52
9 AM – 10 AM	0	0	0	0	0	0	12	12	24	24	24	48
10 AM – 11 AM	0	0	0	0	0	0	12	12	24	24	24	48
11 AM – 12 PM	0	0	0	0	0	0	12	12	24	24	24	48
12 PM – 1 PM	0	0	0	0	0	0	12	12	24	24	24	48
1 PM – 2 PM	0	0	0	0	0	0	8	8	16	16	16	32
2 PM – 3 PM	0	20	20	0	0	0	7	7	14	14	34	48
3 PM – 4 PM	0	330	330	5	5	10	3	3	6	11	341	352
4 PM – 5 PM	0	62	62	1	1	2	3	3	6	7	69	76
Daily Total	**412**	**412**	**868**	**12**	**12**	**24**	**127**	**127**	**254**	**678**	**678**	**1,356**

Notes: Hourly construction worker and truck trips were derived from an estimated quarterly average number of construction workers and truck deliveries per day, with each truck delivery resulting in two daily trips (arrival and departure).

Table 20-11
No Action vs. With Action Construction Trip Comparisons

Scenario	Auto/Taxi Trips			Truck Trips			Total (in PCEs)		
	In	Out	Total	In	Out	Total	In	Out	Total
Peak Hour (6:00 AM to 7:00 AM)									
Proposed Project (PP)	355	6	361	33	33	66	421	72	493
Alternative Scenario (AS)	543	9	552	49	49	98	641	107	748
No Action (NA)	335	5	340	32	32	64	399	69	468
Trip Differences									
PP minus NA	20	1	21	1	1	2	22	3	25
AS minus NA	208	4	212	17	17	34	242	38	280
Peak Hour (6:00 AM to 7:00 AM)									
Proposed Project (PP)	6	355	361	3	3	6	12	361	373
Alternative Scenario (AS)	9	543	552	4	4	8	17	551	568
No Action (NA)	5	335	340	3	3	6	11	341	352
Trip Differences									
PP minus NA	1	20	21	0	0	0	1	20	21
AS minus NA	4	208	212	1	1	2	6	210	216

Based on the above comparisons, overall conditions surrounding the Development Site during construction of either the Proposed Project or the Alternative Scenario would be similar to what would be expected for construction of the No Action development. However, in accordance with DOT requirements, a construction traffic impact analysis for a proposed project should be undertaken without the consideration of potential construction activities associated with as-of-right construction at the same project site. Applying this analysis framework, construction of the Proposed Project and the Alternative Scenario could still result in significant adverse traffic impacts; however, considering that the projected construction trips associated with both development scenarios would also be less than what would materialize upon their completion and occupancy, the anticipated impacts during construction are likely to be within the envelope of impacts identified for the Proposed Project and the Alternative Scenario (see Chapter 14, “Transportation”). Correspondingly, mitigation measures that would mitigate those impacts to the extent practicable could likely be used as well for addressing temporary impacts during construction. A detailed analysis of these construction-related impacts will be presented in the Final EIS. This analysis will also account for nearby construction effects associated with construction of the Hudson Tunnel project, including operational conditions of West 29th Street between Eleventh and Twelfth Avenues. The temporary operational condition of that roadway is expected to persist for the duration of construction of either the Proposed Project or the Alternative Scenario, which would also entail the reconstruction of West 33rd Street between Eleventh and Twelfth Avenues.

TRANSIT

As described above, the Proposed Project and the Alternative Scenario are projected to generate just over 2,000 and 3,100 daily workers during the third quarter of 2028 and the second quarter of 2029, respectively. With nearly 60 percent of construction workers expected to commute to the Development Site via transit, there would be approximately 1,000 and 1,500 construction workers traveling via transit during construction peak hours for the Proposed Project and the Alternative Scenario, respectively. These totals are well below the operational transit trips expected to be generated by either Proposed Project or the Alternative Scenario. Construction worker transit trips would be further dispersed to the 34th Street-Hudson Yards and other subway stations/lines, local bus routes, and commuter rail/bus options in the area. Furthermore, these trips would be made outside of the commuter peak hours, which correspond with lower background transit levels and are typically not subject to concern or assessment of operating conditions. Therefore, construction of the Proposed Project or the Alternative Scenario is not expected to result in any significant adverse transit impacts.

PEDESTRIANS

Similar to what has been concluded for traffic and transit, the number of construction workers traversing the pedestrian network (i.e., sidewalks, corners, and crosswalks) surrounding the Development Site would be substantially lower than those projected for the completion and occupancy of the Proposed Project or the Alternative Scenario. Furthermore, these peak construction pedestrian increments would take place during hours when background pedestrian levels are lower than they would be in the 8:00 AM to 9:00 AM and 5:00 PM to 6:00 PM commuter peak hours. Therefore, construction of the Proposed Project or the Alternative Scenario is not expected to result in any significant adverse pedestrian impacts.

With regard to pedestrian facilities surrounding the Development Site, as discussed above, MPT plans that are subject to approvals and stipulations from DOT’s OCMC would be implemented to appropriately protect and facilitate pedestrian flow, as well as to avoid impacts to pedestrian circulation. As with standard practices for construction projects in New York City, the temporary effects from these measures would change over time and across different parts of construction sites.

PARKING

Construction of the Proposed Project would generate a maximum daily parking demand of 436 spaces in the third quarter of 2028, while construction of the Alternative Scenario would generate a maximum daily parking demand of 675 spaces in the second quarter of 2029. Although the Development Site has a very sizeable footprint, various staging activities would take place at different parts of the site, such that the availability of on-site parking would likely be limited and cannot be guaranteed. Accordingly, most construction workers are expected to seek off-site parking in the surrounding area. As shown in Chapter 14, "Transportation," parking utilization at public parking facilities within ¼-mile of the Development Site is the highest during the midday period, with fewer than 400 parking spaces available under existing conditions. With the number of available parking spaces expected to decrease over time with increases in background traffic and parking demand, the projected construction parking demand levels for the Proposed Project and the Alternative Scenario would result in a parking shortfall, which is not considered a significant adverse impact under CEQR. It is likely, especially with the continuing transformation of West Midtown and Hudson Yards, that travel would shift more from auto to transit. For construction workers who do choose to drive, if there is not adequate nearby parking (i.e., within ¼-mile or an approximately five-minute walk of the Development Site), they would be expected to seek parking resources at a greater distance away.

AIR QUALITY

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

Emissions from non-road construction equipment and on-road vehicles have the potential to affect air quality. Emissions from dust-generating construction activities (i.e., truck loading and unloading operations) also have the potential to affect air quality. A quantitative analysis of the overall combined impact of both non-road and on-road sources of construction-related air emissions, including dust emissions, was performed to determine the potential for significant adverse impacts. Chapter 15, "Air Quality," contains a review of these air pollutants; applicable regulations, standards, and benchmarks; and general methodology for the air quality analyses. Additional details relevant only to the construction air quality analysis methodology are presented in this section.

EMISSIONS REDUCTION MEASURES

Construction activity in general, and large-scale construction in particular, has the potential to adversely affect air quality, primarily as a result of diesel emissions. Measures would be taken to reduce pollutant emissions during construction of the Proposed Project or the Alternative Scenario in accordance with all applicable laws, regulations, and building codes. Contractors would be required under contract specifications to implement an emissions reduction program to minimize the air quality effects from construction.

These include the use of clean fuel, dust suppression measures, idling restrictions, and diesel equipment reduction:

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

In addition, consistent with the Restrictive Declaration, the following measures would be implemented to further reduce air pollutant emissions during construction of the Proposed Project or the Alternative Scenario:

- *Utilization of Newer Equipment.* EPA's Tier 1 through 4 standards for non-road diesel engines regulate the emission of criteria pollutants from new engines, including PM, CO, NO_x, and hydrocarbons. To the extent practicable, all diesel-powered non-road construction equipment 50 horsepower (hp) or greater would meet at least the Tier 3[3] emissions standard, and, once Tier 4-compliant equipment is widely available, with the Tier 4 standard, and in all cases shall comply with the Tier 2 standard.
- *Best Available Tailpipe Reduction Technologies*. Non-road diesel engines with a power rating of 50 hp or greater and controlled truck fleets (i.e., truck fleets under long-term contract with the project) including but not limited to concrete mixing and

[3] The first federal regulations for new non-road diesel engines were adopted in 1994, and adopted by EPA into regulation in a 1998 Final Rulemaking. The 1998 regulation introduces Tier 1 emissions standards for all equipment 50 hp and greater and phases in the increasingly stringent Tier 2 and Tier 3 standards for equipment manufactured in 2000 through 2008. In 2004, EPA introduced Tier 4 emissions standards with a phased-in period of 2008 to 2015. The Tier 1 through 4 standards regulate the EPA criteria pollutants, including PM, hydrocarbons (HC), NO_x and CO. Prior to 1998, emissions from non-road diesel engines were unregulated. These engines are typically referred to as Tier 0.

pumping trucks would utilize the best available tailpipe (BAT) technology for reducing diesel particulate matter (DPM) emissions. Diesel particulate filters (DPFs) have been identified as being the tailpipe technology currently proven to have the highest reduction capability. Construction contracts would specify that all diesel non-road engines rated at 50 hp or greater would utilize DPFs, either installed by the original equipment manufacturer or retrofitted. Retrofitted DPFs must be verified by EPA or the California Air Resources Board. Active DPFs or other technologies proven to achieve an equivalent reduction may also be used. The use of DPFs for diesel engines meeting the Tier 3 emissions standard achieves similar emission reductions as the newer Tier 4 particulate matter emission standard.

