RIVER RING
Chapter 18: Construction

A. INTRODUCTION

This chapter describes the preliminary construction plans for the Proposed Development and assesses the potential for the Proposed Actions to result in significant adverse construction impacts in accordance with 2020 *City Environmental Quality Review (CEQR) Technical Manual* guidance. Construction impacts, although temporary, can include noticeable and disruptive effects from an action that is associated with construction, or could induce construction. Determination of the significance of construction impacts and the need for mitigation are generally based on the duration and magnitude of the impacts. Construction impacts are usually important when construction activity could affect transportation conditions, hazardous materials, archaeological resources, the integrity of historic resources, community noise patterns, and/or air quality conditions.

As described in Chapter 1, "Project Description," the Proposed Actions would facilitate a new development with approximately 1.336 million gross square feet (gsf), comprised of 1.12 million gsf of residential space (approximately 1,250 rental units, of which 313 units would be affordable), 50,000 gsf of community facility space, and 83,000 gsf of commercial space (including 60,000 gsf of office, and 23,000 gsf of local retail). Approximately 250 accessory parking spaces would be provided below-grade (83,000 gsf). The Proposed Development would also include approximately 135,073 sf (3.1 acres) of new waterfront public space (plus 2.32 acres of accessible in-river space and 0.86 acres of intertidal area). Construction of the Proposed Development is anticipated to occur over a period of approximately 50 months, with expected completion and full occupancy by 2027.[1]

In addition to describing the construction plans for the Proposed Development, this chapter provides a discussion of the governmental coordination and oversight related to construction, a conceptual construction schedule, activities likely to occur during construction, the types of equipment that are expected to be used, construction logistics (e.g., site access points and potential staging area locations), and construction workers and truck delivery estimates. Based on this information, potential impacts from construction activities are assessed with respect to transportation, air quality, noise and vibration, land use and neighborhood character, socioeconomic conditions, community facilities, open space, historic and cultural resources, and hazardous materials.

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

[1] As discussed in the EAS and Draft Scope of Work documents, the Projected Development Site identified in the RWCDS would be redeveloped under both No-Action and With-Action conditions, and the Proposed Actions would not affect the construction schedule of that site (anticipated to be approximately 10 months). Therefore, construction analysis of the Projected Development Site is not warranted and this chapter focuses exclusively on the Applicant's Proposed Development Site. Refer to additional screening on page 18-10 of this chapter.

technical analyses. Where appropriate, the analysis accounted for the effects of those components of the project that would be completed and operational during the selected construction analysis years.

B. PRINCIPAL CONCLUSIONS

Pursuant to *CEQR Technical Manual* guidance, detailed analyses of potential construction period impacts related to air quality and noise conditions were conducted, and determined that the Proposed Actions would not result in construction period impacts related to air quality, but could result in potentially significant temporary adverse impacts related to construction noise. Potential measures to mitigate these impacts are discussed in chapter 19, "Mitigation." Preliminary assessments were conducted for other technical areas pursuant to *CEQR Technical Manual* guidance, and determined that the Proposed Actions would not result in construction period impacts related to transportation, land use and neighborhood character, socioeconomic conditions, community facilities, open space, historic and cultural resources, natural resources, or hazardous materials.

Applicant's Proposed Development

Transportation

TRAFFIC

Average daily on-site construction workers and trucks were forecast for new construction anticipated on the Development Site under both the No-Action and With-Action condition. The No-Action construction worker and truck estimates were then subtracted from the With-Action estimates to determine the net incremental demand attributable to construction associated with the Proposed Actions. Peak construction traffic related to trucks and worker autos is expected to peak in the third quarter of 2026, with an estimated 267 workers and 34 trucks per day. These represent peak days of work, and many days during the construction period would have fewer construction workers and trucks on-site.

A forecast of incremental hourly construction worker auto and construction truck trips during the 2026(Q3) peak quarter for construction traffic showed that construction-related traffic is expected to peak during the 6-7 AM and 3-4 PM periods. During the 6-7 AM peak hour there would be a total of 152 passenger car equivalent (PCE) vehicle trips, including 131 inbound trips and 21 outbound trips. During the 3-4 PM peak hour there would be a total of 124 PCE trips, including seven inbound trips and 117 outbound trips.

Incremental trips by construction trucks and construction worker autos were assigned to the street network in proximity to the Development Site to assess the potential for significant adverse traffic impacts during the 6-7 AM and 3-4 PM construction peak hours. Based on *CEQR Technical Manual* guidance, a quantified traffic analysis is typically required if a proposed action would result in 50 or more vehicle trip ends in a peak hour at one or more intersections. Incremental vehicle trips generated by construction of the Proposed Development would not total 50 or more at any intersection in either of the 6-7 AM or 3-4 PM construction peak hours. In addition, there would be fewer than 50 incremental vehicle trips/hour in all other periods. Therefore, construction of the Proposed Development is not expected to result in significant adverse traffic impacts in any peak hour during the 2026(Q3) peak quarter for construction traffic.

TRANSIT

In the 2026(Q3) peak quarter for construction-related transit trips, approximately 267 construction workers would travel to and from the Development Site each day. It is estimated that approximately 64 construction workers would travel to and from the Development Site via public transit each day, and that approximately 51 of these trips would occur in each of the 6-7 AM and 3-4 PM construction peak hours. These construction worker trips, which would occur outside of the peak periods for overall transit ridership, would be distributed among nearby subway stations (48 trips) and bus routes (3 trips). As peak transit demand from construction workers on the Development Site would not meet the 200 trips/hour *CEQR Technical Manual* analysis threshold for a detailed subway analysis, nor the 50 trips/hour/direction analysis threshold for a detailed bus analysis, significant adverse impacts to subway and bus services are not expected to occur in the construction peak hour during the 2026(Q3) peak construction period.

PEDESTRIANS

It is anticipated that there would be an incremental increase of approximately 267 construction workers traveling to and from the Development Site in the 2026(Q3) peak construction period. Construction worker pedestrian trips on sidewalks, corner areas and crosswalks (pedestrian elements) near the Development Site would include those walking to and from the subway, nearby bus stops and off-site parking, as well as workers traveling solely on foot. As the Development Site has frontages along three different streets (North 1st, North 3rd and River streets), these trips would be widely distributed among the pedestrian elements providing access to the Development Site. It is therefore unlikely that any single sidewalk, corner area or crosswalk would experience 200 or more peak-hour trips (the threshold below which significant adverse pedestrian impacts are considered unlikely to occur based on *CEQR Technical Manual* criteria). In addition, it should be noted that construction worker trips would primarily occur outside of the weekday AM and PM commuter peak periods and the weekday midday peak period when area pedestrian facilities typically experience their greatest demand. Consequently, there are no significant adverse pedestrian impacts anticipated in the 2026(Q3) peak quarter for construction worker travel demand.

PARKING

The maximum incremental daily parking demand from construction workers would total approximately 138 spaces in the weekday midday. As it is assumed that there would be no on-site parking until completion of the Proposed Development, construction workers would park on-street or in nearby off-street public parking facilities located in proximity to the Development Site during this period. For example, it is anticipated that some of the construction worker parking demand would be accommodated along the dead-end segments of North 1st Street and North 3rd Street adjacent to the Development Site. In addition, the Applicant controls an existing 725-space public parking garage at 325 Kent Avenue just to the south of the Development Site. This facility currently has substantial available capacity in the weekday midday, which the Applicant proposes to make available to construction workers.

As discussed in Chapter 12, "Transportation," under *CEQR Technical Manual* guidance, the inability of the Proposed Actions or the surrounding area to accommodate future parking demands would be considered a parking shortfall, but would generally not be considered significant due to the magnitude of available alternative modes of transportation. Therefore, should any parking shortfall occur due to incremental demand from construction workers during the 2026(Q3) peak construction period, it would not be considered a significant adverse parking impact based on *CEQR Technical Manual* guidance.

Air Quality

The potential air quality impacts of the Proposed Actions were examined through a detailed analysis of the worst-case construction activities at the Development Site. For annual standards, the 12 consecutive months of construction with the highest $PM_{2.5}$ emissions are month 7 to month 18. During this timeframe, construction activities would include the excavation/foundations for the North Tower and South Tower, superstructure and exterior work on the North Tower, upland park and waterfront/marine structures. The single month with the highest emissions for $PM_{2.5}$ (month 10) was used for purposes of modeling short-term standards and this peak month includes 50 truck trips per day. Modeling of annual standards took into account the monthly variation in emissions over the year. This period has the highest potential for air quality impacts, and other construction periods would have lower impacts by comparison. The short-term and annual time periods for analysis were selected through preparation of a monthly emissions profile based on the potential construction equipment requirements for each site. Off-road equipment, on-road haul truck, and fugitive dust emissions were quantified and impacts at receptors using the U.S. Environmental Protection Agency (EPA) models and methods consistent with the *CEQR Technical Manual*. The analysis accounts for the emission control measures mandated by existing laws and regulations applicable to private developers, including the use of ultra-low sulfur diesel (ULSD), dust control measures, idling restrictions and Best Available Tailpipe Reduction Technologies.

The maximum predicted total concentrations of one- and eight-hour carbon monoxide (CO), 24-hour particulate matter with an aerodynamic diameter of less than or equal to 10 micrometers (PM_{10}), and annual-average nitrogen dioxide (NO_2) would all be below the applicable National Ambient Air Quality Standards (NAAQS).

Considering the annual average $PM_{2.5}$ background concentration of 7.4 $\mu g/m^3$, the temporary incremental increase in annual average $PM_{2.5}$ concentrations would result in a total annual average $PM_{2.5}$ concentration well under the applicable NAAQS (12 $\mu g/m^3$). The incremental increase is also under half the difference between the background concentration and NAAQS. Therefore, the Proposed Actions would not result in a significant adverse construction air quality impact.

Noise

Detailed quantitative construction noise modeling was completed for the Proposed Actions to determine typical construction noise levels for the major construction elements (towers, upland park and marine structures). A receptor network was developed for the study area the around the Proposed Development Site. Sensitive receptor locations, such as residential properties and parks were selected as noise receptor sites. Multiple receptors were created along of the façade of existing buildings to capture the noise levels at different floors of the building. The noise impact criteria described in Chapter 19, Section 410 of the *CEQR Technical Manual* served as a screening-level threshold for potential construction noise impacts. If construction of a proposed project would not result in any exceedances of these criteria at a given receptor, then that receptor would not have the potential to experience a construction noise impact. However, if construction of a proposed project could result in exceedances of these noise impact criteria, then further consideration of the intensity and duration of construction noise at that receptor is warranted. The analysis also compared interior L_{10} noise levels to the CEQR interior noise guideline of 45 dBA.

The construction noise impact analysis identified potentially significant temporary adverse impacts in the following locations, as described below. Mitigation measures considered for these impacts are further discussed in Chapter 19, “Mitigation.”

- **Grand Ferry Park.** The park is in close proximity to some of the marine structures work for the waterfront park. Construction noise levels would be 64 to 70 dBA (L_{eq}) and are anticipated to exceed CEQR thresholds (in this case, a 5 dBA or greater increment) for the duration of construction (45 months). The maximum total noise level at the park during construction would be 70 dBA (L_{eq}) for a period of 10 months (which includes shoreline and marine structures pile driving with direct line-of-sight to the park). However, it is important to note that for the majority of the construction (35 months), the total noise level would be less than 65 dBA (L_{eq}); these predicted noise levels are not atypical for open space resources in New York City.
- **184 Kent Avenue.** This residential building with ground floor commercial use is located immediately north of the Development Site, across North 3rd Street. The maximum total exterior noise level would be approximately 81 dBA (L_{eq}). Interior noise levels are anticipated to exceed the CEQR guideline of 45 dBA (L_{10}) by approximately 4-6 dBA for the first 27 months of construction.
- **187 Kent Avenue**. This new residential building is located on the east side of Kent Avenue, between Metropolitan Avenue and North 3rd Street. The maximum total exterior noise level would be approximately 77 dBA (L_{eq}). Interior noise levels are anticipated to exceed the CEQR guideline of 45 dBA (L_{10}) by approximately 2 dBA for the 21 months of construction.
- **221 Kent Avenue.** This new construction residential building is located on the east side of Kent Avenue between North 1st Street and North 3rd Street. The maximum total exterior noise level would be approximately 79 dBA (L_{eq}). Interior noise levels are anticipated to exceed the CEQR guideline of 45 dBA (L_{10}) by approximately 4 to 10 dBA for the first 21 months of construction.
- **223 Kent Avenue**. This residential building is located at the southeast quadrant of the intersection of Kent Avenue and North 1st Street. The maximum total exterior noise level would be approximately 74 dBA (L_{eq}). Interior noise levels are anticipated to exceed the CEQR guideline of 45 dBA (L_{10}) by approximately 4 dBA for units with window AC and 19 dBA for units without window AC for the duration of construction.
- **68 North 3rd Street.** This residential building with ground floor commercial is located in the southwest quadrant of the intersection of Wythe Avenue and North 3rd Street. The maximum noise level during construction would be approximately 68 dBA (L_{eq}). The CEQR interior L_{10} noise guideline of 45 dBA would not be exceeded for units with window AC. However, a 13 dBA exceedance over CEQR interior L_{10} guideline is anticipated for units without window AC.
- **1 North 4th Place.** This residential tower is located along the waterfront, west of North 4th Street. The maximum total exterior noise level would be approximately 79 dBA (L_{eq}). Interior noise levels are anticipated to exceed the CEQR guideline of 45 dBA (L_{10}) by approximately 3 to 8 dBA for 45 consecutive months of construction.
- **200-206 Kent Avenue.** This new commercial building and office building is located on the west side of Kent Avenue at the intersection of Kent Avenue and North 3rd Street without any line of site obstruction from the project site. The maximum total exterior noise level would be approximately 83 dBA (L_{eq}). Interior noise levels are anticipated to exceed the CEQR guideline of 45 dBA (L_{10}) by approximately 8 dBA for 45 months of construction.
- **254 Kent Avenue/70 River Street.** This commercial building is located on the east side of River Street at the intersection of River Street and Kent Avenue without any line of site obstruction from the project site. The maximum total exterior noise level would be approximately 80 dBA (L_{eq}). Interior noise levels are anticipated to exceed the CEQR guideline of 45 dBA (L_{10}) by approximately 5 dBA for 45 months of construction.

Other Technical Areas

LAND USE AND NEIGHBORHOOD CHARACTER

Construction activities would affect land use within the Development Site but would not alter surrounding land uses. As is typical with construction projects, during periods of peak construction activity there would be some disruption, predominantly noise, to the nearby area. These disruptions would be temporary in nature and would have limited effects on land uses within the surrounding area, particularly as most construction activities would take place within the Development Site or within portions of sidewalks, curbs, and travel lanes of public streets immediately adjacent to the site. Overall, while the construction at the Development Site would be evident to the local community, the temporary nature of construction would not result in significant or long-term adverse impacts on local land use patterns or the character of the nearby area.

SOCIOECONOMIC CONDITIONS

Construction activities could temporarily affect pedestrian and vehicular access. However, lane and/or sidewalk closures would not 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. Overall, construction activities associated with the Proposed Development would not result in any significant adverse impacts on surrounding businesses.