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

ON-SITE CONSTRUCTION ACTIVITY ASSESSMENT`

Analysis Periods

To determine which construction periods constitute the worst-case periods for the pollutants of concern (PM, CO, and NO_2), construction-related emissions were calculated for each calendar year throughout the duration of construction on a rolling annual and peak day basis for $PM_{2.5}$. $PM_{2.5}$ was selected for determining the worst-case periods for all pollutants analyzed, because the ratio of predicted $PM_{2.5}$ incremental concentrations to impact criteria is anticipated to be higher than for other pollutants. Therefore, initial estimates of $PM_{2.5}$ emissions throughout the construction years for both the Proposed Project and the Alternative Scenario were used for determining the worst-case periods for analysis of all pollutants. Generally, emission patterns of PM_{10} and NO_2 would follow $PM_{2.5}$ emissions since they are related to diesel engines by horsepower. CO emissions may have a somewhat different pattern but would also be anticipated to be highest during periods when the most construction activity would occur.

Based on the resulting multi-year profiles of annual average and peak day average emissions of $PM_{2.5}$ developed for both the Proposed Project and Alternative Scenario, August 2028, with a projected maximum short-term emission rate of 2.615 pounds of $PM_{2.5}$ per day, and the 12-month period from November 2027 to October 2028, with a projected maximum annual average emission rate of 1.340 pounds of $PM_{2.5}$ per day, under the Alternative Scenario, were identified as the Proposed Actions' worst-case short-term and annual construction periods, respectively, since the highest project-wide $PM_{2.5}$ emissions were predicted in these periods.

Dispersion of the relevant air pollutants from the construction sites during these periods was analyzed. Broader conclusions regarding potential concentrations during non-peak periods for both the Proposed Project and the Alternative Scenario are discussed qualitatively, based on the reasonable worst-case analysis period results.

Engine Emissions

The sizes, types, and number of units of construction equipment were estimated based on the construction activity schedule developed for the activities under the Proposed

Actions. Emission rates for NO_x, CO, PM_{10}, and $PM_{2.5}$ from truck engines was developed using the EPA Motor Vehicle Emission Simulator (MOVES4) emission model. Emission factors for NO_x, CO, PM_{10}, and $PM_{2.5}$ from on-site construction engines were developed using the NONROAD emission module included in the MOVES4 emission model. The emission factor calculations took into account any emissions reduction measures that would be required, as described above, under "Emissions Reduction Measures."

On-Site Dust Emissions

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

Dispersion Modeling

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

Source Simulation

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

Meteorological Data

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

Background Concentrations

To estimate the maximum expected total pollutant concentrations, the calculated impacts from the emission sources must be added to a background value that accounts for existing pollutant concentrations from other sources. The background levels were based on concentrations monitored at the nearest NYSDEC ambient air monitoring stations. **Table 20-12** shows the existing background levels based on concentrations monitored at the nearest NYSDEC ambient air monitoring stations, along with the NAAQS. Data from 2017 to 2019 is proposed for use due to uncertainties in the representativeness of background concentrations in 2020 and 2021 due to the effects of COVID-19.

Table 20-12
Maximum Background Pollutant Concentrations

Pollutant	Average Period	Location	Concentration	NAAQS
$PM_{2.5}$	24-hour	JHS 126	17.8 μg/m^3	35 μg/m^3
	Annual	JHS 126	7.6 μg/m^3	9 μg/m^3
PM_{10}	24-hour	IS 52	36 μg/m^3	150 μg/m^3
NO_2	Annual	IS 52	32.8 μg/m^3	100 μg/m^3
CO	1-hour	CCNY	2.52 ppm	35 ppm
	8-hour	CCNY	1.2 ppm	9 ppm
Source: New York State Air Quality Report Ambient Air Monitoring System, NYSDEC, 2017–2019.				

Receptor Locations

Receptors for the modeling analysis were placed at locations that would be publicly accessible, at residences, schools, and other sensitive uses at both ground-level and elevated locations (e.g., residential windows), at adjacent sidewalk locations, and at publicly accessible open spaces (e.g., the High Line).

ON-ROAD SOURCES

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

On-Road Vehicle Emissions

Vehicular engine emission factors were computed using the EPA mobile source emissions model, MOVES4. This emissions model calculates engine emission factors for various vehicle types, based on the fuel type (gasoline, diesel, or natural gas), meteorological conditions, vehicle speeds, vehicle age, roadway type and grade, number of starts per day, engine soak time, inspection and maintenance programs and various other factors that influence emissions. The inputs and use of MOVES incorporate the most current resource available from NYSDEC.[4]

On-Road Dust Emissions

$PM_{2.5}$ emission rates were determined with road dust to account for their impacts. Road dust emission factors were calculated according to the latest procedure delineated by

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

EPA.[5] An average weight of 20 tons and 2.6 tons was assumed for construction trucks and worker vehicles in the analyses, respectively.

CONSTRUCTION AIR QUALITY ANALYSIS RESULTS

As discussed above under On-Site Construction Activity Assessment-Analysis Periods, based on the resulting multi-year profiles of annual average and peak day average emissions of $PM_{2.5}$ developed for both the Proposed Project and the Alternative Scenario, activities under the Alternative Scenario were identified as the Proposed Actions' worst-case short-term and annual construction periods, respectively, since the highest project-wide $PM_{2.5}$ emissions were predicted in these periods. Maximum predicted concentrations during the representative worst-case construction periods for the Alternative Scenario are presented in **Table 20-13**. To estimate the maximum total pollutant concentrations, the modeled concentrations from the Alternative Scenario were added to a background value that accounts for existing pollutant concentrations from other nearby sources. As shown in **Table 20-13**, the maximum predicted total concentrations of all pollutants are below the applicable NAAQS. In addition, the maximum predicted $PM_{2.5}$ concentrations would not exceed the applicable *CEQR Technical Manual* $PM_{2.5}$ *de minimis* thresholds in the 24-hour and annual averaging periods.[6] Emissions from the other less intensive construction periods under the Alternative Scenario and the construction activities for the Proposed Project would be less than the emissions during the modeled worst-case periods; therefore, the resulting concentrations from these non-peak periods are expected to be less than the concentrations presented in **Table 20-13**. Therefore, construction activities associated with Proposed Actions would not result in significant adverse air quality impacts.

Table 20-13
Maximum Pollutant Concentrations – Alternative Scenario

Pollutant	Averaging Period	Units	Maximum Modeled Impact	Background Concentration(1)	Total Concentration	*De minimis*	NAAQS
NO_2	Annual	μg/m³	7.8	32.8	40.6	-	100
CO	1-hour	ppm	1.5	2.5	4.1	-	35
	8-hour	ppm	0.5	1.2	1.7	-	9
PM_{10}	24-hour	μg/m³	3.9	36	39.9	-	150
$PM_{2.5}$	24-hour	μg/m³	3.7	17.8	21.5	8.6(2)	35
	Annual—Local	μg/m³	0.16	7.6	7.8	0.3	9
	Annual—Neighborhood	μg/m³	0.02	7.6	7.6	0.1	

Notes: N/A—Not Applicable
(1) The background levels are based on the most representative concentrations monitored at NYSDEC ambient air monitoring stations (see **Table 20-6**).
(2) $PM_{2.5}$ *de minimis* criterion—24-hour average, not to exceed more than half the difference between the background concentration and the 24-hour standard of 35 μg/m³.

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

6 The *CEQR Technical Manual* 24-hour $PM_{2.5}$ *de minimis* criterion is equal to half the difference between the 24-hour background concentration (17.8 μg/m³) and the 24-hour standard (35 μg/m³).

NOISE

Construction under the Proposed Actions has the potential to result in noise impacts generated by the operation of construction equipment on construction sites and construction-related vehicles traveling to and from the Development Site on adjacent roadways. The potential for noise impacts due to the construction under the Proposed Actions is discussed below.

SOUND LEVEL DESCRIPTORS

Chapter 17, “Noise,” defines the sound level descriptors. The $L_{eq(1)}$ is the noise descriptor recommended for use in the *CEQR Technical Manual* for vehicular traffic and construction noise impact evaluation and is used to provide an indication of highest expected sound levels. The 1-hour L_{10} is the noise descriptor used in the *CEQR Technical Manual* noise exposure guidelines. The maximum 1-hour equivalent sound level ($L_{eq(1)}$) and maximum 1-hour L_{10} were selected as the noise descriptors used in the construction noise impact evaluation.

CONSTRUCTION NOISE ANALYSIS FUNDAMENTALS

Construction activities increase noise levels as a result of (1) the operation of construction equipment on site; and (2) the movement of construction-related vehicles (i.e., worker trips, and material and equipment trips) on the roadways to and from the construction site. The combined effect of each of these noise sources was evaluated.

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

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

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

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

SELECTION OF ANALYSIS SCENARIO

As described above, the EIS analyzes both the Proposed Project and an Alternative Scenario. As platform construction would be identical under either scenario, both scenarios consist of approximately the same amount of development in area, the total construction duration of each scenario is approximately the same, and the equipment list for each building to be constructed under either scenario is identical, one worst-case scenario was analyzed in detail for construction noise in order to establish a worst-case envelope of potential construction noise impacts. Since the Alternative Scenario consists of five buildings (i.e., Sites A, B, C-1, C-2, and C-3) to be constructed simultaneously compared to four buildings under the Proposed Project (Podium, Sites A, B, and C), and tower construction under the Alternative Scenario would occur in each corner of the Project Site, the Alternative Scenario represents worst-case construction conditions, and potential impacts determined for the Alternative Scenario conservatively represent the potential impacts to occur with the Proposed Project.

CONSTRUCTION NOISE ANALYSIS METHODOLOGY

A detailed modeling analysis was conducted to quantify potential construction noise effects at existing noise receptors (e.g., residences, schools, etc.) near the proposed Development Site as well as at completed and occupied proposed buildings. The construction noise methodology is as follows:

1. *Select analysis hours for cumulative on-site equipment and construction truck noise analysis*. The 7:00 AM to 8:00 AM hour is 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 cumulative on-site equipment and construction truck noise analysis.* Selected receptors represent open space, residential, commercial office, or other noise-sensitive uses potentially affected by the construction associated with the Proposed Actions during operation of on-site construction equipment and/or along routes taken to and from the development site by construction trucks. Project elements (e.g., buildings, open spaces) that would be completed and occupied while construction under the Proposed Actions is still ongoing are also included in the analysis as receptors.
3. *Establish existing noise levels at selected receptors.* Measured existing noise levels from the operational noise analysis have been relied upon for the construction noise analysis as well. As shown in **Table 17-5**, with the exception of West 33rd Street between Eleventh and Twelfth Avenues (a segment on which there are no existing noise-sensitive uses), measured L_{eq} noise levels were all greater than 65 dBA during construction hours. Consequently, an existing level of 65 dBA L_{eq} has been applied to all receptors included in the construction noise analysis. This assumption will be refined between the Draft and Final EIS, at which time a CadnaA model representing the existing conditions (including existing building geometry and existing condition traffic levels) will be validated based on the measured existing noise levels and used to calculate baseline noise levels at the other noise receptor locations included in the analysis.

4. *Establish worst-case noise analysis period under the anticipated construction schedule.* The worst-case noise analysis period is the period during the construction schedule that is expected to result in the highest construction noise levels. The selected time period is discussed below in the “Analysis Periods” section. Additional analysis periods will be analyzed to evaluate potential construction noise impacts in more detail between the Draft and Final EIS.
5. *Calculate construction noise levels for each analysis period at each receptor location*. Given the on-site equipment and peak hourly volume of construction truck trips expected during the analysis period (see **Table 20-9),** and the location of the equipment, which is based on construction logistics diagrams, a CadnaA model file was created. The model included each of the construction noise sources during the analysis period and hour, calculation points representing multiple locations on various façades and floors of the associated receptors previously identified, as well as the noise control measures that would be used on the construction site.
6. *Determine total noise levels and noise level increments during construction.* For 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.
7. *Compare construction noise increments to impact criteria*. For each noise receptor, the predicted noise increments due to construction were compared to CEQR noise impact thresholds and additional incremental noise impact criteria as described below.
8. *Estimate interior noise levels*. At receptors representing interior locations where noise increments due to construction are predicted to exceed incremental construction noise impact thresholds, window/wall attenuation was estimated based on field observations. Maximum predicted construction noise levels and estimated window/wall attenuation was used to estimate interior noise levels.
9. *Establish construction noise duration*. For each receptor, the noise level increments and estimated interior noise levels in each analysis period was evaluated to determine the duration during construction that the receptor would experience exceedances of impact criteria.
10. *Identify potential construction noise impacts.* At each receptor where exceedances of construction noise impact criteria are predicted, a determination was made as to whether the Proposed Actions would have the potential to result in significant adverse construction noise impacts.
11. *Describe night-time noise and potential night-time noise impacts.* Since platform construction would regularly include a second shift from 3:30 PM to 12 AM, such construction activity would have the potential to result in noise impacts during night-time hours when residential and hotel receptors are more sensitive to noise. Since platform construction was previously analyzed in the 2021 Infrastructure FEIS and its potential for noise impacts evaluated according to FTA and CEQR impact criteria, its conclusions regarding night-time construction noise impacts provide a conservative indication of potential night-time construction noise impacts for the Proposed Project

and Alternative Scenario. These potential night-time construction noise impacts are described below.

CONSTRUCTION MOBILE SOURCE ANALYSIS

As described above in the Transportation section, a detailed analysis of construction-related traffic impacts will be presented in the Final EIS. Based on this detailed analysis of construction-related traffic, a Noise PCE screening analysis will be conducted for noise levels from construction mobile sources. At noise receptor sites adjacent to the construction work areas that represent noise-sensitive uses, the construction worker vehicle and construction truck trips during the analysis hour will be converted to Noise PCEs and compared to the existing level of Noise PCEs to estimate the level of noise resulting from these trips.

However, to conservatively account for the noise effects of construction truck trips, the peak total volume of construction truck trips that would occur during the construction workday (i.e., after 7:00 AM) were included in the modeling of construction noise as discussed below.

NOISE RECEPTOR SITES

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

Within the study area, multiple receptor locations close to the construction areas were selected for the construction noise analysis to represent buildings or noise-sensitive open space locations that have the potential to experience elevated noise as a result of construction. These receptors are 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 and specific open space locations (e.g., the High Line), noise receptors at multiple elevations were analyzed. Receptors at street level will be used to represent open space locations at grade. The receptor sites selected for detailed analysis represent locations where maximum project effects due to construction noise would be expected.

Within the study area, 59 receptor locations were selected for the construction noise analysis. **Table 20-14** lists the noise receptor sites (i.e., sites 1 to 59) and the associated land use at these sites. The noise receptor locations are shown in **Figure 20-1**.

CONSTRUCTION NOISE MODELING

Noise effects from construction activities were evaluated using the CadnaA model, a computerized model developed by DataKustik for noise prediction and assessment. The model can be used for the analysis of a wide variety of noise sources, including stationary sources (e.g., construction equipment, industrial equipment, power generation equipment), transportation sources (e.g., roads, highways, railroad lines, busways, airports), and other specialized sources (e.g., sporting facilities). The model takes into

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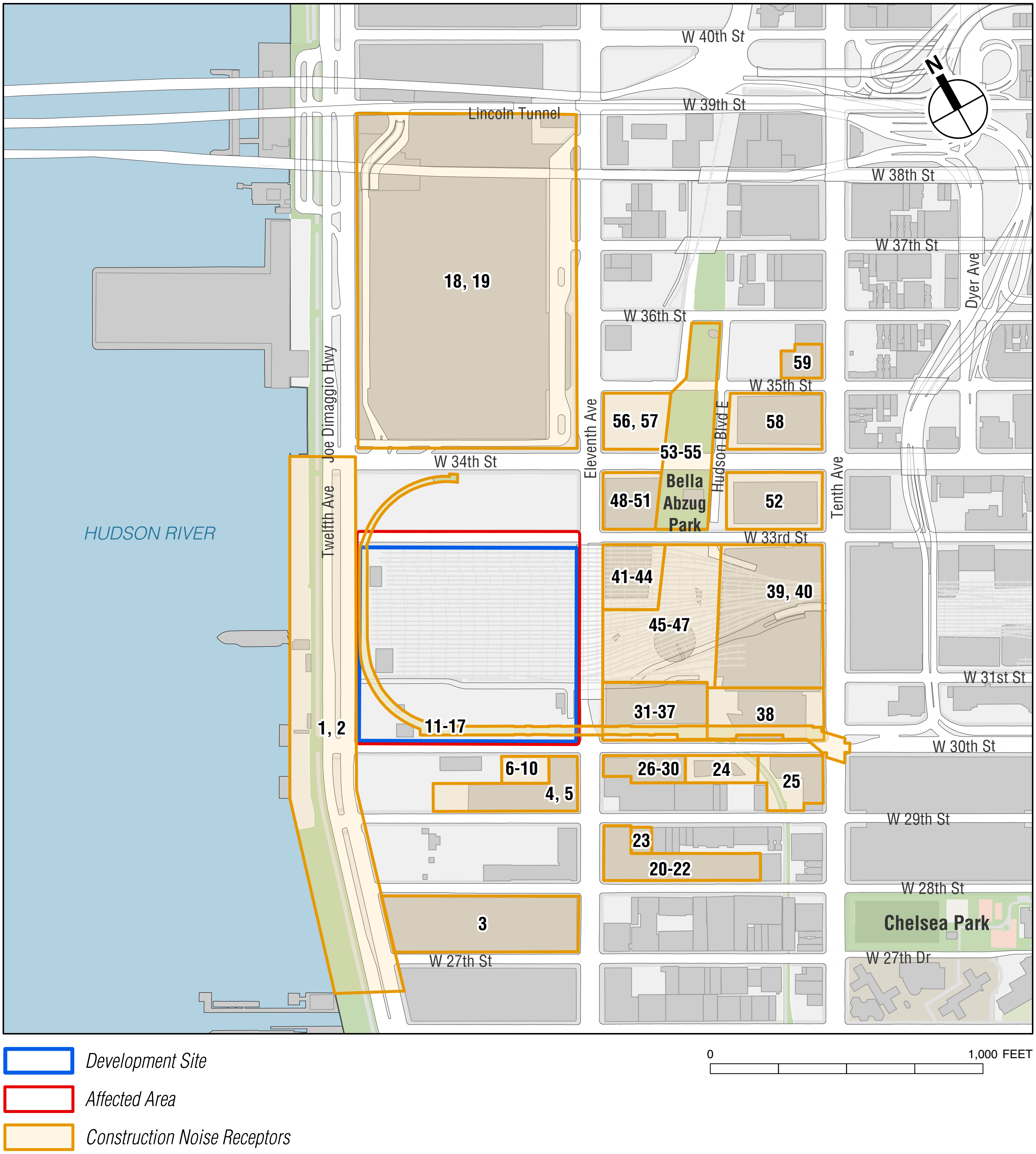