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

COMMUNITY FACILITIES

No community facilities would be directly affected by construction activities. The Development Site will be surrounded by construction fencing and barriers that would limit the effects of construction on any nearby community facilities. Construction workers would not place any burden on public schools and would have minimal, if any, demands on libraries, child care facilities, and health care. Construction of the Proposed Development would not block or restrict access to any facilities in the area, and would not materially affect emergency response times. The NYPD and FDNY emergency services and response times would not be significantly affected due to the geographic distribution of the police and fire facilities and their respective coverage areas.

OPEN SPACE

There are no publicly accessible open spaces within the Development Site and no open space resources would be used for staging or other construction activities. Construction of the two towers comprising the Proposed Development would not occur immediately adjacent to Grand Ferry Park, however the park is adjacent to the southern limit of construction for the proposed waterfront park (which includes, demolition of existing waterfront and in-water structures and pile installation for new in-water structures). As discussed above, there would be no significant adverse air quality impacts on open spaces taking into account dust control measures and other emission reduction measures incorporated in the project. The construction noise analysis (discussed above) showed there would be a temporary potentially significant adverse noise impact to the park. The maximum total noise level at the park during construction would be 75 dBA (L_{eq}) for a period of 5 months, and for the majority of construction the noise level at the park would be in the low to mid 60s of dBA (L_{eq}). The predicted noise levels are not atypical

for open space resources in New York City and would not result in a major change in the usability of the park. Therefore, the temporary construction noise impact would not result in a significant adverse construction-related open space impact.

HISTORIC AND CULTURAL RESOURCES

The Development Site does not possess archaeological significance, and therefore, the Proposed Development does not have the potential to result in construction period archaeological impacts. As the Development Site is located within 90 feet of the S/NR-listed and NYCL-eligible Austin, Nichols & Co. Warehouse, construction of the Proposed Development would be subject to the New York City Department of Buildings (DOB)'s Technical Policy & Procedure Notice (TPPN) #10/88. Under the TPPN, a construction protection plan would be provided to the LPC for review and approval prior to any work in the Project Area. As such, no construction-related impacts on historic resources would occur as a result of the Proposed Actions.

NATURAL RESOURCES

The implementation of erosion and sediment control measures and a Stormwater Pollution Prevention Plan (SWPPP) would minimize potential impacts on littoral zone tidal wetlands from discharge of stormwater runoff during land-disturbing activities. In addition, equipment used during construction of the proposed waterfront public space would move throughout the waterfront public space area during the construction as necessary, and any effects from their presence would be temporary. As such, the Proposed Development would not result in any significant adverse construction-related impacts on natural resources.

HAZARDOUS MATERIALS

A detailed assessment of potential impacts on hazardous materials is described in Chapter 9, "Hazardous Materials." The hazardous materials assessment identified various potential sources of subsurface contamination on, or in close proximity to, the Development Site. To reduce the potential for adverse impacts associated with new construction resulting from the Proposed Actions, a hazardous materials (E) designation would be placed on the upland portions of the tax lots comprising the Development Site. The (E) designation requires approval by the New York City Office of Environmental Remediation (OER) prior to obtaining NYC Buildings Department (DOB) permits for any new development entailing soil disturbance. The environmental requirements for the (E) designation also include a mandatory Construction Health and Safety Plan (CHASP), which must be approved by OER.

Adherence to these existing regulations would prevent impacts from construction activities at the Development Site.

Projected Development Site

The RWCDS for the Proposed Actions includes a non-Applicant-owned Projected Development Site at 230 Kent Avenue (Block 2362, Lot 1), which is expected to be improved with a three-story, approximately 20,223 gsf mixed-use light industrial, commercial and community facility building as a result of the proposed zoning change from M3-1 to M1-4. Given the small size of the RWCDS development, both in terms of total square footage and building height, and the fact that the Projected Development Site has already been excavated in conjunction with remedial activities, construction of the Projected Development Site is expected to be completed in approximately 10 months. Given the limited construction duration and minimal construction activities associated with this Projected Development

Site, its contributions to potential construction-period impacts would be negligible. As such, the analyses in the remainder of this chapter focus exclusively on the potential construction impacts associated with the Applicant's approximately 1.336 million gsf Proposed Development.

C. GOVERNMENTAL COORDINATION AND OVERSIGHT

The governmental oversight of construction in New York City is extensive and involves a number of city, state, and federal agencies. **Table 18-1** shows the main agencies involved in construction oversight and each agency's areas of responsibility. The primary responsibilities lie with New York City agencies. The New York City Department of Buildings (DOB) has the primary responsibility for ensuring that the construction meets 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 both construction workers and the public. The areas of responsibility include the enforcement of regulations pertaining to the installation and operation of construction equipment, such as cranes and lifts, sidewalk sheds, and safety netting and scaffolding. The New York City Department of Parks and Recreation (NYC Parks) has oversight on tree protection and tree removal during construction. The New York City Department of Environmental Protection (DEP) enforces the New York City Noise Control Code (also known as Chapter 24 of the Administrative Code of the City of New York, or Local Law 113) and the DEP Notice of Adoption Rules for Citywide Construction Noise Mitigation (also known as Chapter 28), approves Remedial Action Plans (RAPs) and Construction Health and Safety Plans (CHASPs), regulates water disposal into the sewer system, and oversees dust control for construction activities. The New York City Fire Department (FDNY) has primary oversight for compliance with the New York City Fire Code and for the installation of tanks containing flammable materials. The New York City Department of Transportation (NYCDOT) reviews and approves any traffic lane and sidewalk closures. The New York City Landmarks Preservation Commission (LPC) approves studies and testing to prevent loss of archaeological materials and to prevent damage to fragile historic structures.

TABLE 18-1
Construction Oversight in New York City

Agency	Area(s) of Responsibility
New York City	
Department of Buildings (DOB)	Primary oversight for Building Code and site safety
Department of Parks & Recreation	Tree protection and removal
Department of Environmental Protection (DEP)	Noise, hazardous materials, dewatering, dust
Fire Department (FDNY)	Compliance with Fire Code, tank operation
Department of Transportation (NYCDOT)	Traffic lane and sidewalk closures
Landmarks Preservation Commission (LPC)	Archaeological and historic architectural protection
New York State	
Department of Labor (DOL)	Asbestos workers
New York City Transit (NYCT)	Bus stop relocation; any subsurface construction within 200 feet of a subway
Department of Environmental Conservation (NYSDEC)	Dewatering, hazardous materials, tanks, Stormwater Pollution Prevention Plan, Industrial SPDES, if any discharge into the Hudson River
United States	
Environmental Protection Agency (EPA)	Air emissions, noise, hazardous materials, toxic substances
Occupational Safety and Health Administration (OSHA)	Worker safety

At the state level, the New York State Department of Environmental Conservation (NYSDEC) regulates discharge of water into rivers and streams, disposal of hazardous materials, and construction, operation,

and removal of bulk petroleum and chemical storage tanks. The New York State Department of Labor (NYSDOL) licenses asbestos workers. New York City Transit (NYCT) is in charge of bus stop relocations, and any subsurface construction within 200 feet of a subway. On the federal level, the U.S. Environmental Protection Agency (EPA) has wide ranging authority over environmental matters, including air emissions, noise emission standards, hazardous materials, and the use of poisons. Much of the responsibility is delegated to the state level. The U.S. Occupational Safety and Health Administration (OSHA) sets standards for work site safety and construction equipment.

D. CONSTRUCTION SCHEDULE

Applicant's Proposed Development

The anticipated construction schedule is shown in **Figure 18-1** and described below. The construction schedule reflects the preliminary sequencing of construction events as currently contemplated by the Applicant who owns, manages and operates a general contracting company that will execute the construction of the Proposed Development. The construction schedule represents the general contractor's best estimate based upon the current building designs and prior experience constructing buildings and open space of similar size and scale. The upland portion of the site is currently vacant and will not require any demolition.

As shown in **Figure 18-1**, construction of the Proposed Development would occur over a total of approximately 50-months (17-quarters), with an anticipated start date in the third quarter of 2023. Demolition of select existing seaward structures is expected to commence in July of 2023, and would begin the construction process of the marine infrastructure and waterfront park, which would occur over approximately 24 months. The demolition and dredging phase for the waterfront park would last approximately eight months, excavation and construction of new waterfront structures would last for approximately four months, pilings and utilities would take place over approximately 12 months, and the landscaping and finishes would take place over approximately 12 months.

FIGURE 18-1
Anticipated Construction Schedule – Proposed Development

	Year	2023				2024				2025				2026				2027			
	Quarter	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
North Tower *(24 months)*	Excavation / Foundation(1)																				
	Superstructure / Exterior Fit-Out																				
	Façade / Interior Fit-Out / Finishing																				
South Tower *(23 months)*	Superstructure / Exterior Fit-Out																				
	Façade / Interior Fit-Out / Finishing																				
Waterfront Park *(24 months)*	Demolition / Dredging																				
	Excavation / Shoreline Structures																				
	Pilings / Precast / MEP / Utilities																				
	Landscaping / Finishes																				

(1) The excavation and foundation work for both the North and South Towers would be completed during the same phase.

Construction on the first tower (the North Tower) is planned to begin in October of 2023, and would occur over a total of approximately 24 months with overlapping construction stages, including ten months for excavation and foundation, approximately 15 months for the superstructure and exterior fit-out, and 11 months for interior fit-out and finishing. It should also be noted that the excavation and foundation work for both the North and South Towers would be completed during the same phase. As shown in **Figure 18-1**, construction of the second tower (the South Tower) is estimated to commence in November of 2025,

and would occur over a total of approximately 23 months with overlapping stages, with 19 months for superstructure and exterior fit-out and 14 months for interior fit-out and finishes. As noted above, the South Tower would not have an excavation/foundation stage, as the excavation and foundation for the entire upland development would take place during construction of the North Tower. As shown in **Figure 18-1**, future construction phases of the two towers would not overlap (there would be a one-month gap between completion of the North Tower and the start of construction of the South Tower).

Projected Development Site

The RWCDS for the Proposed Actions includes a non-Applicant-owned Projected Development Site at 230 Kent Avenue (Block 2362, Lot 1), which is expected to be improved with a three-story, approximately 20,223 gsf mixed-use light industrial, commercial and community facility building as a result of the proposed zoning change from M3-1 to M1-4. Given the small size of the RWCDS development, both in terms of total square footage and building height, and the fact that the Projected Development Site has already been excavated in conjunction with remedial activities, construction of the Projected Development Site is expected to be completed in approximately 10 months, as summarized in **Table 18-2** below. As shown in the conceptual construction schedule below, it is assumed that construction of the Projected Development Site would start in mid-2022 following, and be completed in spring of 2023. As the Projected Development Site is currently vacant, no demolition activities would be needed. Based on the Projected Development Site's conceptual construction schedule below, there would be no overlap with any of the construction activities for the Applicant's Proposed Development, which would commence in July of 2023 (refer to **Figure 18-1** above).

TABLE 18-2
Conceptual Construction Schedule for Projected Development

Construction Phase	Duration	Estimated Start	Estimated Finish
Foundation (1)	1 month	July 2022	August 2022
Superstructure / Exterior Fit-Out	4 months	August 2022	November 2022
Façade / Interior Fit-Out / Finishing	5 months	December 2022	April 2023

(1) As the Projected Development Site has already been excavated in conjunction with remedial activities, no additional excavation is anticipated.

Given the limited construction duration and minimal construction activities associated with this Projected Development Site, its contributions to potential construction-period impacts would be negligible. It should be noted that the Projected Development Site identified in the RWCDS would be redeveloped under both No-Action and With-Action conditions (a two-story building in the No-Action and a three-story building in the With-Action), and the Proposed Actions would not affect the construction schedule of that site. Moreover, construction of the Projected Development would not overlap with the Proposed Development's construction activities. In addition, due to the Projected Development Site having been excavated during remedial activity, air emissions and noise would not be produced from diesel trucks or heavy excavation equipment as would typically occur during site preparation and excavation. The small footprint and short duration of construction would not require a large inventory of heavy equipment or extended use of the equipment, thus further limiting potential air quality and noise impacts. As such, the analyses in the remainder of this chapter focus exclusively on the potential construction impacts associated with the Applicant's approximately 1.336 million gsf Proposed Development.

E. DESCRIPTION OF CONSTRUCTION ACTIVITIES

General Construction Practices

Hours of Work

Construction of the Proposed Development would be carried out in accordance with New York City laws and regulations, which allow construction activities between 7:00 AM and 6:00 PM 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 a concrete pour for a floor deck), the workday may occasionally be extended beyond normal work hours. Any extended workdays would generally last until approximately 6:00 PM and would not include all construction workers onsite, but only those involved in the specific task requiring additional work time.

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

Deliveries, Access, and Staging Areas

Access to the Development Site during construction would be fully controlled. The work areas would be fenced off and limited access points for workers and construction-related trucks would be provided. Construction workers are generally prohibited from parking their vehicles onsite during the construction period. Truck movements would be spread throughout the day and would generally occur between the hours of 6 AM and 3 PM, depending on the stage of construction. Material deliveries to the site would be controlled and scheduled. To aid in adhering to the delivery schedules, as is normal for building construction in New York City, flaggers would be employed at each construction gate. The flaggers could be supplied by the subcontractor on-site at the time or by the construction manager. The flaggers would control trucks entering and exiting the site so that they would not interfere with one another. In addition, they would provide an additional traffic aid as the trucks enter and exit the on-street traffic streams.

The NYCDOT Office of Construction Mitigation and Coordination (OCMC) reviews and approves all maintenance and protection of traffic (MPT) plans which specify any planned sidewalk or lane closures and staging for all construction sites. MPT plans would be developed for any required temporary sidewalk, traffic lane, and/or street closures to ensure the safety of the construction workers and the public passing through the area. Implementation of the closures would be coordinated with OCMC. It is anticipated that measures to be implemented as part of the MPT plan would include parking lane closures, safety signs, safety barriers, and construction fencing.

Description of Construction Activities

Construction of large-scale buildings 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. If a site has existing structures, the structures are demolished with some of the materials (such as concrete, block, and brick) either recycled

or crushed on-site to be reused as fill and the debris taken to a licensed disposal facility. Hazardous materials remediation typically occurs at this point. Excavation of the soils is next along with the construction of the foundations. When the below-grade construction is completed, construction of the superstructure of the new building begins. As the core and floor decks of the building are being erected, installation of the mechanical and electrical internal networks would start. As the building progresses upward, the exterior cladding is installed, and the interior fit out begins. During what is typically considered the busiest time of building construction, the upper core and structure is being built while mechanical/electrical connections, exterior cladding, and interior finishing are progressing on lower floors.

The following provides a description of each of the anticipated construction tasks for both the North and South Towers (upland construction), as well as the waterfront open space.

Construction Startup Tasks

Construction startup work prepares a site for the construction work and would involve the installation of public safety measures, such as fencing, sidewalk sheds, and Jersey barriers. For each proposed building, and the area for the waterfront open space, the construction site would be fenced off, typically with solid fencing to minimize interference between the persons passing by the site and the construction work. Separate gates for workers and for trucks would be installed, and sidewalk sheds and Jersey barriers would be erected. Trailers for the construction engineers and managers would be hauled to the site and installed within the Development Site. On-site power generation capabilities would also be placed at this time where necessary.