Construction Noise Receptors

WESTERN RAIL YARD MODIFICATIONS

Figure 20-1

account the reference sound pressure levels of the noise sources at 50 feet, attenuation with distance, ground contours, reflections from barriers and structures, attenuation due to shielding, etc. The CadnaA model is based on the acoustic propagation standards promulgated in International Standard ISO 9613-2. This standard is currently under review for adoption by the American National Standards Institute (ANSI) as an American Standard. The CadnaA model is a state-of-the-art tool for noise analysis and is approved for construction noise level prediction by the *CEQR Technical Manual*.

Table 20-14
Noise Receptors by Location and Land Use

Receptor	Location	Block / Lot	Associated Land Use
1, 2	Hudson River Park and Pickleball Courts	Block 665 / Lots 1 and 68	Open Space and Recreation
3	261 Eleventh Avenue	Block 673 / Lot 1	Commercial Office
4, 5	311 Eleventh Avenue	Block 675 / Lot 12	Mixed Residential and Commercial
6-10	606 West 30th Street	Block 675 / Lot 39	Mixed Residential and Commercial
11-17	The High Line	Block 676, 679, and 702	Open Space and Recreation
18, 19	Javits Center	Block 680 / Lot 1	Event Space
20-22	539 West 28th Street	Block 700 / Lot 9	Mixed Residential and Commercial
23	550 West 29th Street	Block 700 / Lot 7502	Mixed Residential and Commercial
24	520 West 30th Street	Block 701 / Lot 16	Mixed Residential and Commercial
25	500 West 30th Street	Block 701 / Lot 7502	Mixed Residential and Commercial
26-30	312 Eleventh Avenue	Block 701 / Lot 62	Mixed Residential and Commercial
31-37	553 West 30th Street	Block 702 / Lot 7502	Mixed Residential and Commercial
38	501 West 30th Street	Block 702 / Lot 10	Commercial Office
39, 40	500 West 33rd Street	Block 702 / Lot 7501	Commercial Office
41-44	34 Hudson Yards	Block 702 / Lot 7503	Mixed Residential and Commercial
45, 46	Hudson Yards Public Square and Gardens	Block 702 / Lot 175	Open Space and Recreation
47	The Vessel	Block 702 / Lot 175	Open Space and Recreation
48-51	380 Eleventh Avenue	Block 705 / Lot 1	Commercial Office
52	427 Tenth Avenue	Block 705 / Lot 39	Commercial Office
53-55	Bella Abzug Park	Blocks 705, 706, and 707	Open Space and Recreation
56, 57	400 Eleventh Avenue	Block 706 / Lot 1	Commercial Office
58	527 West 34th Street	Block 706 / Lot 17	Commercial Office
59	505 West 35th Street	Block 707 / Lot 7501	Mixed Residential and Commercial

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

Construction equipment source strength was determined by the L_{max} levels presented in Table 22-1 of the *CEQR Technical Manual*. For construction equipment not included in this table, other reference sources, manufacturer specifications, or field measured noise levels were used.

In addition, shielding by barriers erected on the construction site and reflections and shielding from adjacent buildings will be accounted for in the model. Construction-related vehicles were assigned to the adjacent roadways. 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. The $L_{10(1)}$ noise levels were conservatively estimated by adding 3 dBA to the $L_{eq(1)}$ noise levels, as is standard practice.[7]

DETERMINATION OF NON-CONSTRUCTION NOISE LEVELS

Noise generated by construction activities (calculated using the CadnaA model as described above) were added to baseline (i.e., non-construction) noise levels, including noise generated by non-construction traffic on adjacent roadways, to determine the total noise levels at each receptor location. As shown in Table 17-5, with the exception of West 33rd Street between Eleventh and Twelfth Avenues (a segment on which there are no existing noise-sensitive uses), measured L_{eq} noise levels were all greater than 65 dBA during construction hours. Consequently, an existing level of 65 dBA L_{eq} has been applied to all receptors included in the construction noise analysis. This assumption will be refined between the Draft and Final EIS, at which time baseline noise levels will be calculated using the CadnaA model using existing condition traffic data. The existing condition CadnaA model will include the noise measurement locations described in Chapter 17, "Noise," for the purpose of validating the calculated existing condition noise level modeling.

ANALYSIS TIME PERIOD SELECTION

The construction noise analysis estimated construction noise levels based on projected activity and equipment usage as well as the peak volume of construction truck traffic as shown in **Table 20-9**. As discussed above, the Alternative Scenario was determined to be the worst-case scenario for construction noise and was therefore analyzed in detail in order to establish a worst-case envelope of potential construction noise impacts.

Based on the anticipated construction schedule and preliminary construction estimates developed for the Alternative Scenario, a specific time period during construction was selected for detailed analysis, i.e., March through August 2029. The period selected includes all construction stages for each of the proposed buildings included in the Alternative Scenario as well as the peak construction activity resulting from the platform construction as established in the construction noise analysis from the 2021 Infrastructure FEIS. This is the time period with the potential to result in the maximum incremental construction noise at nearby receptors (i.e., time periods when multiple buildings would be under construction using noisy equipment). Additional analysis periods will be analyzed to evaluate potential construction noise impacts in more detail between the Draft and Final EIS.

CONSTRUCTION NOISE IMPACT CRITERIA

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

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

time (the “duration”), and the locations where construction has the potential to increase noise (“receptors”) in evaluating potential construction noise effects.

The noise impact criteria described in Chapter 19, Section 410 of the *CEQR Technical Manual* serve as a screening-level threshold for potential construction noise impacts. If construction resulting from the Proposed Actions would not result in any exceedances of these criteria at a given receptor, then that receptor would not have the potential to experience a construction noise impact.

If noise levels during construction would exceed the screening thresholds at a given receptor, the specific intensity and duration of construction noise level increases would be considered further to determine the potential for temporary significant adverse impacts. Noise level increases that would be considered “objectionable” (i.e., equal to or greater than 15 dBA) lasting 12 consecutive months or more and noise level increases that would be considered “very objectionable” (i.e., equal to or greater than 20 dBA)[8] lasting three consecutive months or more could also be considered significant impacts.

Since construction noise is being represented by one six-month worst-case analysis time period, it is conservatively assumed that the predicted noise level increments would occur for at least 12 consecutive months.

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

NOISE REDUCTION MEASURES

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

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

- Equipment that meets the sound level standards specified in Subchapter 5 of the *New York City Noise Control Code* and Table 22-1 of the *CEQR Technical Manual* would be utilized from the start of construction. **Table 20-15** shows the noise levels for

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

typical construction equipment that would be used for construction under the Proposed Actions.

- As early in the construction period as logistics allow, diesel- or gas-powered equipment would be replaced with electrical-powered equipment such as welding machines, water pumps, bench saws, and table saws (i.e., early electrification) to the extent feasible and practicable. Where electrical equipment cannot be used, diesel or gas-powered generators and pumps would be located within buildings to the extent feasible and practicable.
- The construction site would be configured to minimize back-up alarm noise. In addition, all trucks would not be allowed to idle more than three minutes at the construction site based upon Title 24, Chapter 1, Subchapter 7, Section 24-163 of the New York City Administrative Code.
- Contractors and subcontractors would be required to properly maintain their equipment and mufflers.

In addition, the source control listed below would be implemented as a PCRE beyond New York regulations for the construction under the Proposed Actions:

- Pile installation and foundation elements would be constructed by drilling rather than impact driving.

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

- Noisy equipment, such as cranes, concrete pumps, concrete trucks, and delivery trucks, would be located away from and shielded from sensitive receptor locations to the extent practicable given site limitations (i.e., receptors on multiple sides).
- Noise barriers constructed from plywood or other materials would be utilized to provide shielding (e.g., the construction sites would have a minimum 8-foot-tall barrier around the perimeter).
- Path noise control measures (i.e., portable noise barriers, panels, enclosures, and acoustical tents) would be used for certain equipment as necessary to the extent feasible and practicable to remain consistent with **Table 20-15**. The details to construct portable noise barriers, enclosures, tents, etc. are shown in DEP's *Rules for Citywide Construction Noise Mitigation.*[9]

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

Table 20-15
Construction Equipment Noise Emissions in dBA

Equipment List	Typical L_{max} Noise Level at 50 feet[1]
All Other Equipment > 5 HP	85
Bar Bender	80
Concrete Mixer Truck	85
Concrete Pump Truck	82
Concrete Saw	90
Concrete Trowel (Walk Behind)	76
Concrete Vibrator	76[3]
Crane	85
Generator	82
Jackhammer	85
Man Lift	85
Scissor Lift	74[2]
Welder / Torch	73

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

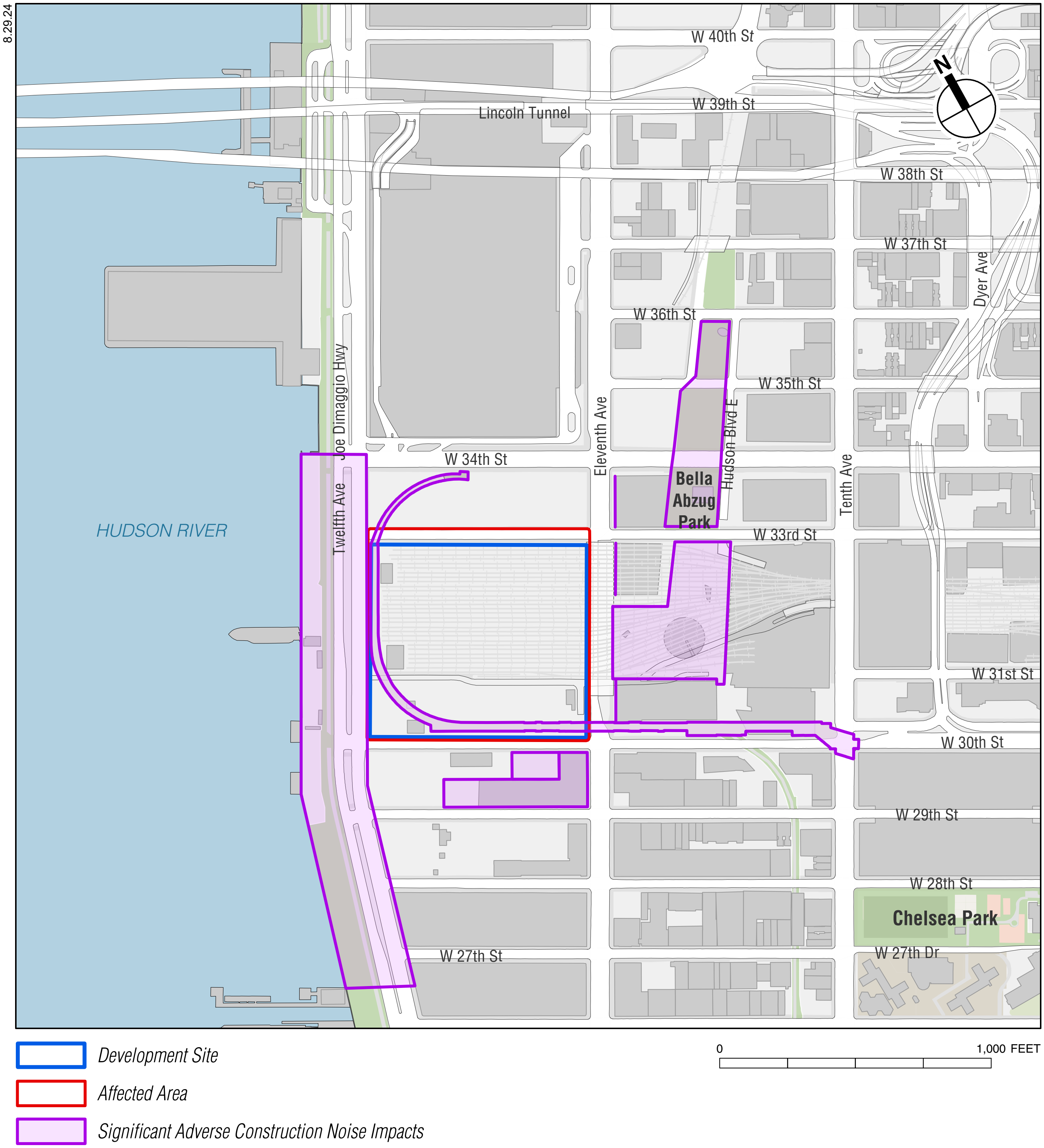
In addition, the path control listed below would be implemented as a PCRE beyond New York regulations for the construction under the Proposed Actions:

- Throughout the construction period, concrete operations would be located within the construction barrier.

DAYTIME CONSTRUCTION NOISE ANALYSIS RESULTS

Using the methodology described and considering the noise abatement measures specified above, a cumulative noise analysis was performed to determine maximum 1-hour equivalent ($L_{eq(1)}$) noise levels that would be expected at each of the 59 noise receptor locations during of the selected construction period.

The full results of the detailed construction noise analysis are shown in **Appendix F**. The results of the detailed construction noise analysis at locations where “objectionable” and “very objectionable” noise level increases are predicted are summarized in **Table 20-16**. Locations in which significant adverse impacts were determined are shown in **Figure 20-2**.



Significant Adverse Construction Noise Impacts

WESTERN RAIL YARD MODIFICATIONS

Figure 20-2

Table 20-16
Construction Noise Analysis Results in dBA

Receptor	Address	Existing L_{10}	Max Total L_{10}	Max Change in L_{10}	"Objectionable" Increase	"Very Objectionable" Increase
1	Hudson River Park and Pickleball Courts	68.0	84.9	16.9	Yes	No
2	Hudson River Park and Pickleball Courts	68.0	84.9	16.9	Yes	No
4	311 Eleventh Avenue	68.0	84.0	16.0	Yes	No
5	311 Eleventh Avenue	68.0	84.8	16.8	Yes	No
6	606 West 30th Street	68.0	83.7	15.7	Yes	No
7	606 West 30th Street	68.0	86.0	18.0	Yes	No
8	606 West 30th Street	68.0	86.0	18.0	Yes	No
9	606 West 30th Street	68.0	84.5	16.5	Yes	No
11	The High Line	68.0	87.6	19.6	Yes	No
12	The High Line	68.0	89.3	21.3	Yes	Yes
13	The High Line	68.0	87.8	19.8	Yes	No
14	The High Line	68.0	89.3	21.3	Yes	Yes
15	The High Line	68.0	88.6	20.6	Yes	Yes
16	The High Line	68.0	92.7	24.7	Yes	Yes
17	The High Line	68.0	84.7	16.7	Yes	No
31	553 West 30th Street	68.0	83.3	15.3	Yes	No
32	553 West 30th Street	68.0	83.2	15.2	Yes	No
41	34 Hudson Yards	68.0	83.2	15.2	Yes	No
45	Hudson Yards Public Square and Gardens	68.0	85.1	17.1	Yes	No
46	Hudson Yards Public Square and Gardens	68.0	84.6	16.6	Yes	No
47	The Vessel	68.0	85.1	17.1	Yes	No
48	380 Eleventh Avenue	68.0	83.4	15.4	Yes	No
53	Bella Abzug Park	68.0	84.7	16.7	Yes	No
54	Bella Abzug Park	68.0	84.6	16.6	Yes	No
55	Bella Abzug Park	68.0	84.5	16.5	Yes	No

The noise levels shown in **Table 20-16** are maximum 1-hour L_{10} noise levels; however, noise levels resulting from construction typically fluctuate throughout the day and from day to day during each construction phase and would not be sustained at these maximum values. Additionally, noise levels expected to result from the construction under the Proposed Actions would be comparable to those from typical construction sites in New York City involving a new building with concrete slab floors and column-supported foundation. Similarly, potential disruptions to adjacent residences and other receptors from elevated noise levels generated by construction would be expected to be comparable to those that would occur immediately adjacent to a typical New York City construction site during the portions of the construction period when the loudest activities would occur.

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

The High Line

Receptors 11 through 17 represent the High Line. Existing noise levels at these receptors are estimated in the mid-60s dBA, which would be considered "marginally acceptable" according to *CEQR Technical Manual* noise exposure criteria. Consistent with the findings of the 2021 Infrastructure FEIS, construction is predicted to result in noise levels up to the low 90s dBA, resulting in noise level increases up to approximately 25 dBA during the most noise-intensive stage of construction (i.e., construction on Site A directly over the High Line), which would take place over the course of approximately 34 months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these receptors would be in the “clearly unacceptable” category. Based on the prediction of “very objectionable” noise level increases occurring over the course of greater than three consecutive months, construction noise would result in a temporary significant adverse impact at the portion of the High Line north of West 30th Street. This receptor is discussed further in Chapter 22, “Mitigation.”