Demolition

As the upland portion of the Development Site is currently vacant, no demolition activities would be needed. However, all existing in-water structures would be demolished except for three existing caissons. A tugboat would be used to position work barges carrying construction equipment (such as excavators, cranes and saws) used in the demolition of in-water structures. Demolition debris would also be removed on barges.

Excavation and Foundation

The Proposed Development would require excavation for each of the proposed buildings' foundation as well as the underground parking garage.[2] The maximum depth of excavation is approximately 19 feet below grade. The excavation and foundation for both towers would be constructed at that the same time. Excavators would be used to excavate soil and the excavated materials would be loaded onto dump trucks for transport to a licensed disposal facility or for reuse on any portion of the Development Site that needs fill. No blasting is anticipated for the construction of the Proposed Development. This stage of construction would include the construction of the foundation and below-grade elements for both the North and South Towers. Piles would be installed with the use of drill rigs. If boulders are encountered during pile installation activities, the obstructions would be removed by a rock hammer. Concrete mix trucks and concrete pumpers would be used to pour the foundation and the below-grade structures. Excavation and foundation activities may also involve the use of rebar benders, generators, air compressors, cherry pickers, rock hammers, and saws.

[2] It should be noted that the excavation and foundation work for both the North and South Towers would be completed during the same phase.

Superstructure and Exterior Façade – Core and Shell Construction

The core is the central part of the building and is the main part of the structural system. It contains the building's beams and columns, as well as elevator shafts, vertical risers for mechanical, electrical, and plumbing systems, electrical and mechanical equipment rooms, and core stairs. The shell is the exterior of the building. Tower cranes, fixed at locations adjacent to the two buildings, and mobile cranes brought onto the construction area as needed and would be used to lift structural components, façade elements, and other large materials, and load and place materials into and on the building. Core and shell construction activities would also require the use of concrete pumpers, generators and air compressors, concrete trowels, welders, saws, rebar benders, and a variety of small handheld tools. In addition, temporary construction elevators (hoists) would be used for the vertical movement of workers and materials during this stage of construction.

Interior Fit-Out and Finishing

Interior fit-out activities would typically include the construction of interior partitions, installation of lighting fixtures, and interior finishes (e.g., flooring, carpentry, painting, etc.), and mechanical and electrical work, such as the installation of elevators and lobby finishes. Final cleanup and touchup of the buildings and final building system (e.g., electrical system, fire alarm, plumbing, etc.) testing and inspections would be part of this stage of construction. Equipment used during this stage of construction would include hoists, delivery trucks, and a variety of small handheld tools. In addition, grid power is expected to be available during this stage of construction although generators may be needed for welding operations. Interior fit-out activities 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 buildings enclosed.

Construction of Waterfront Public Space

The construction activities related to the waterfront open space would be completed from both the waterside and upland area. Waterfront and in-water construction activities would involve construction barges and involve pile-supported structures (breakwaters), while excavation, filling activity, and debris removal would be completed on land as part of the cut-fill work. Activities related to pile-supported structures would be done via construction barges, which would temporarily be stationed in deep water areas during in-water and waterfront construction activities, while the excavation of beach and tide pools and assemblage of materials and cut-fill work would largely be completed on land. Construction equipment would move throughout the waterfront area of the site during the construction as necessary, and any effects from their presence would be temporary.

Number of Construction Workers and Material Deliveries

The number of workers and the number of truck trips associated with material deliveries vary with the scale of the project and the general construction task. The number of workers and truck deliveries to the Development Site was estimated by calendar quarter for all construction activities associated with the Proposed Development, as well as for the as-of-right development assumed in the No-Action condition, based on the construction schedule provided in **Figure 18-1**. The No-Action construction worker and truck estimates were then subtracted from the With-Action estimates, so as not to overestimate the construction effects associated with the Proposed Actions. The resultant estimate of the number of trucks and workers per quarter are summarized in **Table 18-3**. As indicated in the table, the number of workers would peak in the fourth quarter of 2024, with an estimated 268 workers per day, and in the third quarter of 2026, with an estimated 267 workers per day. The number of trucks would also peak in the third quarter of

2026, with an estimated 34 trucks per day. The third quarter (Q3) of 2026 was selected as the peak quarter for the construction transportation analyses as the overall number of daily construction-related worker and vehicle trips would likely be highest during this period.

TABLE 18-3
Average Incremental Number of Daily Workers and Trucks by Quarter

Year	2023				2024				2025				2026			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	-7	-30	-17	-19	186	183	199	268	260	48	23	3	58	200	267	233
Trucks	-3	-27	-20	7	18	26	30	23	17	0	-6	-1	23	30	34	32

Year	2027				Average	2026(Q3) Peak
Quarter	1st	2nd	3rd	4th		
Workers	117	80	53	0	113	267
Trucks	28	15	7	0	12	34

F. PROBABLE IMPACTS OF THE PROPOSED ACTIONS

Similar to many development projects in NYC, construction can cause temporary disruption to the surrounding area throughout the construction period. The following analyses describe potential construction impacts on transportation, air quality, noise and vibration, as well as other technical areas including land use and neighborhood character, socioeconomic conditions, community facilities, open space, historic and cultural resources, and hazardous materials.

Transportation

Traffic

Construction activities would generate construction worker auto trips and truck trips. As discussed above, average daily on-site construction workers and trucks were forecast for new construction anticipated on the Development Site under both the No-Action and With-Action condition. The No-Action construction worker and truck estimates were then subtracted from the With-Action estimates to determine the net incremental demand attributable to construction associated with the Proposed Actions. As shown in **Table 18-3** and discussed above, peak construction traffic related to trucks and worker autos is expected to peak in the third quarter of 2026, with an estimated 267 workers and 34 trucks per day. These represent peak days of work, and many days during the construction period would have fewer construction workers and trucks on-site.

Similar to other construction projects in New York City, most of the construction activity at the Development Site is expected to take place during the typical construction shift of 7:00 AM to 3:30 PM. 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. While construction truck trips would be made throughout the day (with more trips typically made during the early morning), construction workers would typically commute during the hours before and after the work shift. For analysis purposes, each truck delivery was assumed to result in two truck trips during the same hour (one “in” and one “out”), and each truck trip was assumed to have a passenger car equivalent (PCE) of 2.0, consistent with *CEQR Technical Manual* guidance. For construction workers, the majority (80 percent) of arrival and departure trips are expected to take place during the hour before and after each

shift. For construction trucks, deliveries would typically peak during the early morning, with an estimated 25 percent overlapping with construction worker arrival traffic.

Based on 2000 Census reverse journey-to-work data for construction workers employed in census tracts in proximity to the Development Site,[3] it is anticipated that construction workers' travel to the Development Site in Williamsburg, Brooklyn would be primarily by the auto mode (approximately 63.3 percent by private autos and 2.7 percent by taxis/rideshare services), with smaller numbers using public transportation (22.4 percent subway, 1.4 percent bus) and walking/biking (10.2 percent). It is also estimated that auto occupancy would average approximately 1.23 persons per vehicle. These trip generation assumptions were used as the basis for assessing the potential transportation-related impacts during construction.

Table 18-4 shows a forecast of incremental hourly construction worker auto and construction truck trips during the 2026(Q3) peak quarter for construction traffic. As shown in **Table 18-4**, in 2026(Q3), construction-related traffic is expected to peak during the 6-7 AM and 3-4 PM periods. During the 6-7 AM peak hour there would be a total of 152 PCE vehicle trips, including 131 inbound trips and 21 outbound trips. During the 3-4 PM peak hour there would be a total of 124 PCE trips, including seven inbound trips and 117 outbound trips.

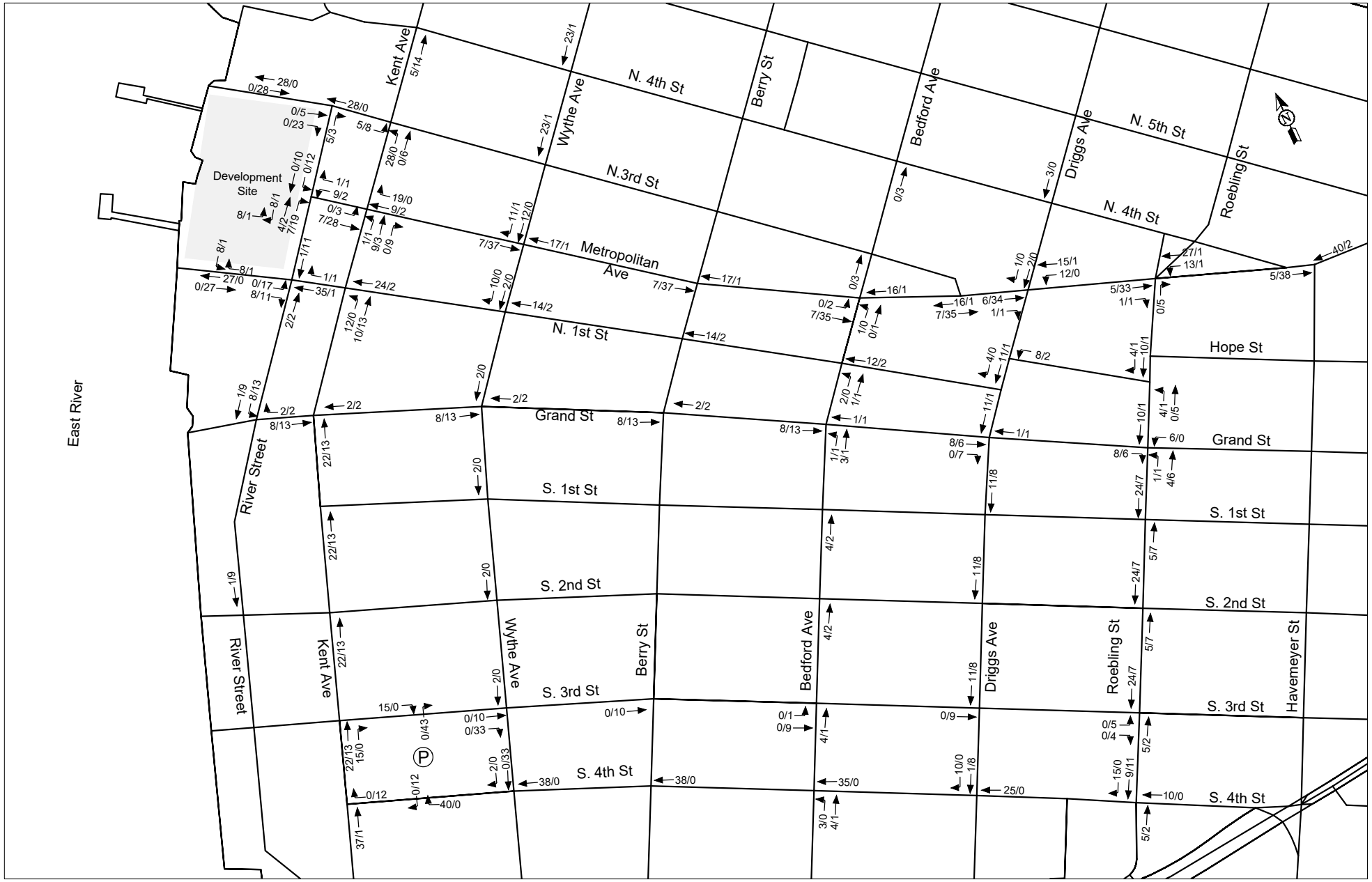
TABLE 18-4
2026(Q3) Peak Incremental Construction Vehicle Trip Projections (in PCEs)

	Auto/Taxi Trips					Truck Trips					Total Vehicle Trips		
	In		Out			In		Out					
Hour	%	#	%	#	Total	%	#	%	#	Total	In	Out	Total
6-7 AM	80	115	0	5	120	25	16	25	16	32	131	21	152
7-8 AM	20	29	0	1	30	10	7	10	7	14	36	8	44
8-9 AM	0	0	0	0	0	10	7	10	7	14	7	7	14
9-10 AM	0	0	0	0	0	10	7	10	7	14	7	7	14
10-11 AM	0	0	0	0	0	10	7	10	7	14	7	7	14
11 AM-12 PM	0	0	0	0	0	10	7	10	7	14	7	7	14
12-1 PM	0	0	0	0	0	10	7	10	7	14	7	7	14
1-2 PM	0	0	0	0	0	5	3	5	3	6	3	3	6
2-3 PM	0	0	5	5	5	5	3	5	3	6	3	10	13
3-4 PM	0	5	80	115	120	2.5	2	2.5	2	4	7	117	124
4-5 PM	0	1	15	22	23	2.5	2	2.5	2	4	3	24	27
5-6 PM	0	0	0	0	0	0	0	0	0	0	0	0	0

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

Incremental trips by construction trucks and construction worker autos were assigned to the street network in proximity to the Development Site to assess the potential for significant adverse traffic impacts during the 6-7 AM and 3-4 PM construction peak hours. **Figure 18-2** shows the assignments of these vehicles in each of these peak hours. Trucks were assumed to access the Development Site via Metropolitan Avenue and Kent Avenue, as they are the nearest NYCDOT-designated Local Truck Routes. Construction worker autos were first assigned to primary travel corridors based on AASHTO CTPP 2012-2016 Census reverse journey-to-work data for Brooklyn tracts 551, 553, 555 and 557, and then either to

[3] 2000 Census reverse journey-to-work data for the area encompassed by Brooklyn census tracts 551, 553, 555 and 577. (Note: 2000 Census tracts differ from current census tracts.)



Legend

= Development Site

Ⓟ = Parking Garage

11/9 = Weekday AM/PM ConstructionTraffic Volumes

River Ring

Figure 18-2
Weekday AM & PM Construction Trips Assignment

on-street parking adjacent to the Development Site, or to nearby off-street public parking. As discussed below in the Parking section, the Applicant controls an existing 725-space public parking garage at 325 Kent Avenue just to the south of the Development Site. This facility currently has substantial available capacity in the weekday midday, which the Applicant proposes to make available to construction workers. For assignment purposes, it was assumed that 50 percent of construction workers traveling by auto would utilize this off-street public parking and that 50 percent would park on street along the blocks of North 1st Street and North 3rd Street adjacent to the Development Site. (By assigning autos parking on-street to only these two locations, this conservative approach concentrates parking demand at intersections in proximity to the Development Site, rather than dispersing it more widely among other nearby blocks, which is the more likely and realistic scenario.)

Based on *CEQR Technical Manual* guidance, a quantified traffic analysis is typically required if a proposed action would result in 50 or more vehicle trip ends in a peak hour at one or more intersections. As shown in **Figure 18-2**, incremental vehicle trips generated by construction of the Proposed Project would not total 50 or more at any intersection in either of the 6-7 AM or 3-4 PM construction peak hours. In addition, as shown in **Table 18-4**, there would be fewer than 50 incremental vehicle trips/hour in all other periods. Therefore, construction of the Proposed Development is not expected to result in significant adverse traffic impacts in any peak hour during the 2026(Q3) peak quarter for construction traffic.