Hudson Yards Public Square and Gardens and the Vessel

Receptors 45 through 47 represent the Hudson Yards Public Square and Gardens and the Vessel. Existing noise levels at these receptors are estimated in the high 60s dBA, which would be considered “marginally acceptable” according to *CEQR Technical Manual* noise exposure criteria. Construction is predicted to result in noise levels up to the mid-80s dBA at these receptors, resulting in noise level increases up to approximately 17 dBA during the most noise-intensive stage of construction (i.e., platform construction excavation and caisson drilling), which would take place over the course of approximately 30 months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these receptors would be in the “clearly unacceptable” category. Based on the prediction of “objectionable” noise level increases occurring over the course of greater than 12 consecutive months, construction noise would result in a temporary significant adverse impact at the Hudson Yards Public Square and Gardens and the Vessel. These receptors are discussed further in Chapter 22, “Mitigation.”

Hudson River Park

Receptors 1 and 2 represent Hudson River Park. Existing noise levels at these receptors are estimated in the high 60s dBA, which would be considered “marginally acceptable” according to *CEQR Technical Manual* noise exposure criteria. Construction is predicted to result in noise levels up to the mid-80s dBA at these receptors, resulting in noise level increases up to approximately 17 dBA during the most noise-intensive stage of construction (i.e., platform construction excavation and caisson drilling), which would take place over the course of approximately 30 months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these receptors would be in the “clearly unacceptable” category. Based on the prediction of “objectionable” noise level increases occurring over the course of greater than 12 consecutive months, construction noise would result in a temporary significant adverse impact at Hudson River Park between West 26th Street and West 34th Street. This receptor is discussed further in Chapter 22, “Mitigation.”

Bella Abzug Park

Receptors 53 through 55 represent Bella Abzug Park. Existing noise levels at these receptors are estimated in the high 60s dBA, which would be considered “marginally acceptable” according to *CEQR Technical Manual* noise exposure criteria. Construction is predicted to result in noise levels up to the mid-80s dBA at these receptors, resulting in noise level increases up to approximately 17 dBA during the most noise-intensive stage of construction (i.e., platform construction excavation and caisson drilling), which would take place over the course of approximately 30 months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these receptors would be in the “clearly unacceptable” category. Based on the prediction of “objectionable” noise level increases occurring over the course of greater than 12 consecutive months, construction noise would result in a temporary significant adverse impact at Bella Abzug Park. This receptor is discussed further in Chapter 22, “Mitigation.”

Residential Receptors on West 30th Street between Eleventh and Twelfth Avenues

Receptors 4 through 10 represent residential buildings on West 30th Street between Eleventh and Twelfth Avenues, including 311 Eleventh Avenue and 606 West 30th Street. Existing noise levels at these receptors are estimated in the high 60s dBA, which would be considered “marginally acceptable” according to *CEQR Technical Manual* noise exposure criteria. Construction is predicted to result in noise levels up to the mid-80s dBA at these receptors, resulting in noise level increases up to approximately 18 dBA during the most noise-intensive stage of construction (i.e., the overlap of platform MEP fit-out with construction at Site B), which would take place over the course of approximately 24 months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these receptors would be in the “clearly unacceptable” category.

These receptors are constructed on lots containing E-designations requiring between 28 and 33 dBA window/wall attenuation and the provision of an alternate means of ventilation. Consequently, interior L_{10} noise levels would be up to approximately 55 dBA. Compared to the CEQR interior noise threshold of 45 dBA for residences, interior noise levels would be up to approximately 10 dBA higher. Based on the prediction of “objectionable” noise level increases lasting greater than 12 consecutive months and interior noise levels exceeding the acceptable limit, construction noise would result in a temporary significant adverse impact at 311 Eleventh Avenue and 606 West 30th Street. These receptors are discussed further in Chapter 22, “Mitigation.”

Residential Receptors at 553 West 30th Street

Receptors 31 through 37 represent residential receptors at 553 West 30th Street. Existing noise levels at these receptors are estimated in the high 60s dBA, which would be considered “marginally acceptable” according to *CEQR Technical Manual* noise exposure criteria.

At receptors 33 through 37, which represent portions of the north, west, and south façades of the building, construction is predicted to result in noise levels up to the low 80s dBA, resulting in noise level increases up to approximately 13 dBA during the most noise-intensive stages of construction (i.e., the overlap of platform MEP fit-out with construction at Site B). According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these façades would be in the “marginally unacceptable” to “clearly unacceptable” category. No “objectionable” or “very objectionable” increases are predicted to occur at these receptors; consequently, noise from construction would not rise to the level of a significant impact.

At receptors 31 and 32, which represent the west façade of the building, construction is predicted to result in noise levels up to the low 80s dBA, resulting in noise level increases slightly greater than 15 dBA during the most noise-intensive stage of construction (i.e., the overlap of platform MEP fit-out with construction at Site B), which would take place over the course of approximately 24 months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these receptors would be in the "clearly unacceptable" category.

This building appears to have insulated glass windows and central air conditioning, which would be expected to provide approximately 32 dBA window/wall attenuation. Consequently, interior L_{10} noise levels would be up to approximately 51 dBA. Compared to the CEQR interior noise threshold of 45 dBA for residences, interior noise levels would be up to approximately 6 dBA higher. Based on the prediction of "objectionable" noise level increases lasting greater than 12 consecutive months and interior noise levels exceeding the acceptable limit, construction noise would result in a temporary significant adverse impact at the residential receptors along the west façade of 553 West 30th Street. These receptors are discussed further in Chapter 22, "Mitigation."

Residential and Hotel Receptors at 34 Hudson Yards

Receptors 41 through 44 represent residential and hotel guestroom receptors at 34 Hudson Yards. Existing noise levels at these receptors are estimated in the high 60s dBA, which would be considered "marginally acceptable" according to *CEQR Technical Manual* noise exposure criteria.

At receptors 42 through 44, which represent portions of the north, east, and south façades of the building, construction is predicted to result in noise levels up to the low 80s dBA, resulting in noise level increases up to approximately 13 dBA during the most noise-intensive stages of construction (i.e., the overlap of platform MEP fit-out with construction at Site C3). According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these façades would be in the "marginally unacceptable" to "clearly unacceptable" category. No "objectionable" or "very objectionable" increases are predicted to occur at these receptors; consequently, noise from construction would not rise to the level of a significant impact.

At receptor 41, which represents the west façade of the building, construction is predicted to result in noise levels up to the low 80s dBA, resulting in noise level increases slightly greater than 15 dBA during the most noise-intensive stage of construction (i.e., the overlap of platform MEP fit-out with construction at Site B), which would take place over the course of approximately 24 months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these receptors would be in the "clearly unacceptable" category.

This building appears to have insulated glass windows and central air conditioning, which would be expected to provide approximately 32 dBA window/wall attenuation. Consequently, interior L_{10} noise levels would be up to approximately 51 dBA. Compared to the CEQR interior noise threshold of 45 dBA for residences, interior noise levels would be up to approximately 6 dBA higher. Based on the prediction of "objectionable" noise level increases lasting greater than 12 consecutive months and interior noise levels exceeding the acceptable limit, construction noise would result in a temporary significant adverse impact at the residential and hotel guestroom receptors along the west façade of 34 Hudson Yards. These receptors are discussed further in Chapter 22, "Mitigation."

Commercial Office Receptors at 380 Eleventh Avenue

Receptors 48 through 51 represent commercial office receptors at 380 Eleventh Avenue. Existing noise levels at these receptors are estimated in the high 60s dBA, which would be considered "marginally acceptable" according to *CEQR Technical Manual* noise exposure criteria.

At receptors 49 through 51, which represent portions of the north, east, and south façades of the building, construction is predicted to result in noise levels up to the low 80s dBA, resulting in noise level increases up to approximately 13 dBA during the most noise-intensive stages of construction (i.e., the overlap of platform MEP fit-out with construction at Site C3). According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these façades would be in the "marginally unacceptable" to "clearly unacceptable" category. No "objectionable" or "very objectionable" increases are predicted to occur at these receptors; consequently, noise from construction would not rise to the level of a significant impact.

At receptor 48, which represents the west façade of the building, construction is predicted to result in noise levels up to the low 80s dBA, resulting in noise level increases slightly greater than 15 dBA during the most noise-intensive stage of construction (i.e., the overlap of platform MEP fit-out with construction at Site B), which would take place over the course of approximately 24 months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these receptors would be in the "clearly unacceptable" category.

This building appears to have insulated glass windows and central air conditioning, which would be expected to provide approximately 32 dBA window/wall attenuation. Consequently, interior L_{10} noise levels would be up to approximately 51 dBA. Compared to the CEQR interior noise threshold of 50 dBA for commercial office uses, interior noise levels would be up to approximately 1 dBA higher. Based on the prediction of "objectionable" noise level increases lasting greater than 12 consecutive months and interior noise levels exceeding the acceptable limit, construction noise would result in a temporary significant adverse impact at the commercial office receptors along the west façade of 380 Eleventh Avenue. These receptors are discussed further in Chapter 22, "Mitigation."