Curb Lane Closures and Staging

Construction staging would most likely occur on the Development Site and may extend within portions of sidewalks, curbs and travel lanes of public streets adjacent to the Development Site. Similar to many other construction projects in New York City, temporary curb lane and sidewalk closures are expected to be required adjacent to the Development Site, which would have dedicated gates, driveways, or ramps for delivery vehicle access. It is anticipated that construction activity would mostly take place within the Development Site itself, and potentially within portions of River Street, North 1st Street and/or North 3rd Street. Any sidewalk or street closures would require the approval of the NYCDOT-OCMC, the entity that ensures critical travel arteries are not interrupted, especially in peak travel periods.

Flag persons are expected to be present at active project site driveways, where needed, to manage the access and movement of trucks to ensure no on-street queuing. Some of the site deliveries may also occur along the perimeter of the construction site within delineated closed-off areas for concrete pour or steel delivery.

Transit

As discussed above and shown in **Table 18-3**, in the 2026(Q3) peak quarter for construction-related transit trips, approximately 267 construction workers would travel to and from the Development Site each day. As also discussed above, a total of approximately 23.8 percent of construction workers are expected to travel to and from the construction site by public transit (subway or bus) and 10.2 percent by walking or biking. In addition, it is estimated that approximately 80 percent of all construction workers would arrive and depart in the peak hour before and after each shift. Therefore, it is estimated that approximately 64 construction workers would travel to and from the Development Site via public transit each day, and that approximately 51 of these trips would occur in each of the 6:00 AM to 7:00 AM and 3:00 PM to 4:00 PM construction peak hours. These construction worker trips, which would occur outside of the peak periods for overall transit ridership, would be distributed among nearby subway stations (48 trips) and bus routes (3 trips).

As peak transit demand from construction workers on the Development Site would not meet the 200 trips/hour *CEQR Technical Manual* analysis threshold for a detailed subway analysis, nor the 50 trips/hour/direction analysis threshold for a detailed bus analysis, significant adverse impacts to subway and bus services are not expected to occur in the construction peak hour during the 2023(Q3) peak construction period.

Pedestrians

As discussed previously, it is anticipated that there would be an incremental increase of approximately 267 construction workers traveling to and from the Development Site in the 2026(Q3) peak construction period. An estimated 214 of these workers (80 percent) would arrive and depart in the peak hour before and after each shift, and many are expected to drive and park at the Development Site. Construction worker pedestrian trips on sidewalks, corner areas and crosswalks (pedestrian elements) near the Development Site would therefore include those walking to and from the subway, nearby bus stops and off-site parking, as well as workers traveling solely on foot. As the Development Site has frontages along three different streets (North 1st, North 3rd and River streets), these trips would be widely distributed among the pedestrian elements providing access to the Development Site. It is therefore unlikely that any single sidewalk, corner area or crosswalk would experience 200 or more peak-hour trips (the threshold below which significant adverse pedestrian impacts are considered unlikely to occur based on *CEQR Technical Manual* criteria). In addition, it should be noted that construction worker trips would primarily occur outside of the weekday AM and PM commuter peak periods and the weekday midday peak period when area pedestrian facilities typically experience their greatest demand. Consequently, significant adverse pedestrian impacts in the 2026(Q3) peak quarter for construction worker travel demand are not anticipated. At locations where temporary sidewalk closures are required during construction activities, adequate protection or temporary sidewalks and appropriate signage would be provided in accordance with NYCDOT-OCMC requirements.

Parking

As discussed above, there would be an incremental increase of 267 construction workers traveling to the Development Site in the 2026(Q3) peak construction period. Approximately 63.3 percent of these workers are expected to travel to the Development Site by private auto. Based on an average auto occupancy of 1.23 persons per auto, the maximum incremental daily parking demand from construction workers would total approximately 138 spaces in the weekday midday. As it is assumed that there would be no on-site parking until completion of the Proposed Development, construction workers would park on-street or in nearby off-street public parking facilities located in proximity to the Development Site during this period. For example, it is anticipated that some of the construction worker parking demand would be accommodated along the dead-end segments of North 1st Street and North 3rd Street adjacent to the Development Site. In addition, the Applicant controls an existing 725-space public parking garage at 325 Kent Avenue just to the south of the Development Site. This facility currently has substantial available capacity in the weekday midday, which the Applicant proposes to make available to construction workers.

As discussed in Chapter 12, "Transportation," under *CEQR Technical Manual* guidance, the inability of the Proposed Actions or the surrounding area to accommodate future parking demands would be considered a parking shortfall, but would generally not be considered significant due to the magnitude of available alternative modes of transportation. Therefore, should any parking shortfall occur due to incremental demand from construction workers during the 2026(Q3) peak construction period, it would not be considered a significant adverse parking impact based on *CEQR Technical Manual* guidance.

Air Quality

Emissions from on-site construction equipment and on-road construction-related vehicles, as well as dust generating construction activities, generally have the potential to affect air quality. Therefore, analysis of potential impacts on air quality from the construction of the Proposed Development includes a quantitative analysis of both on-site, on-road, and marine equipment sources of air emissions. In general, much of the heavy equipment used in construction utilizes diesel-powered engines and produces nitrogen oxides (NO_x) and particulate matter (PM). Fugitive dust generated by construction activities also contain PM. Finally, gasoline engines produce carbon monoxide (CO). As a result, the primary air pollutants of concern for construction activities include nitrogen dioxide (NO_2), particulate matter with an aerodynamic diameter of less than or equal to ten micrometers (PM_{10}), particulate matter with an aerodynamic diameter of less than or equal to 2.5 micrometers ($PM_{2.5}$), and CO.

The detailed construction air quality analysis estimates the overall construction emissions profile for the Proposed Development and evaluates the worst-case analysis time periods for short-term air quality standards and annual air quality standards. The emissions profile was based on $PM_{2.5}$ emissions (exhaust and fugitive dust). For annual standards, the 12 consecutive months of construction with the highest $PM_{2.5}$ emissions are month 7 to month 18. During this timeframe, construction activities would include the excavation/foundations for the North Tower and South Tower, superstructure and exterior work on the North Tower, upland park and waterfront/marine structures. The single month with the highest emissions for $PM_{2.5}$ (month 10) was used for purposes of modeling short-term standards and this peak month includes 50 truck trips per day. Modeling of annual standards took into account the monthly variation in emissions over the year. Subsequent to completion of the construction air quality impact analysis, the construction schedule was updated to start in January 2023 and to add six months to the duration of the construction of the south tower. It was not necessary to update the original modeling because the modeling is based on worst-case time periods (month) relative to the start of construction. Although the start date of construction changed, the worst-case time periods remained the same months relative to the revised construction start date. The change in the duration of the south tower construction has no effect on the worst-case time periods selected for detailed air quality analysis because the south tower construction does not begin until Month 29. The worst-case short-term and annual analysis periods for air quality occur earlier in the construction sequence when the north tower and waterfront/marine construction activities are overlapping. In addition, the south tower construction duration has minimal construction air quality impacts because it involves exterior and interior fit-out work only as opposed to excavation which results in the highest emissions of particulate matter from fugitive dust. All the excavation required for the south tower will be completed earlier in the construction sequence (as part of the north tower construction).

For air quality impact analysis, receptors were placed at points surrounding the Project Area (including elevated receptors on existing buildings and sidewalk receptors surrounding the Development Site), and dispersion models were used to predict and compare the concentration of pollutants to the National Ambient Air Quality Standards (NAAQS) and/or CEQR *de minimis* impact criteria, as appropriate.

Project-on-project impacts of the South Tower construction on the North Tower were not evaluated in detail because the earliest the North Tower could be occupied would be construction month 29, during which time the South Tower construction activities would include superstructure and exterior work with relatively low petroleum-powered equipment requirements and low potential for impact. The highest construction emissions are typically associated with the excavation phase (which generates additional fugitive dust from handling soil) and the excavation for the South Tower would occur simultaneously with

the North Tower excavation earlier in the construction sequence. Therefore, significant project-on-project impacts would not occur.

Emission Control Measures

The following measures will be committed to by the Applicant as Project Components Related to the Environment (PCREs) and are incorporated in the construction air quality analysis, as appropriate.

Clean Fuel. Ultra-low sulfur diesel (ULSD) fuel would be used exclusively for all diesel engines throughout the Construction Site.

Dust Control Measures. To minimize fugitive dust emissions from construction activities, a strict fugitive dust control plan, including a robust watering program, would be required as part of contract specifications. For example, stabilized truck exit areas would be established for washing off the wheels of all trucks that exit the Construction Site; truck routes within the Development Site would be either watered as needed or, in cases where such route would remain in the same place for an extended duration, the routes would be stabilized, covered with gravel, or temporarily paved to avoid the resuspension of dust; all trucks hauling loose material would be equipped with tight-fitting tailgates and their loads securely covered prior to leaving the Development Site; water sprays would be used for all demolition, excavation, and transfer of soils to ensure that materials would be dampened, as necessary, to avoid the suspension of dust into the air. Loose materials would be watered or covered. All measures required by the portion of the New York City Air Pollution Control Code 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 also be restricted to three minutes for all equipment and vehicles that are not using their engines to operate a loading, unloading, or processing device (e.g., concrete mixing trucks) or otherwise required for the proper operation of the engine.

Best Available Tailpipe Reduction Technologies. Non-road diesel engines with a power rating of 50 horsepower (hp) or greater and controlled truck fleets (i.e., truck fleets under long-term contract for the Proposed Development), including but not limited to concrete mixing and pumping trucks, would utilize the best available tailpipe (BAT) technology for reducing DPM emissions. Diesel particulate filters (DPFs) are 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 (OEM) or retrofitted. Retrofitted DPFs must be verified by EPA or the California Air Resources Board (CARB). Active DPFs or other technologies proven to achieve an equivalent reduction may also be used.

Utilization of Newer Equipment. EPA's Tier 1 through 4 standards for non-road engines regulate the emission of criteria pollutants from new engines, including PM, CO, NO_x, and hydrocarbons (HC).[4] All non-road construction equipment with a power rating of 50 hp or greater would meet at least the Tier 3 emissions standard (alternatively at least the Tier 4 final emissions standard). All land-based non-road engines rated less than 50 hp would meet at least the Tier 2 emissions standard.

[4] For summary of the phase in of Tiers 1-4 exhaust emission standards for non-road compression ignition (diesel) engines, see: https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100OA05.pdf

Marine diesel engine emission standards follow a similar tiered system to non-road diesel engines. Marine diesel engines would meet at least Tier 3 emissions standards.

Methodology

POLLUTANTS/AVERAGING TIMES FOR DETAILED ANALYSIS

The following specific averaging times were analyzed: annual average NO_2, 24 hour-average $PM_{2.5}$, annual average $PM_{2.5}$, 24 hour-average $PM_{10,}$ and one-hour and eight-hour CO. The one-hour NO_2 standard was not analyzed as explained in greater detail below.

With the promulgation of the 2010 one-hour average standard for NO_2, local ground-level sources, such as on-site construction sources, may be of greater concern for this pollutant. However, construction effects are typically temporary in nature and do not persist at a single location. The monthly/annual variation in the types of equipment needed on the construction site, and the utilization of the equipment would fluctuate on an hourly basis. In addition, construction sources would move throughout a construction site over the entire construction period as opposed to sources that operate on a regular basis in a defined location such as an exhaust stack on a building. Also, there are no clear methods to predict the rate of transformation of NO to NO_2 at ground-level for construction sources given the level of existing data and models. For these reasons, a one-hour NO_2 analysis was not conducted for construction sources.

CRITERIA FOR ASSESSING THE SIGNIFICANCE OF CONSTRUCTION AIR QUALITY IMPACTS

The NAAQS were used for screening purposes for construction impacts. Refer to Chapter 13, "Air Quality" for a description of the NAAQS. If construction impacts are below the NAAQS, no further assessment of the magnitude and duration of impacts is needed.

PEAK PERIODS FOR DETAILED ANALYSIS

A $PM_{2.5}$ emissions profile was prepared for each month of the construction schedule for purposes of identifying the peak periods with the greatest potential for air quality impacts. For annual average air quality standards, the 12 consecutive months with the highest $PM_{2.5}$ emissions was selected for detailed analysis (Months 7-18). For short-term standards, the single month with the highest $PM_{2.5}$ emissions was selected for detailed analysis (Month 10).

ENGINE EXHAUST EMISSIONS

Emission factors for NO_x, CO, PM_{10}, and $PM_{2.5}$ from on-site construction engines were developed using the latest EPA NONROAD Emission Model, which is incorporated in EPA's MOVES2014b model interface. The NONROAD model is based on source inventory data accumulated for specific categories of non-road equipment. The emission factors in grams per horsepower-hour for each type of equipment, with the exception of trucks, will be determined from the output files for the NONROAD model (i.e., calculated from regional emissions estimates) and the application of EPA-generated post-processing scripts. With the incorporation of DPFs (as discussed under "Emission Control Measures," above), PM emissions for diesel equipment of 50 hp or greater would be similar to Tier 4 standards. For purposes of CO and NO_x emissions, equipment of 50 hp or greater would to meet Tier 3 standards. For smaller equipment less than 50 hp, Tier 2 emission factors were utilized.

Tailpipe emission rates for NO_x, CO, PM_{10}, and $PM_{2.5}$ from heavy trucks travelling on-site and on roadways surrounding the site (e.g., dump trucks, concrete trucks) were developed using the most recent version of the EPA Mobile Source Emission Simulator (MOVES2014b), as referenced in the *CEQR Technical Manual*. The MOVES2014b vehicle type used was the single unit short-haul truck. The majority of

construction trucks are single unit trucks (concrete trucks, dump trucks, and delivery trucks). Dump trucks and other trucks were assumed to travel within the site for four (4) minutes at 5 mph (1,760 feet). In addition concrete trucks were assumed to travel within the site for two (2) minutes at 5 mph (880 feet). A separate idle emission factor was determined using MOVES to account for truck idling activity. Dump trucks were assumed to idle five minutes per trip to account for loading and unloading. Concrete trucks were assumed to idle for one hour per trip while unloading concrete to the concrete pumps. To meet project emission requirements (e.g., DPFs), a 2012 model year was assumed for haul truck $PM_{2.5}$/PM_{10} emissions. A Tier 3 model year (2006) will be assumed for CO and NO_x emission rates from haul trucks.

The analysis year for purposes of emissions rate development (e.g., the analysis year input to MOVES) was 2022 and emissions were estimated based on January morning temperature and humidity data included in regional MOVES input databases available from NYSDEC. Subsequent to the completion of the construction air quality analysis, the construction schedule was updated to start in 2023. However, this change would have a negligible impact on the MOVES emission rates and any effect would be a decrease because of assumed fleet turnover (retirement of older equipment with the highest emission rates). Therefore, it was not necessary to revise the MOVES emission rate analysis for 2023 and the 2022 emission rates are appropriately conservative and representative.

Worker commute trips would occur during the hour before and after each shift. However, the worker commute trips would not be concentrated in any one location due to no on-site parking for workers. A small number of workers could park on North 1st Street and North 3rd Street, others would be distributed in other existing on-street parking spaces in the project area and at parking garages. Emissions associated with worker commute trips would be similarly dispersed throughout the area and would be very low in comparison to the non-road equipment, heavy truck trips and fugitive dust-related emission sources that are the focus of the construction air quality analysis. Based on these considerations, it was not necessary to include emissions associated with worker commutes in the analysis.