Commercial Office Receptors at Alternative Scenario Site C1

If the commercial office tower at Site C1 in the Alternative Scenario would be completed and occupied while construction of remaining project elements (i.e., Site A, Site B, Site C2, and Site C3) would be ongoing, construction under the Alternative Scenario would also have the potential to result in a significant adverse impact at the commercial office receptors in Site C1. The potential for significant adverse construction noise impacts at commercial office receptors at Site C1 during remaining construction under the Alternative Scenario will be examined further between the Draft and Final EIS.

Other Nearby Receptors

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

NIGHTTIME CONSTRUCTION NOISE IMPACTS

As described above, the analysis of noise resulting from night-time platform construction from the 2021 Infrastructure FEIS provides a conservative indication of potential night-time construction noise impacts for the Proposed Project and Alternative Scenario.

Residential and Hotel Receptors along Eleventh Avenue between West 29th and 33rd Streets

The residential and hotel receptors at 34 Hudson Yards and 553 West 30th Street were examined in the construction noise analysis from the 2021 Infrastructure FEIS as "Residential Buildings along Eleventh Avenue between West 29th and 33rd Streets." That analysis concluded that hoe ram use over the course of nine non-consecutive months during platform construction would result in noise level increments at these receptors up to approximately 8 dBA. However, these buildings are on zoning lots with Noise (E) Designations requiring a minimum of 35 dB(A) façade attenuation and an alternate means of ventilation allowing for the maintenance of a closed-window condition. With this minimum level of attenuation, interior noise levels would be less than 45 dBA during the worst-case construction, which is the *CEQR Technical Manual* acceptable threshold for residential spaces. Because interior noise levels would remain in the range considered acceptable for residential use, noise resulting from night-time platform construction would not rise to the level of a significant adverse impact at these receptors.

Residential Receptors along West 30th Street between Eleventh and Twelfth Avenues

The residential receptors at 311 Eleventh Avenue and 606 West 30th Street were examined in the construction noise analysis from the 2021 Infrastructure FEIS as "Residential buildings along West 30th Street between Eleventh and Twelfth Avenues." That analysis concluded that hoe ram use over the course of nine non-consecutive months during platform construction would result in noise level increments at these receptors up to approximately 14 dBA and total noise levels up to approximately 77 dBA. However, these buildings are on zoning lots with Noise (E) Designations requiring a minimum of 33 dBA façade attenuation and an alternate means of ventilation allowing for the maintenance of a closed-window condition. With this minimum level of attenuation, interior noise levels would be less than 45 dBA during the worst-case construction, which is the *CEQR Technical Manual* acceptable threshold for residential spaces. Because interior noise levels would remain in the range considered acceptable for residential use, noise resulting from night-time platform construction would not rise to the level of a significant adverse impact at these receptors.

CONCLUSIONS

Construction under the Proposed Actions would have the potential to result in significant adverse impacts related to noise. At some receptors, construction under the Proposed Actions would result in increments that would be considered objectionable (i.e., 15 dBA or greater) or very objectionable (i.e., 20 dBA or greater). The potential for significant adverse impacts at these receptors was determined by evaluating the duration of these increments and whether CEQR interior noise level thresholds would be exceeded or not.

Construction under the Proposed Actions is anticipated to result in significant adverse impacts at ten receptors under either With Action scenario (i.e., The High Line north of West 30th Street, Hudson Yards Public Square and Gardens, the Vessel, Hudson River Park between West 26th Street and West 30th Street, Bella Abzug Park, 311 Eleventh Avenue, 606 West 30th Street, the west façade of 553 West 30th Street, the west façade of 34 Hudson Yards, and the west façade of 380 Eleventh Avenue) and one additional receptor (i.e., Site C1) under the Alternative Scenario. However, building construction would typically occur during weekday daytime hours and would therefore not produce noise during nighttime hours when residents would be most sensitive to noise, and platform construction occurring between 3:30 PM and 12 AM was determined not to result in significant adverse noise impacts at any residential or hotel receptors. Further, construction would comply with *New York City Noise Control Code* regulations and abide by PCREs to not utilize impact pile driving and to incorporate additional path controls for concrete operations. Per *New York City Noise Control Code* regulations, construction under the Proposed Actions would be required to prepare a Construction Noise Mitigation Plan, which may identify more control measures that would further reduce construction noise levels. This is discussed further in Chapter 22, "Mitigation." Additional refinements to the construction noise analysis to be conducted between the Draft and Final EIS, including detailed modeling of additional analysis time periods and existing condition noise levels, may result in elimination of predicted significant adverse construction noise impacts at some receptors.

VIBRATION

Construction activities have the potential to result in vibration that could cause structural or architectural damage, and/or annoyance or interference with vibration-sensitive activities. Vibration levels at a receiver are ab function of the source strength (which depends on the construction equipment and methods used), the distance between the equipment and the receiver, the characteristics of the transmitting medium (i.e., soil, rock, etc.), and the receiver building construction materials. Construction equipment can cause ground vibrations that dissipate with distance. Vehicular traffic typically does not result in perceptible vibration levels, even at receivers close to major roadways, unless there are discontinuities in the roadway surface. Excepting 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 Development Site.

Construction Vibration Criteria

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

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

ANALYSIS METHODOLOGY

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

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

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

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

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

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

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

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

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

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

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

Table 20-17
Vibration Source Levels for Construction Equipment

Equipment	PPV_{ref} (in/sec)	Approximate L_v (ref) (VdB)
Vibratory Roller	0.210	94
Large bulldozer	0.089	87
Hydraulic break ram	0.089	87
Caisson drilling	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79

Source: *Transit Noise and Vibration Impact Assessment*, FTA-VA-90-1003-06, September 2018.

The source vibration levels shown in **Table 20-17** were projected to nearby receptors to estimate the levels of construction vibration that would occur near the Development Site.

CONSTRUCTION VIBRATION ANALYSIS RESULTS

Using the methodology described above, 15 feet is the distance at which operation of drill rigs, hoe rams, or large bulldozers would result in vibration capable of causing damage to historic structures. With the exception of the High Line and the North River Tunnel, there are no buildings or structures located within 15 feet of the construction work areas; therefore, vibration from construction is not anticipated to result in damage at any buildings.

The High Line has been determined eligible for listing on the State and National Registers of Historic Places, and at the time of the 2009 FEIS the Metropolitan Transportation

Authority (MTA), the New York City Planning Commission (CPC), and the Applicant executed a Letter of Resolution (LOR) with the New York State Office of Parks, Recreation and Historic Preservation (OPRHP) to address the potential for adverse effects to the High Line, including those relating to construction of the development on the WRY Site. The LOR, which remains in effect, requires preparation of a CPP to protect the High Line during adjacent project construction. The requirement for a CPP to protect the High Line during adjacent project construction was also incorporated into the Restrictive Declaration for the 2009 project. Therefore, as detailed in the Restrictive Declaration, before commencing construction within 90 feet of the High Line, the Applicant will develop a CPP in coordination with OPRHP and LPC to avoid any adverse physical, construction-related impacts to the High Line, including those from ground-borne vibrations. The CPP would include a requirement for monitoring to determine the amount of vibration at the subject structures during the construction period, as well as a prohibition on vibration exceeding the acceptable threshold (i.e., 0.5 in/sec). If construction were to result in vibration exceeding this threshold, the CPP would require construction means and methods to be altered to avoid producing such exceedances. As detailed in Chapter 7, “Historic and Cultural Resources,” the subterranean railroad tracks and tunnels of the New York Improvements and Tunnel Extension of the Pennsylvania Railroad (North River Tunnel), which extend beneath the Development Site, have been determined S/NR-eligible. Caisson drilling during platform construction may occur adjacent to the North River Tunnel, as close as 11 feet away. At this distance, vibration levels from drill rigs would be below the threshold for damage for historic structures. The Applicant would coordinate with Amtrak regarding the necessary measures to protect the North River Tunnel during project construction.

Following the methodology described above, the distances at which drill rigs, hoe rams, or large bulldozers would result in exceedances of the human annoyance criteria would be 79 feet for residential buildings. There are no buildings where vibration would interfere with interior operations within 79 feet of vibration-producing construction.

Consequently, because vibration from construction would not exceed the criteria for damage at any structure, as confirmed by vibration monitoring at the High Line when necessary and would not exceed the FTA criteria for human annoyance over an extended duration at any receptor, construction under the Proposed Actions would not result in adverse construction vibration impacts.

OTHER TECHNICAL AREAS

LAND USE AND NEIGHBORHOOD CHARACTER

Construction activities would affect land use on the Development Site, but would not affect land use conditions and patterns outside of these areas. As is typical with construction projects, during periods of peak activity, there would be some disruption to nearby areas. There would be construction trucks and construction workers coming to the Development Site as well as trucks and other vehicles backing up, loading, and unloading. These disruptions would have limited effects on land uses in the larger study area, as most construction would take place within the Development Site. Overall, the temporary and localized nature of construction would not result in any significant adverse impacts on local land use patterns of the nearby area.