Watercraft emissions factors were obtained from the 2020 Draft EPA report *Methodologies for Estimating Port-Related and Goods Movement Mobile Source Emission Inventories*. Given that very detailed engine information is not available, watercraft emission factors were obtained from Table H.6. *Average Harbor Craft Emission Factors by Engine Tier.* As noted previously, at least Tier 3 standards will be met. Default load factors were used per Table 4.4. *Default Harbor Craft Propulsion and Auxiliary Engine Load Factors.*

FUGITIVE EMISSION SOURCES

In addition to engine emissions, fugitive dust emissions from operations (e.g., excavation and transferring of excavated materials into dump trucks) was calculated based on procedures delineated in EPA AP-42 Table 13.2.3-1.[5] The quantity of soil loaded into trucks was estimated based on the total number of soil haul trucks as estimated for each construction month by the Applicant's construction specialists.

A soil density of 2,106 lbs/cubic yard was assumed per EPA guidelines on "moist soil".[6] Excavation was assumed to occur at a constant rate over the excavation phase identified in the construction schedule. The soil moisture content was assumed to be 12% based on AP-42 guidelines.

[5] U.S. Environmental Protection Agency, Compilation of Air Pollutant Emission Factors (AP-42), Section 13.2.3 Heavy Construction Operations.

[6] https://www.epa.gov/sites/production/files/2016-03/documents/conversions.pdf

Fugitive dust associated with truck travel on-site was calculated based on AP-42 section 13.2.2 (unpaved roads). The average truck weight assumed was 20 tons (40,000 pounds). Per the *CEQR Technical Manual*, the average silt content assumed was 8.5%.

The analysis of material handling activities and on-site truck travel in terms of annual average emission rates will account for 130 days of precipitation per year. No emissions rate adjustment for precipitation will be used for short-term PM emission rates.

The analysis of material handling activities and on-site truck travel also accounts for a dust control plan with at least a 50 percent reduction in PM_{10} and $PM_{2.5}$ emissions from fugitive dust through wet suppression, as discussed above in "Emission Reduction Measures."

Dispersion Modeling

Potential impacts from non-road sources were evaluated using the latest version of the EPA/ American Meteorological Society (AMS) AERMOD dispersion model (version 19191).

LOCATION OF NEARBY SENSITIVE RECEPTORS

The study area for identification of sensitive receptors included a 400-foot radius surrounding the Development Site. Receptors were placed at multiple elevations along the facades of the buildings and along sidewalks, and in open space areas that would remain publicly- accessible during construction. Recently constructed and planned developments within the study area were included in the development of the receptor network. Key receptor locations included the six-story mixed-use building north of the Project Area (184 Kent Avenue), 206 Kent (six-story commercial with level 3 roof garden), and Grand Ferry Park, among others.

SOURCE SIMULATION

Cranes and other equipment (such as generators) that would remain stationary on a short-term basis were modeled as point sources for short-term standards, while mobile equipment and dust emissions were modeled as area sources. For annual average standards, all equipment was assumed to be moving around the site and thus was represented as an area source. For $PM_{2.5}$ and PM_{10}, fugitive dust emissions (from both loading material into trucks and from truck travel on unpaved areas on-site) will be included in total area source emission rates.

Separate area sources were incorporated to represent the combined North Tower/South Tower excavation/foundation work area, the North Tower superstructure/exterior tower work area, the upland park, and marine structures (in-water) elements of the Proposed Action. Separate area sources were also included to model construction truck traffic on the streets surrounding the Development Site (specifically, Metropolitan Avenue, River Street, North 1st Street and North 3rd Street).

METEOROLOGICAL DATA

The meteorological data set consisted of five consecutive years of meteorological data: surface data collected at La Guardia Airport (2015-2019) and concurrent upper air data collected at Brookhaven, New York. These data were processed using the EPA AERMET program and are the same data as used in the analyses conducted for Chapter 13, "Air Quality".

NOX-NO2 CONVERSION

Annual NO_2 concentrations were estimated using AERMOD's Ambient Ratio Method 2 (ARM2), a Tier 2 method for addressing NO_x to NO_2 conversion.

BACKGROUND CONCENTRATIONS

Background concentrations used in the construction air quality analysis were the same as the background concentrations used in the operational air quality analysis (see Chapter 13).

Construction Effects of the Proposed Development

Maximum predicted concentration increments and overall concentrations, including background concentrations (converted to consistent units of $\mu g/m^3$ for all pollutants), are presented in **Table 18-5**. As shown in the table, the maximum predicted total concentrations of one- and eight-hour CO, 24-hour PM_{10}, and annual-average NO_2 are below the applicable NAAQS.

The annual average $PM_{2.5}$ concentration values due to the project at various locations are summarized below:

- **Sidewalk receptors**. The highest annual average $PM_{2.5}$ temporary concentration increase (1.8 $\mu g/m^3$) would occur at a sidewalk receptor on the west side of River Street directly adjoining the construction site. Considering the background concentration of 7.4 $\mu g/m^3$, the temporary increase in $PM_{2.5}$ concentration would result in a total annual average $PM_{2.5}$ concentration well under the applicable NAAQS (12 $\mu g/m^3$). The increase is also under half the difference between the background concentration and NAAQS. Sidewalk receptors do not represent an area of long-term air quality exposure due to the short time pedestrians would spend in any particular sidewalk location. Therefore, the exceedance of the *de minimis* criteria at these locations is not considered a significant adverse impact.
- **184 Kent Avenue**. The highest annual average $PM_{2.5}$ temporary concentration increase at this 6-story mixed-use commercial/ residential building would be 0.98 $\mu g/m^3$. The maximum concentration would occur at the ground level near the southwest corner of the building. During subsequent construction years when there is less excavation/material movement, concentrations would be lower. Considering the background concentration of 7.4 $\mu g/m^3$, the temporary increase in $PM_{2.5}$ concentration would result in a total annual average $PM_{2.5}$ concentration well under the applicable NAAQS (12 $\mu g/m^3$). The increase is also under half the difference between the background concentration and NAAQS. Therefore, construction of the Proposed Development would not result in a significant adverse construction air quality impact.
- **200**- **206 Kent Avenue.** The highest annual average $PM_{2.5}$ temporary concentration increase at this new commercial building under construction would be 1.23 $\mu g/m^3$ on the west façade facing the construction site at the ground level. During subsequent construction years when there is less excavation/material movement, concentrations would be lower. Considering the background concentration of 7.4 $\mu g/m^3$, the temporary increase in $PM_{2.5}$ concentration would result in a total annual average $PM_{2.5}$ concentration well under the applicable NAAQS (12 $\mu g/m^3$). The increase is also under half the difference between the background concentration and NAAQS. Therefore, construction of the Proposed Development would not result in a significant adverse construction air quality impact.
- **187 Kent Avenue**. The highest annual average $PM_{2.5}$ temporary concentration increase at this new mixed-use building would be 0.53 $\mu g/m^3$ on the west façade facing the construction site at the ground level. During subsequent construction years when there is less excavation/material

movement, concentrations would be lower. Considering the background concentration of 7.4 µg/m^3, the temporary increase in $PM_{2.5}$ concentration would result in a total annual average $PM_{2.5}$ concentration well under the applicable NAAQS (12 µg/m^3). The increase is also under half the difference between the background concentration and NAAQS. Therefore, construction of the Proposed Development would not result in a significant adverse construction air quality impact.

- **234 Kent Avenue.** The highest annual average $PM_{2.5}$ temporary concentration increase at this commercial building east of River Street and south of North 1st Street would be 0.55 µg/m^3 on the west façade at the ground level. During subsequent construction years when there is less excavation/material movement, concentrations would be lower. Considering the background concentration of 7.4 µg/m^3, the temporary increase in $PM_{2.5}$ concentration would result in a total annual average $PM_{2.5}$ concentration well under the applicable NAAQS (12 µg/m^3). The increase is also under half the difference between the background concentration and NAAQS. Therefore, construction of the Proposed Development would not result in a significant adverse construction air quality impact.
- **Grand Ferry Park**. The highest annual average $PM_{2.5}$ temporary concentration increase at receptors in the park is 0.53 µg/m^3 and this concentration would occur at the northwest corner of the park, in other portions of the park the concentration would be lower. Visitors to the park would not be subject to prolonged exposure due to the temporary nature of park visitation patterns. During subsequent construction years when there is less excavation/material movement, concentrations would be lower. Considering the background concentration of 7.4 µg/m^3, the temporary increase in $PM_{2.5}$ concentration would result in a total annual average $PM_{2.5}$ concentration well under the applicable NAAQS (12 µg/m^3). The increase is also under half the difference between the background concentration and NAAQS. Therefore, construction of the Proposed Development would not result in a significant adverse construction air quality impact.

TABLE 18-5
Construction Air Quality Analysis Results

Pollutant	*Averaging Period*	*Units*	*Maximum Increment*	*Background Concentration*	*Total Concentration*		*NAAQS*
CO	1-hour	µg/m^3	1,554	1,718	3,272		40,000.0
	8-hour		483	1,260	1,743		10,000.0
$PM_{2.5}$	Annual	µg/m^3	1.8	7.4	9.2		12
	24-hr		10.7	17.8	28.5		35
PM_{10}	24-hr	µg/m^3	63.4	32.0	95.4		150
NO_2	Annual	µg/m^3	31.0	28.4	59.4		100

Notes: Comparison to the NAAQS is based on total concentrations.

µg/m^3 = micrograms per cubic meter
PPB = parts per billion
PPM = parts per million

Noise

Potential impacts on community noise levels during construction of the Proposed Development could result from construction equipment operation and construction trucks and worker vehicles traveling to

and from the Development Site. Noise levels at a given location are dependent on the type and number of pieces of construction equipment operated, the acoustical utilization factor of the equipment (i.e., the percentage of time a piece of equipment is operating at full power), the distance from the construction site, and any shielding effects (from structures such as buildings, walls, or barriers). Noise levels from construction activities would vary widely, depending on the stage of construction and the location of the construction relative to receptor locations as described below. The most noise-intensive construction activities would not occur every day or every hour on those days that they would occur. During hours when the loudest pieces of construction equipment are not in use, receptors would experience lower construction noise levels. Construction noise levels would fluctuate during the construction period at each receptor, with the greatest levels of construction noise occurring for limited periods. The most substantial construction noise sources are expected to be impact equipment such as excavators with hydraulic break rams and paving breakers, as well as the movements of trucks.

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

Construction Noise Analysis Fundamentals

Construction activities result in increased noise levels as a result of (1) the operation of construction equipment on-site; and (2) the movement of construction-related vehicles (i.e., worker automobiles, and material and equipment deliveries) on the roadways to and from the construction site. The 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 (see **Table 18-6** for the noise levels of typical construction 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.

Noise levels due to construction-related traffic are a function of the following:

- The noise emission levels of the type of vehicle (e.g., auto, light-duty truck, heavy-duty truck, bus, etc.);
- Volume of vehicular traffic on each roadway segment;

- Vehicular speed;
- The distance between the roadway and the receptor;
- Topography and ground effects; and
- Shielding.

Construction Noise Impact Criteria

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

The noise impact criteria described in Chapter 19, Section 410 of the *CEQR Technical Manual* serve as a screening-level threshold for potential construction noise impacts. If construction of the Proposed Development 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. The screening level noise impact criteria for mobile and on-site construction activities are as follows:

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

If construction of the Proposed Development would result in exceedances of these noise impact criteria at a receptor, then further consideration of the intensity and duration of construction noise is warranted at that receptor. Generally, exceedances of these criteria for more than 24 consecutive months are considered to be significant impacts. Noise level increases that would be considered objectionable (i.e., greater than 15 dBA) lasting more than 12 consecutive months and noise level increases considered very objectionable (i.e., greater than 20 dBA)[7] for three or more consecutive months would also be considered significant impacts.

The presence of window/wall attenuation measures at noise receptor sites, such as double-glazed windows and alternate means of ventilation, is considered when evaluating locations predicted to experience noise level increments from construction in excess of *CEQR Technical Manual* impact criteria for a prolonged period of 24-months or greater. An interior L_{10} noise level of 45 dBA or below for residential and community facility uses is typically considered acceptable. Receptors exceeding an interior L_{10} noise level of 45 dBA require further assessment of the magnitude and duration of the noise impact, as well as the specific type of use affected, to conclude whether or not the impact is significant.

[7] Definition of "objectionable" and "very objectionable" noise level increases based on Table B from DEC's "Assessing and Mitigating Noise Impacts" policy memorandum, revised February 2001.

The CEQR criteria are expressed in terms of L_{10} (or the noise level exceeded ten percent of the time), while the noise impact modeling was performed based on L_{eq} (or the energy-equivalent noise level). In a construction context, L_{10} is typically three dB higher than L_{eq} based on extensive empirical data from the Central Artery/Tunnel Project (CA/T).[8] Therefore, an additional 3 dB adjustment was applied to estimate L_{10} from the modeled L_{eq} results.

Construction Noise Analysis Methodology

EXISTING NOISE LEVELS

The CadnaA noise model was used to determine existing $L_{eq(1\text{-}hr)}$ noise levels in the study area based on available AM peak hour traffic volume and vehicle classification data (pre-COVID-19 conditions). In addition, field measurements were conducted in the vicinity of the project area during the month of November 2020 to determine ambient noise levels. **Figure 15-1** in Chapter 15, "Noise" shows the field measurement locations. The difference between the predicted existing $L_{eq(1\text{-}hr)}$ noise levels due to traffic and measured ambient noise levels were calculated to use as correction factors to account for background noise not attributable to vehicular traffic. The correction factors were determined for each field measurement location and added to the predicted No-Action and With-Action levels at the representative receptors that corresponds to measurement locations.

The correction factor for measurement Location 1 was calculated to be 7 dB and was added to all representative receptors that are south of North 3rd Street and west of Kent Avenue. The correction factor for Location 2 was calculated to be 11 dB and added to all representative receptors located north of North 3rd Street and west of Kent Avenue. The correction factor for receptors on the river front north of North 4th street was calculated to be 14 dB and added to the existing noise level. The correction factor for Location 5 was calculated to be 7 dB and added to all receptors east of Kent Avenue.

MOBILE SOURCES (OFF-SITE)

Worker commute trips would occur during the hour before and after each shift, and therefore unlike truck trips, worker commute trips would not have the potential to contribute to cumulative construction noise impacts in combination with non-road equipment. In addition, the worker commute trips would not be concentrated in any one location due to no on-site parking for workers. A small number of workers could park on North 1st Street and North 3rd Street, others would be distributed in other existing on-street parking spaces in the project area and at parking garages. Based on these considerations, it was not necessary to include construction worker commute trips in the detailed construction noise analysis. Peak construction truck traffic is estimated to be 57 daily truck trips during Month 14 (August 2024, with work occurring on the North Tower superstructure and exterior at the same time as work on the waterfront park pilings, precast and landscaping). These trips would be distributed throughout the workday and therefore the truck volume in any particular hour would be substantially lower. Truck access to the project site would be via the BQE (a NYCDOT designated through-truck route with existing high truck volumes) and Metropolitan Avenue (a designated local truck route). Truck trips would be less in all other months of construction. Therefore, truck trips are not expected to be concentrated enough to result in a significant increase in noise at off-site locations outside the construction impacts study area.

[8] Federal Highway Administration. 2006. FHWA Roadway Construction Noise Model User's Guide. Available at: https://www.fhwa.dot.gov/environment/noise/construction_noise/rcnm/rcnm.pdf

For the immediate project area, a cumulative impact analysis of construction-generated truck traffic with on-site construction equipment sources was conducted using CadnaA and the estimated truck trips for each representative analysis month. Specifically, this cumulative analysis included truck travel on Metropolitan Avenue, River Street, North 1st Street and North 3rd Street. Vehicle speeds in the model were assigned based on the speed limit for the streets.

ON-SITE SOURCES

A construction equipment resource estimate was prepared by the applicant's construction specialists for purposes of estimating noise impacts from on-site equipment and truck travel on streets surrounding the project site.

Noise effects from construction activities were evaluated using the CadnaA model, a computerized model developed by DataKustik for noise prediction and assessment. The model can be used for the analysis of a wide variety of noise sources, including stationary sources (e.g., construction equipment, industrial equipment, power generation equipment) and transportation sources (e.g., roads, highways, railroad lines, busways, waterways, airports). The model takes into account the reference sound pressure levels of the noise sources at 50 feet, attenuation with distance, ground contours, reflections from barriers and structures, attenuation due to shielding, etc. Some of the noise sources are indoors after the completion of the exterior shell or superstructure. In these situations, a 10 dB attenuation factor is applied to indoor noise sources. FHWA Noise Reduction (NR) factor for masonry buildings with double glazed windows is 35 dB and overall Transmission Loss (TL) can be much higher than 10 dB. The CadnaA model is based on the acoustic propagation standards promulgated in International Standard ISO 9613-2. The CadnaA model is a state-of-the-art tool for noise analysis and an appropriate tool for construction noise impact analysis as noted in Chapter 22 of the *CEQR Technical Manual*.

Geographic input data to be used with the CadnaA model includes CAD drawings defining planned site work areas, adjacent building footprints and heights, locations of streets, and locations of sensitive receptors. For each analysis period, the geographic location and operational characteristics of each piece of construction equipment were input to the model. The geographic location selected for the construction equipment was based on the use requirements, that is, equipment such as hand held tools that have flexibility in operating location were placed reasonably distant from potential noise receptors. Reflections and shielding by barriers and project elements erected on the construction site and shielding from adjacent buildings were also accounted for in the model. The model produces A-weighted $L_{eq(1)}$ noise levels at each receptor location for each analysis period, as well as the contribution from each noise source.

As shown in **Figure 18-1** construction activity associated with the Proposed Development is expected to occur over approximately 45 months. A peak period analysis was performed to determine the representative analysis periods for further detailed modeling. **Table 18-6** summarizes the equipment types, usage factors, and reference noise levels used in the analysis (L_{max} at 50 feet). Based on this analysis, five months were selected for detailed modeling as shown in **Table 18-7**. **Table 18-7** also indicates the time period represented by each month and specific equipment in-use during that month.

Subsequent to completion of the construction noise analysis based on a start date of January 2022, the construction schedule was updated to start in January 2023 and to add six months to the duration of the construction of the south tower. The change in the construction start year has no effect on the construction noise analysis. The change in the duration of the south tower construction has no effect on the first four of the modeled representative months because these months occur before the start of construction on the south tower. For the fifth modeled representative month, the duration of

construction represented is increased, however the equipment requirements during the peak of South Tower construction would be the same as originally analyzed for the overlap of South Tower superstructure, exterior fit-out and interior fit-out phases.

TABLE 18-6
Construction Equipment Used in Noise Analysis

Equipment Type	Noise equipment description (CEQR Table 22-1)	Usage Factor (%)	L_{max} @ 50 ft (dBA)
Generator (200 HP)	Generator	50%	82
200 Ton Crane (500 HP)	Crane	16%	85
250 Ton Crane (500 HP)	Crane	16%	85
Air Compressor (200 HP)	Compressor (air, greater than 350 cfm)	40%	80
Asphalt laying equipment (80 HP)	Paver	50%	85
Backhoe (90 HP)	Backhoe	40%	80
Cable Puller	All Other Equipment >5 HP	50%	85
Circular saw (0.5 HP)	Saw-FTA manual	50%	76
Concrete Pumper (200 HP)	Concrete Pump Truck	20%	82
Concrete Mixer Truck	Concrete Mixer Truck	40%	85
Crane, Crawler - 150T (777 HP)	Crane	16%	85
Deck Engines, Cable	All Other Equipment >5 HP	50%	85
Demo Saw - Concrete Road (50 HP)	Concrete Saw	20%	90
Demo Saw – Hand (4 HP)	Saw-FTA manual	50%	76
Dual hoist - high rise (200 HP)	Man lift	20%	85
Excavator (260 HP)	Excavator	40%	85
Front Loader (175 HP)	Front end loader	40%	80
Hoe Ram, Excavator Mounted	Mounted impact hammer (hoe ram)	20%	90
Impact Pile Driver (300 HP) or Vibratory Pile Driver	Impact Pile Driver	20%	95
Jack Hammer	Jackhammer	20%	85
Mortar Mixer (6 HP)	Drum mixer	50%	80
Pneumatic Hand Tools	Pneumatic tools	50%	85
Pug Mill (200 HP)	Drum mixer	50%	80
Rebar Bending Machine	Bar Bender	20%	80
Roller (80 HP)	Roller	20%	85
Small Boat – Outboard (200 HP)	Ferry Boat - FTA Manual minus 3 dBA	50%	75
Snorkel/Man Lift (150 HP)	Man lift	20%	85
Telebelt	Flat bed truck	40%	84
Trash Pump, 6' (300 HP)	Pumps	50%	77
Troweling machine (11 HP)	All Other Equipment >5 HP	50%	85
Tug Boat (1,800 HP)	Ferry Boat - FTA Manual	50%	78
Vibrator Plate Compactor (6 HP)	All Other Equipment >5 HP	50%	85
Welders (25 HP)	Welder/Torch	40%	73

Based on *CEQR Technical Manual* Table 22-1 except circular saw and tugboat reference levels which are from FTA Transit Noise and Vibration Impact Assessment Manual. Small outboard motor boat based on the FTA ferry boat reference level minus 3 dBA to reflect smaller engine size.

TABLE 18-7
Representative Months For Detailed CadnaA Analysis

Noise Analysis Month	Used to represent	North Tower*	South Tower	Marine Structures	Upland Park
Oct 2023	July to Dec 2023	Backhoe Excavator x2 Impact Pile Driverx2 Loader Air Compressor Generator	No work	Excavator x2 Air Compressor Hoe Ram, Excavator Mountedx2 250 Ton Cranex2 200 Ton Crane Tug Boat Small Boat – Outboardx2 Jack Hammerx2 Front Loader Deck Engines, Cable Snorkel/Man Lift Generatorx2 Demo Saw - Concrete Road Demo Saw - Hand	No work

Noise Analysis Month	Used to represent	North Tower*	South Tower	Marine Structures	Upland Park
March 2024	Jan to May 2024	Backhoe Excavator x4 Impact Pile Driverx4 Loader Air Compressor x2 Mobile Crane Generator Concrete Pumper x2	No work	Excavator x2 Impact Pile Hammer Vibratory Pile Hammer x2 Air Compressor x3 Hoe Ram, Excavator Mounted x2 250 Ton Crane x3 Tug Boat Small Boat – Outboard x2 Concrete Boom Pump Jack Hammer Welders x2 Telebelt x2 Pug Mill Trash Pump, 6' x2 Front Loader Deck Engines, Cable x2 Snorkel/Man Lift x2 Generator x4 Demo Saw – Hand x2	Generator Air Compressor circular saw Crane, Crawler - 150T Demo Saw - Concrete Road Demo Saw – Handx2 Excavator Front Loader Hoe Ram, Excavator Mounted Jack Hammer x2 Telebelt Pneumatic Hand Tools Roller Cable Puller Vibrator Plate Compactor x2

Noise Analysis Month	Used to represent	North Tower*	South Tower	Marine Structures	Upland Park
Aug 2024	June to Oct 2024	Loader Air Compressor Generator x2 Circular saw x6 Pneumatic Hand Tools x10 Concrete Pumper Troweling machine Tower crane (electric)	No work	Impact Pile Hammer Vibratory Pile Hammer x2 Air Compressor x3 250 Ton Crane x3 Tug Boat Small Boat – Outboard x2 Concrete Boom Pump x2 Jack Hammer Welders x3 Deck Engines, Cable x2 Snorkel/Man Lift x2 Generator x4 Demo Saw – Hand x2	Air Compressor Backhoe circular saw Concrete Boom Pump Crane, Crawler - 150T Demo Saw - Concrete Road Demo Saw - Hand Excavator x2 Front Loader Jack Hammer Mortar Mixer Telebelt Pneumatic Hand Tools Rebar Bending Machine Roller x2 Troweling machine Vibrator Plate Compactor x2 Welders x2

Noise Analysis Month	Used to represent	North Tower*	South Tower	Marine Structures	Upland Park
Jan 2025	Nov 2024 to Sept. 2025	Loader Air Compressor x2** Generator x2 Circular saw x12** Dual hoist - high rise Pneumatic Hand Tools x10** Concrete Pumper Troweling machine** Welders x2** Tower crane (electric)	No work	Air Compressor x2 250 Ton Crane x2 Tug Boat Small Boat – Outboard x2 Concrete Boom Pump Jack Hammer Welders x2 Snorkel/Man Lift x2 Generator x2 Demo Saw – Hand x2	Air Compressor asphalt laying equipment Backhoe circular saw Concrete Boom Pump Crane, Crawler - 150T Demo Saw - Concrete Road Demo Saw – Hand x3 Excavator x2 Front Loader Jack Hammer x2 Mortar Mixer x2 Telebelt Pneumatic Hand Tools Rebar Bending Machine Roller x2 Cable Puller Troweling machine Vibrator Plate Compactor x2 Welders x2
Aug 2026	Nov 2025 to Sep 2027	No work	Loader Air Compressor x2** Generator x2 Circular saw x12** Dual hoist - high rise Pneumatic Hand Tools x10** Concrete Pumper Troweling machine Welders x2** Tower crane (electric)	No work	No work

* North Tower equipment list for October 2023 and March 2024 includes excavation and foundations for South Tower (since the excavation/foundation for both towers would be constructed at the same time)

** Indicates equipment operating inside the completed building façade

IMPACT ANALYSIS PROCEDURE

The following steps were undertaken as part of the construction noise impact assessment process:

1. As a screening measure, the CEQR noise criteria were assessed, including an assessment of the duration of exceedance. The existing conditions predicted noise level for each receptor was used to identify the appropriate impact criterion.
2. For each receptor resulting in a noise impact for 24 consecutive months or greater based on the CEQR criteria, further consideration of the magnitude and duration of impact was conducted by considering:
    a. Interior noise levels (based on field observation of window/ventilation conditions) in comparison to the CEQR interior noise guideline
    b. Significance thresholds established for this project (e.g., construction noise increment of 15 dBA L_{eq} for 12 months or 20 dBA or greater for 3 or more months).
    c. Geographic extent of the impact
    d. Nature of the land uses affected and their typical hours of operation in comparison to the construction work hours.
3. Mitigation options were considered for those locations determined to have a potentially significant adverse impact.

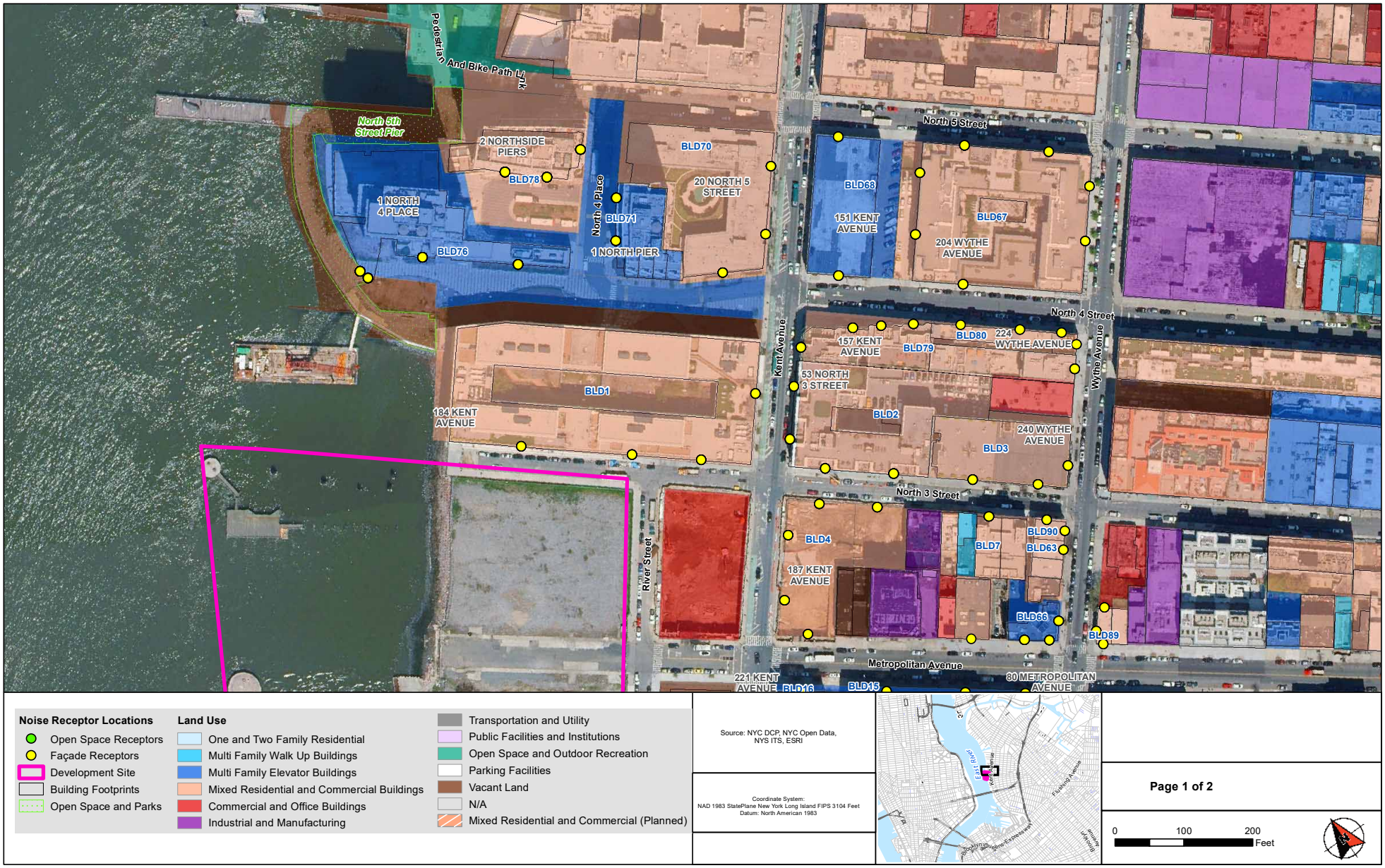
Noise Receptor Locations

A detailed receptor network was developed for the study area around the Development Site which would encompass the locations where the maximum project effects due to construction noise would be expected. Sensitive receptor locations, such as residential and commercial properties, and open space resources close to the Project Area were selected as noise receptor sites. Receptors were placed at each floor of buildings. Recently constructed, buildings under construction and planned buildings identified in the development of the No Action scenario were included in the receptor network. **Figure 18-3** provides an overview of the modeled receptor locations (displaying x, y receptor locations only, not the number of stories).