Construction would adhere to the provisions of the New York City Building Code and other applicable regulations. In addition, throughout the construction period, measures would be implemented to control air quality, noise, and vibration within the construction areas. For example, as discussed above, under "Air Quality," a mandatory emissions reduction program would be implemented for the Proposed Project or the Alternative Scenario to minimize the air quality effects of construction on the surrounding community. Measures would include, to the extent practicable, dust suppression (e.g., a watering program), idling restrictions, use of ULSD fuel for construction vehicles, diesel equipment reduction, use of newer equipment, and best available technologies. As discussed under "Noise and Vibration," a number of measures would be implemented during construction to reduce potential noise effects, including the erection of construction fencing, location of noisy equipment away from sensitive receptor locations where practicable, early electrification, idling restrictions, and proper maintenance of equipment.

During construction, the Development Site and the immediately surrounding area would be subject to additional traffic from construction trucks and worker vehicles and partial sidewalk and lane closures. In addition, staging activities, temporary sidewalks, construction fencing, and construction equipment and building superstructure would be visible to pedestrians in the immediate vicinity of the Development Site. However, the effects would be localized, confined largely to streets surrounding the Development Site, and no immediate area would experience the effects of the Proposed Project's or the Alternative Scenario's construction activities for the full project construction duration. MPT plans would be developed for any temporary sidewalk, lane, and/or street closures and traffic improvement measures as described in Chapter 22, "Mitigation," would ameliorate traffic issues. Fencing would be erected to reduce potentially undesirable views of construction areas, to buffer noise emitted from construction activities, and to protect the safety of pedestrians, including users of the High Line, during construction. Access to surrounding businesses would be maintained throughout the duration of the construction period. Therefore, although there is the potential for adverse effects during construction, these effects would be temporary and localized and would not result in significant impacts to neighborhood character.

SOCIOECONOMIC CONDITIONS

Construction activities could temporarily affect pedestrian and vehicular access to businesses near the Development Site. However, the temporary lane and/or sidewalk closures needed to accommodate construction of the Proposed Project or the Alternative Scenario are not expected to obstruct entrances to any existing businesses, and businesses are not expected to 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. The areas immediately surrounding the Development Site are generally light in business uses. For example, the block to the north of the Development Site is a parking lot, which was formerly used as a truck marshalling yard for the Javits Convention Center, but is now used primarily for parking associated with the convention center. The western portion of the block immediately to the south of the Development Site is vacant and reserved for construction staging for the Hudson Tunnel Project. West of the Development Site and Route 9A is a portion of the Hudson River Park Greenway, containing a bike and running path. Although the superblock to the east of the Development Site contains the Eastern Rail Yard mixed used development completed in

2019, the access points to that Hudson Yards site are mainly oriented inward, around the public open space, rather than to Eleventh Avenue. MPT plans would be developed and implemented to ensure that access to existing businesses near the Development Site would be maintained throughout the construction period.

Construction would create direct benefits resulting from expenditures on labor, materials, and services, and indirect benefits near the Development Site created by expenditures by material suppliers, construction workers, and other employees involved in the construction activity. Construction also would contribute to increased tax revenues for the City and state, including those from personal income taxes. Therefore, construction activities associated with the Proposed Project or the Alternative Scenario would not result in any significant adverse impacts on socioeconomic conditions.

OPEN SPACE

Although temporary construction activities for the Proposed Project or the Alternative Scenario would occur near the High Line and could be visible from the park, construction activities would not be staged from, result in physical alterations to, or result in occupation of this park. The Applicant would coordinate with NYC Parks and Friends of the High Line to maintain pedestrian access to the High Line during construction. In addition, as discussed in detail in Chapter 7, “Historic and Cultural Resources,” a CPP would be developed and implemented to protect the High Line during adjacent project construction. There would be construction-period coordination between the Applicant, NYC Parks, and Friends of the High Line to ensure that construction on the Development Site protects users and minimizes disruption to the use and enjoyment of the High Line as much as possible. Other open space resources near the Development Site would also not be used for staging or other construction activities and access to those resources would remain active at all times during construction.

As discussed above, throughout the construction period, measures would be implemented to control air quality, noise, and vibration within the construction site. As presented above under “Air Quality,” the detailed air modeling analysis predicted that construction associated with the Proposed Actions would not result in any significant adverse air quality impacts on nearby open spaces. As presented above under “Noise,” construction associated with the Proposed Actions would have the potential to result in significant adverse noise impacts on four nearby open spaces: the High Line north of West 30th Street, Hudson Yards Public Square and Gardens and the Vessel, Hudson River Park between West 26th Street and West 30th Street, and Bella Abzug Park. Construction would comply with New York City Noise Control Code regulations as well as abiding by a PCRE to not utilize impact pile driving. Per New York City Noise Control Code regulations, construction under the Proposed Actions would be required to prepare a Construction Noise Mitigation Plan, which may identify more control measures that would further reduce construction noise levels. This is discussed further in Chapter 22, “Mitigation.”

HISTORIC AND ARCHAEOLOGICAL RESOURCES

A detailed assessment of potential impacts on historic and cultural resources is described in Chapter 7, “Historic and Cultural Resources.”

Archaeological Resources

The Hudson Yards FGEIS concluded that none of the lots located on the Development Site were sensitive for archaeological resources. In a comment letter dated February 2, 2024, LPC determined that Block 676, Lots 1 and 5 have no archaeological or architectural significance (see **Appendix C**). Therefore, the Proposed Project or the Alternative Scenario would not result in significant adverse impacts on archaeological resources during construction.

Architectural Resources

The Proposed Actions would not result in significant adverse direct impacts to historic and cultural resources with the preparation and implementation of a Construction Protection Plan (CPP) to avoid inadvertent construction-related impacts (including ground-borne vibration, falling debris, and accidental damage) associated with the construction of the Proposed Project to the known architectural resource within 90 feet of the Development Site (the High Line, which has been determined eligible for listing on the State and National Registers of Historic Places). The Applicant would coordinate with Amtrak regarding the necessary measures to protect the S/NR-eligible North River Tunnel below the Development Site during project construction. With the exception of the High Line and the North River Tunnel, the architectural resources in the study area are located more than 90 feet from the Development Site; thus, the Proposed Project or the Alternative Scenario would not be expected to have the potential for adverse physical, construction-related impacts to these resources.

HAZARDOUS AND CONTAMINATED MATERIALS

A detailed assessment of the potential risks related to construction with respect to any hazardous materials is described in Chapter 10, "Hazardous Materials."

Consistent with the Remedial Measures outlined in the 2009 *Western Rail Yard Final Environmental Impact Statement* (2009 FEIS) for the Western Rail Yard project (CEQR No. 09DCP007M) and associated Restrictive Declaration (R-230), and the 2021 *Western Rail Yard Infrastructure Project Combined FEIS/Record of Decision and Final Section 4(f) Evaluation* (2021 FEIS) for the Western Rail Yard Infrastructure project, measures are either already in place or would be put into place to ensure the adequate remediation of hazardous materials conditions either before, or in conjunction with, development of the Proposed Project or the Alternative Scenario. As such, this analysis finds that the Proposed Actions would not result in any significant adverse impacts to hazardous materials.

The 2009 and 2021 FEISs identified the potential for contamination within the Development Site from current and past usage based on soil and groundwater sampling. R-230 was recorded against the Development Site as a result of the 2009 FEIS. The Restrictive Declaration, which is regulated like an E-designation, requires that, before obtaining DOB permits associated with redevelopment, the property owner conduct Phase I ESAs, Phase II subsurface investigations, and remediation, where appropriate, to the satisfaction of OER. The Restrictive Declaration would also ensure that any necessary post-construction measures required by OER would be implemented.

The hazardous materials assessments of the 2009 and 2021 FEISs also identified the potential for asbestos-containing materials (ACM), lead-based paint (LBP), and polychlorinated-biphenyl-(PCB)-containing equipment, and lighting fixtures within the existing buildings. As noted in those FEISs, regulatory requirements for maintenance and (if necessary) disposal of such materials before or during demolition would be followed.

With the implementation of the investigation and remediation measures required by the Restrictive Declaration, applicable local, state, and federal regulations, and/or conditions in development contracts/agreements, construction specifications, leases, and/or amended leases, the Proposed Actions would not result in any significant adverse impacts with respect to hazardous materials.

WATER AND SEWER INFRASTRUCTURE

A detailed assessment of potential impacts on water and sewer infrastructure is described in Chapter 11, "Water and Sewer Infrastructure."

Infrastructure activities at the Development Site would include utility connections to existing water, sewer, electric, gas, and telecommunications. These activities would be coordinated with DEP, Con Edison, or the appropriate private utility company to ensure that service to customers in nearby areas is not disrupted. All utility lines would be located either in the streetbed or within the below-grade space. Residents and workers in nearby buildings are not expected to experience substantial disruptions to water supply or wastewater removal. Any disruption to service that may occur when new equipment (e.g., a transformer, or a sewer or water line) is put into operation is expected to be very short-term (i.e., hours).

Therefore, the construction of the Proposed Project or the Alternative Scenario's infrastructure improvements would not cause any significant adverse impacts to nearby users of these services. ✷