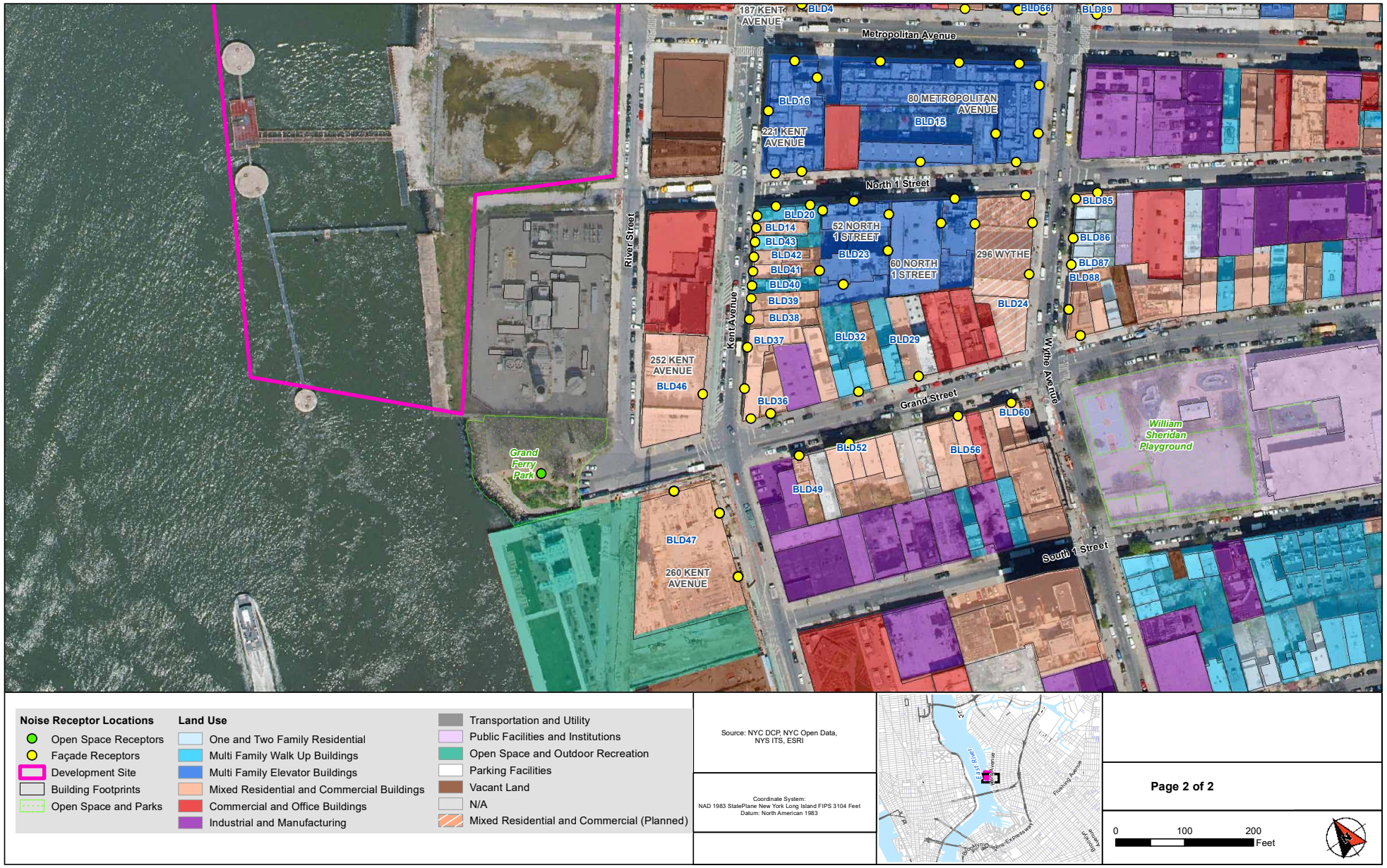
Noise Reduction Measures

As previously stated, construction noise is regulated by the requirements of the New York City Noise Control Code (also known as Chapter 24 of the Administrative Code of the City of New York, or Local Law 113), the DEP Notice of Adoption Rules for Citywide Construction Noise Mitigation (also known as Chapter 28), and the EPA's noise emission standards. These local and federal requirements mandate that specific construction equipment and motor vehicles meet specified noise emission standards; that construction activities be limited to weekdays between the hours of 7 AM and 6 PM; and that construction materials be handled and transported in such a manner as not to create unnecessary noise. For weekend and afterhours work, permits would be required, as specified in the New York City Noise Control Code.

The New York City Noise Control Code also requires the adoption and implementation of a specific noise mitigation plan for each construction site. Standard measures included in construction noise mitigation plans include variety of source and path controls, such as ensuring that all equipment employs the manufacturer's appropriate noise reduction device(s) and that construction devices with internal combustion engines keep their engine's housing doors closed, covering portable noise-generating equipment with noise-insulating fabric, preventing vehicle engine idling on-site, etc.


Pedestrian And Bike Path Link
North 5th Street Pier
2 NORTHSIDE PIERS
BLD78
BLD70
20 NORTH 5 STREET
North 4 Place
BLD71
1 NORTH PIER
1 NORTH 4 PLACE
BLD76
North 5 Street
BLD63
151 KENT AVENUE
BLD67
204 WYTHE AVENUE
North 4 Street
Kent Avenue
157 KENT AVENUE
BLD79
BLD80
224 WYTHE AVENUE
Wythe Avenue
53 NORTH 3 STREET
BLD1
184 KENT AVENUE
BLD2
240 WYTHE AVENUE
BLD3
North 3 Street
BLD4
River Street
BLD90
BLD7
BLD63
187 KENT AVENUE
BLD66
BLD89
Metropolitan Avenue
221 KENT AVENUE
BLD16
BLD15
80 METROPOLITAN AVENUE
Noise Receptor Locations
Open Space Receptors
Façade Receptors
Development Site
Building Footprints
Open Space and Parks
Land Use
One and Two Family Residential
Multi Family Walk Up Buildings
Multi Family Elevator Buildings
Mixed Residential and Commercial Buildings
Commercial and Office Buildings
Industrial and Manufacturing
Transportation and Utility
Public Facilities and Institutions
Open Space and Outdoor Recreation
Parking Facilities
Vacant Land
N/A
Mixed Residential and Commercial (Planned)
Source: NYC DCP, NYC Open Data, NYS ITS, ESRI
Coordinate System: NAD 1983 StatePlane New York Long Island FIPS 3104 Feet Datum: North American 1983
Page 1 of 2
0
100
200
Feet

Source: WSP



Source: WSP

Figure 18-3 (cont'd)
Construction Noise Receptor Locations

In terms of specific path control commitments, the project would include:

- An 8-ft plywood fence around the perimeter of the construction site.
- Additional path controls (such as portable barriers or shrouds around specific equipment) would be considered during the development of the construction noise mitigation plan.
- Efforts will be made to operate equipment producing noise at reasonable distance from receptors when there is flexibility in the operating location for the noise source (e.g., hand tools such as saws).

In terms of source controls (i.e., reducing noise levels at the source), the following measures would be implemented where feasible and practicable in accordance with the New York City Noise Code:

- Equipment that meets the sound level standards specified in Subchapter 5 of the New York City Noise Control Code would be utilized from the start of construction.
- On-site vehicle idle time would be restricted to three minutes for all equipment and vehicles that are not using their engines to operate a loading, unloading, or processing device (e.g., concrete mixing trucks) or otherwise required for the proper operation of the engine.
- As early in the construction period as practicable, electrical-powered equipment would be selected for certain noisy equipment, such as, concrete vibrators, hoists, and man lifts (i.e., early electrification).

Construction Noise Analysis Results

Using the methodology described and considering the noise abatement measures specified above, cumulative noise analyses were performed to determine maximum 1-hour equivalent ($L_{eq(1)}$) noise levels that would be expected at each of the noise receptor locations during each of the five selected construction periods. This resulted in a predicted range of peak hourly construction noise levels throughout the construction period at each receptor point and at each floor of the represented building. The results of the detailed construction noise analysis are summarized by residential and mixed residential/commercial address/location in **Table 18-8**. Receptors at commercial use-only buildings were included in the noise model and results are included in the modeling backup files. The locations of the evaluated buildings are shown in **Figure 18-3**.

TABLE 18-8
Construction Noise Analysis Results at Residential and Mixed Use Locations in dBA

CadnaA Building ID	Address	Land Use	Existing L_{eq}	Max Total Leq	Max Change	Maximum Continuous Duration (months)		
						Exceedance of CEQR Screening Threshold	Objectionable Increase	Very Objectionable Increase
BLD76	**1 NORTH 4 PLACE**	**Multi- Family Elevator Building**	***67.5***	***79.1***	***30.0***	***45***	***45***	***27***
BLD71	**1 NORTHSIDE PIERS**	**Multi- Family Elevator Building**	***64.9***	***74.1***	***18.4***	***27***	***16***	***0***
BLD89	101 METROPOLITAN AVENUE	Mixed Residential and Commercial	*66.3*	*68.0*	*5.0*	*39*	*0*	*0*

CadnaA Building ID	Address	Land Use	Existing L_{eq}	Max Total Leq	Max Change	Maximum Continuous Duration (months)		
						Exceedance of CEQR Screening Threshold	Objectionable Increase	Very Objectionable Increase
BLD68	151 KENT AVENUE	Multi- Family Elevator Building	*53.6*	*60.8*	*10.0*	*39*	*0*	*0*
BLD79	**157 KENT AVENUE**	**Mixed Residential and Commercial**	***67.4***	***68.7***	***15.7***	***45***	***11***	***0***
BLD1	**184 KENT AVENUE**	**Mixed Residential and Commercial**	***69.1***	***81.4***	***23.3***	***27***	***27***	***21***
BLD4	**187 KENT AVENUE**	**Mixed Residential and Commercial**	***64.8***	***76.9***	***26.2***	***45***	***39***	***21***
BLD78	2 NORTHSIDE PIERS	Mixed Residential and Commercial	*67.3*	*72.6*	*10.0*	*27*	*0*	*0*
BLD70	20 NORTH 5 STREET	Mixed Residential and Commercial	*66.3*	*67.9*	*10.7*	*39*	*0*	*0*
BLD11A	**200-206 KENT AVENUE**	**Commercial and Office**	***73.7***	***83.3***	***27.0***	***45***	***45***	***27***
BLD67	204 WYTHE AVENUE	Mixed Residential and Commercial	*64.3*	*67.1*	*7.2*	*29*	*0*	*0*
BLD16	**221 KENT AVENUE**	**Multi- Family Elevator Building**	***66***	***78.7***	***16.5***	***45***	***21***	***0***
BLD19, 20	**223 KENT AVENUE**	**Multi- Family Walk-Up Building**	***68.2***	***74.1***	***18.3***	***45***	***28***	***0***
BLD80	224 WYTHE AVENUE	Mixed Residential and Commercial	*65*	*65.4*	*6.4*	*29*	*0*	*0*
BLD14	225 KENT AVENUE	Mixed Residential and Commercial	*68.5*	*74.5*	*7.1*	*16*	*0*	*0*
BLD43	227 KENT AVENUE	Multi- Family Walk-Up Building	*68.7*	*73.4*	*5.8*	*10*	*0*	*0*
BLD42	229 KENT AVENUE	Mixed Residential and Commercial	*68.8*	*72.7*	*5.0*	*39*	*0*	*0*
BLD41	231 KENT AVENUE	Mixed Residential and Commercial	*68.8*	*70.7*	*2.9*	*0*	*0*	*0*
BLD40	233 KENT AVENUE	Multi- Family Walk-Up Building	*68.7*	*74.7*	*7.6*	*45*	*0*	*0*
BLD39	235 KENT AVENUE	Mixed Residential and Commercial	*68.8*	*70.3*	*1.5*	*0*	*0*	*0*
BLD38	237 KENT AVENUE	Mixed Residential and Commercial	*68.9*	*69.8*	*0.9*	*0*	*0*	*0*
BLD3	240 WYTHE AVENUE	Mixed Residential and Commercial	*72*	*72.4*	*5.2*	*5*	*0*	*0*
BLD37	245 KENT AVENUE	Mixed Residential and Commercial	*68.7*	*70.6*	*6.2*	*5*	*0*	*0*
BLD46	252 KENT AVENUE	Multi-Family Walk- Up Building	*75.8*	*75.9*	*0.7*	*0*	*0*	*0*
BLD85	253 WYTHE AVENUE	Mixed Residential and Commercial	*63.2*	*65.3*	*7.0*	*18*	*0*	*0*
BLD45	**254 KENT AVENUE/ 70 RIVER STREET**	**Commercial**	***75.9***	***79.9***	***23.7***	***45***	***45***	***5***

CadnaA Building ID	Address	Land Use	Existing L_{eq}	Max Total Leq	Max Change	Maximum Continuous Duration (months)		
						Exceedance of CEQR Screening Threshold	Objectionable Increase	Very Objectionable Increase
BLD63	254 WYTHE AVENUE	Mixed Residential and Commercial	*67.3*	*70.6*	*5.0*	*0*	*0*	*0*
BLD86	259 WYTHE AVENUE	One & Two Family Buildings	*65.1*	*66.0*	*1.5*	*0*	*0*	*0*
BLD87	263 WYTHE AVENUE	One & Two Family Buildings	*65.3*	*66.2*	*1.1*	*0*	*0*	*0*
BLD88	265 WYTHE AVENUE	Mixed Residential and Commercial	*65.2*	*66.3*	*3.5*	*0*	*0*	*0*
BLD47	266 KENT AVENUE	Mixed Residential and Commercial	*73.8*	*75.9*	*12.6*	*0*	*0*	*0*
BLD24	296 WYTHE	Residential & Commercial Mixed Use (Planned)	*66*	*66.7*	*8.0*	*23*	*0*	*0*
BLD36	35 GRAND STREET	Mixed Residential and Commercial	*59*	*62.7*	*4.6*	*0*	*0*	*0*
BLD49	38 GRAND STREET	Mixed Residential and Commercial	*57.8*	*70.4*	*12.6*	*45*	*0*	*0*
BLD52	46 GRAND STREET	Mixed Residential and Commercial	*56.6*	*67.1*	*11.1*	*45*	*0*	*0*
BLD32	47 GRAND STREET	Multi- Family Walk-Up Building	*57.1*	*61.2*	*5.0*	*5*	*0*	*0*
BLD23	**52 NORTH 1 STREET**	**Multi- Family Elevator Building**	***58***	***74.6***	***22.6***	***45***	***39***	***28***
BLD2	53 NORTH 3 STREET	Mixed Residential and Commercial	*70.9*	*73.0*	*7.0*	*21*	*0*	*0*
BLD4A	**56 NORTH 3 STREET**	**Mixed Residential and Commercial**	***44.6***	***65.3***	***20.9***	***45***	***16***	***11***
BLD29	57 GRAND STREET	Mixed Residential and Commercial	*57.3*	*58.0*	*1.1*	*0*	*0*	*0*
BLD56	62 GRAND STREET	Mixed Residential and Commercial	*56.6*	*63.5*	*7.6*	*18*	*0*	*0*
BLD7	**62 NORTH 3 STREET**	**Mixed Residential and Commercial**	***48.7***	***65.2***	***20.0***	***45***	***5***	***11***
BLD90	**68 NORTH 3 STREET**	**Mixed Residential and Commercial**	***66.7***	***67.7***	***16.1***	***45***	***18***	***0***
BLD60	70 GRAND STREET	Mixed Residential and Commercial	*57.4*	*60.9*	*3.5*	*0*	*0*	*0*
BLD15, 18	**80 METROPOLITAN AVENUE**	**Multi- Family Elevator Building**	***65.8***	***72.3***	***20.4***	***45***	***5***	***18***
BLD66	91 METROPOLITAN AVENUE	Multi- Family Elevator Building	*68.1*	*68.9*	*8.5*	*45*	*0*	*0*
1_Park	**Grand Ferry Park**	**Open Space**	***53***	***69.1***	***16.1***	***45***	***10***	***0***

Note: Bolded rows indicate potentially significant adverse construction noise impact

OPEN SPACE

Grand Ferry Park is a is a NYC Department of Parks and Recreation facility located along the waterfront at the terminus of Grand Street, south of the NYPA 1st Street power plant. The existing conditions daytime noise level predicted for this area is relatively low at approximately 53 dBA (L_{eq}). Construction noise increments of approximately 11 to 16 dBA would occur and the total noise level would range from 64 to 69 dBA (L_{eq}), which is above the 55 dBA (L_{10}) CEQR guideline.[9] The highest construction noise impact would occur during month 9 (representing January to May 2024), which includes shoreline and marine structures pile driving with direct line-of-sight to the park. The CEQR screening criteria (in this case, a 5 dBA or greater increment) would be exceeded for the duration of construction (45 months). Based on the magnitude and duration of the incremental impacts, the impact to Grand Ferry Park is considered a temporary significant adverse construction noise impact. Refer to Chapter 19, "Mitigation," for a discussion of mitigation considered for this temporary significant adverse impact.

RESIDENTIAL AND MIXED-USE BUILDINGS

157 Kent Avenue

This residential building with ground floor commercial is located at the southeast quadrant of the intersection of Kent Avenue and N. 4th Street. The building would exceed CEQR noise impact screening criteria, with total noise levels during construction of up 69 dBA. This new building uses central HVAC, and therefore, a 30 dBA exterior to interior attenuation is assumed. The CEQR interior L_{10} noise guideline of 45 dBA would not be exceeded. Construction activities associated with the Proposed Development would not result in a significant adverse impact.

184 Kent Avenue

This residential building with ground floor commercial is located immediately north of the development site, across North 3rd Street. As a result of the close proximity and direct line of sight to the construction activities, the maximum noise increment on the south façade would be 23 dBA (L_{eq}). The maximum total exterior noise level would be approximately 81 dBA (L_{eq}). Therefore, assuming 30 dBA of exterior to interior attenuation for this relatively newly constructed building with central HVAC, interior noise levels are anticipated to exceed the CEQR guideline of 45 dBA (L_{10}) by approximately 4-6 dBA for the first 27 months of construction. Based on the magnitude and duration of the incremental impacts, the impact to 184 Kent Avenue is considered a temporary significant adverse construction noise impact. Refer to Chapter 19, "Mitigation", for a discussion of mitigation considered for this temporary significant adverse noise impact.

187 Kent Avenue

This new residential building is located on the east side of Kent Avenue, between Metropolitan Avenue and North 3rd Street. The maximum noise increment would be 26 dBA (L_{eq}) and would occur on the north façade facing North 3rd Street (increments are lower on the west façade than the north facade because of an intervening building). The maximum total exterior noise level would be approximately 77 dBA (L_{eq}). Therefore, assuming 30 dBA of exterior to interior attenuation for this relatively newly constructed building with central HVAC, interior noise levels are anticipated to exceed the CEQR guideline of 45 dBA (L_{10}) by approximately 2 dBA for the first 39 months of construction. Based on the magnitude and duration of the incremental impacts, the impact to 187 Kent Avenue is considered a temporary significant adverse

[9] Although the *CEQR Technical Manual* 55 dBA $L_{10(1)}$ guideline is a worthwhile goal for outdoor areas requiring serenity and quiet, this relatively low noise level is typically not achieved in parks and open space areas in New York City.

construction noise impact. Refer to Chapter 19, "Mitigation", for a discussion of mitigation considered for this temporary significant adverse noise impact.

221 Kent Avenue

This new construction residential building is located on the east side of Kent Avenue between North 1st Street and North 3rd Street. The building has unobstructed line-of-sight to the development site because the intervening block is currently vacant (block 2362, lot 1 and lot 3). The maximum noise increment would be 17 dBA (L_{eq}) on the north façade facing North 3rd Street. The maximum total exterior noise level would be approximately 79 dBA (L_{eq}). Therefore, assuming 30 dBA of exterior to interior attenuation for this relatively newly constructed building with PTAC, interior noise levels are anticipated to exceed the CEQR guideline of 45 dBA (L_{10}) by approximately 4 to 4 dBA for the 21 months of construction. Based on the magnitude and duration of the incremental impacts, the impact to 221 Kent Avenue is considered a temporary significant adverse construction noise impact. Refer to Chapter 19, "Mitigation", for a discussion of mitigation considered for this temporary significant adverse noise impact.

223 Kent Avenue

This residential building is located at the southeast quadrant of the intersection of Kent Avenue and North 1st Street. The maximum noise increment would be 18 dBA (L_{eq}) on the North 1st Street facade. The maximum total exterior noise level would be approximately 74 dBA (L_{eq}) and would occur on the Kent Avenue (west) facade. Therefore, assuming 25 dBA of exterior to interior attenuation for the units of the building using window AC and 10 dBA for units without window AC assumed to have openable windows. Interior noise levels are anticipated to exceed the CEQR guideline of 45 dBA (L_{10}) by approximately 0.5 to 4 dBA for units with window AC and 19 dBA for units without window AC for the duration of construction. Based on the magnitude and duration of the incremental impacts, the impact to 223 Kent Avenue is considered a temporary significant adverse construction noise impact. Refer to Chapter 19, "Mitigation", for a discussion of mitigation considered for this temporary significant adverse noise impact.

52 North 1st Street

This new construction residential building is located on the south side of North 1st street between Kent Avenue and Wythe Avenue. The maximum noise increment would be 23 dBA (L_{eq}) on the west façade at the upper floors with direct line of sight to the construction area (intervening buildings are lower height). The maximum total exterior noise level would be approximately 75 dBA (L_{eq}). Therefore, assuming 30 dBA of exterior to interior attenuation for this relatively newly constructed building with central HVAC, interior noise levels are not anticipated to exceed the CEQR guideline of 45 dBA (L_{10}). Therefore, construction activities associated with the Proposed Development would not result in a significant adverse impact.

62 North 3rd Street

This new residential building is located on the south side of North 3rd Street, between Kent Avenue and Wythe Avenue. The building would exceed CEQR noise impact screening criteria, with total noise levels during construction of up 65 dBA (L_{eq}). The building appears to have central HVAC, and therefore, a 30 dBA exterior to interior attenuation is assumed. The CEQR interior L_{10} noise guideline of 45 dBA would not be exceeded. Therefore, construction activities associated with the Proposed Development would not result in a significant adverse impact.

68 North 3rd Street

This residential building with ground floor commercial is located in the southwest quadrant of the intersection of Wythe Avenue and North 3rd Street. The building would exceed CEQR noise impact

screening criteria, with total noise levels during construction of up 68 dBA (L_{eq}) only on north facade. The building appears to have window AC units for some units Therefore, a 25 dBA exterior to interior attenuation is assumed for units with window AC and 10 dBA attenuation for units without window AC. The CEQR interior L_{10} noise guideline of 45 dBA would not be exceeded for units with window AC. However, a 13 dBA exceedance over CEQR interior L_{10} guideline is anticipated for units without window AC. Based on the magnitude and duration of the incremental impacts, the impact to 68 North 3rd Street is considered a temporary significant adverse construction noise impact. Refer to Chapter 19, "Mitigation", for a discussion of mitigation considered for this temporary significant adverse noise impact.

1 Northside Piers

This residential tower is located on the north side of North 4th St and immediately north from 184 Kent Avenue. The maximum noise increment would be 18 dBA (L_{eq}) and the building has direct line-of-sight to the construction area. The maximum total exterior noise level would be approximately 74 dBA (L_{eq}). Therefore, assuming 30 dBA of exterior to interior attenuation for this relatively newly constructed building with central HVAC, interior noise levels are not anticipated to exceed the CEQR guideline of 45 dBA (L_{10}). Therefore, construction activities associated with the Proposed Development would not result in a significant adverse impact.

1 North 4 Place

This residential tower is located along the waterfront, west of North 4th Street. The maximum noise increment would be 30 dBA (L_{eq}) and the building has direct line-of-sight to the construction area and close proximity to marine structures pile driving. The maximum total exterior noise level would be approximately 79 dBA (L_{eq}). Therefore, assuming 30 dBA of exterior to interior attenuation for this relatively newly constructed building with central HVAC, interior noise levels are anticipated to exceed the CEQR guideline of 45 dBA (L_{10}) by approximately 4 dBA for 45 consecutive months of construction. Based on the magnitude and duration of the incremental impacts, the impact to 1 North 4 Place is considered a temporary significant adverse construction noise impact. Refer to Chapter 19, "Mitigation", for a discussion of mitigation considered for this temporary significant adverse noise impact.

80 Metropolitan Avenue

This large L-shaped residential building is located on the west side Wythe Avenue, between Metropolitan Avenue and North 1st Street. The maximum noise increment would be 20 dBA (L_{eq}). The maximum total exterior noise level would be approximately 72 dBA (L_{eq}). Therefore, assuming 30 dBA of exterior to interior attenuation for this relatively newly constructed building with PTAC, interior noise levels are anticipated not to exceed the CEQR guideline of 45 dBA (L_{10}). Construction activities associated with the Proposed Development would not result in a significant adverse impact.

56 North 3 Street

This mixed use residential and commercial building is located on the south of North 3rd Street between Kent Avenue and Wythe Avenue. The maximum noise increment would be 21 dBA (L_{eq}) and would occur on the north façade facing North 3rd Street. The maximum total exterior noise level would be approximately 65 dBA (L_{eq}). Assuming 30 dBA of exterior to interior attenuation for this relatively newly constructed building with central HVAC, interior noise levels are not anticipated to exceed the CEQR guideline of 45 dBA (L_{10}). Construction activities associated with the Proposed Development would not result in a significant adverse impact.

COMMERCIAL USE BUILDINGS

200-206 Kent Avenue

This new commercial and office building is located on the west side of Kent Avenue at the intersection of Kent Avenue and North 3rd Street. The maximum noise increment would be 27 dBA (L_{eq}) and would occur on the west façade facing River Street. The maximum total exterior noise level would be approximately 83 dBA (L_{eq}). Assuming 30 dBA of exterior to interior attenuation for this relatively newly constructed building with central HVAC, interior noise levels are anticipated to exceed the CEQR guideline of 45 dBA (L_{10}) by approximately 8 dBA for 45 months of construction. Based on the magnitude and duration of the incremental impacts, the impact to 200-206 Kent Avenue is considered a temporary significant adverse construction noise impact. Refer to Chapter 19, "Mitigation", for a discussion of mitigation considered for this temporary significant adverse noise impact.

254 Kent Avenue/ 70 River Street

This commercial building is located on the east of River Street at the intersection of River Street and North 1st Street. The maximum noise increment would be 24 dBA (L_{eq}) and would occur on the west façade facing River Street. The maximum total exterior noise level would be approximately 80 dBA (L_{eq}). Assuming 30 dBA of exterior to interior attenuation for this relatively newly constructed building with central HVAC, interior noise levels are anticipated to exceed the CEQR guideline of 45 dBA (L_{10}) by approximately 5 dBA for 45 months of construction. Based on the magnitude and duration of the incremental impacts, the impact to 200-206 Kent Avenue is considered a temporary significant adverse construction noise impact. Refer to Chapter 19, "Mitigation", for a discussion of mitigation considered for this temporary significant adverse noise impact.

The total noise levels at two locations, 184 Kent Avenue and 200-206 Kent Avenue, would be up to 81 and 83 dBA, respectively, during construction, which could violate NYC Noise Code 24-228 (L_{max} cannot exceed 85 dBA at 50 or more feet). Therefore, the Applicant is committing to provide noise monitoring to ensure that violations of the NYC Noise Code do not occur at adjacent receptors.

PROJECT-ON- PROJECT IMPACTS

Construction of the North Tower would be completed in Month 27 (September 2025) and could be occupied within 1-2 months later. The marine and park construction elements would be completed before the North Tower is occupied. The South Tower superstructure construction would be starting around the same time as the North Tower is occupied. Therefore, a project-on-project construction noise analysis was completed by placing receptors along the façade of the North Tower for analysis Month 37 (August 2026). It is important to note that the potential for project-on-project impacts is substantially reduced by the project construction sequence which involves excavation and foundations for both towers at the same time in 2023-2024 (in other words, the South Tower foundation is done at the same time as the North Tower). The CadnaA modeling results show the maximum exterior noise level on the North Tower during Month 30 is 71 dBA. As discussed in the noise chapter, the project includes an (E) designation, which requires 28 dBA exterior to interior attenuation and alternative means of ventilation for certain facades. For construction noise analysis purposes, it is anticipated that the entire building would use the same type of windows and ventilation. Based on this, the maximum interior noise level during construction would be 45.7 dBA (L_{10}), which slightly exceeds by less than 1 dBA the CEQR interior noise guideline of 45 dBA L_{10}. The exceedance would be geographically limited to the ground through 9th floor of the south North Tower façade. The duration of impact would be less than 23 months (which is the entire construction duration of the South Tower). The impact would not occur at all if the building achieves 30 dBA exterior to interior attenuation (as is typically assumed for new construction using PTAC or central HVAC systems).

Based on the limited magnitude, duration and geographic extent of impact, the construction of the South Tower would not result in a significant adverse construction noise impact on the North Tower.

Other Technical Areas

Land Use and Neighborhood Character

Construction activities would affect land use within the Development Site but would not alter surrounding land uses. As is typical with construction projects, during periods of peak construction activity there would be some disruption, predominantly noise, to the nearby area. There would be construction trucks and construction workers coming to the Development Site. These disruptions would be temporary in nature and would have limited effects on land uses within the surrounding area, particularly as most construction activities would take place within the Development Site or within portions of sidewalks, curbs, and travel lanes of public streets immediately adjacent to the site. In addition, measures would be implemented to control noise, vibration, emissions, and dust on the construction site, including the erection of construction fencing. The fencing would reduce potentially undesirable views of the construction site and buffer noise emitted from construction activities. Overall, while the construction at the Development Site would be evident to the local community, the temporary nature of construction would not result in significant or long-term adverse impacts on local land use patterns or the character of the nearby area.

Socioeconomic Conditions

Construction activities could temporarily affect pedestrian and vehicular access. However, lane and/or sidewalk closures would not 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. Maintenance and Protection of Traffic (MPT) plans would be developed for any temporary curb-lane and sidewalk narrowing/closures as required by DOT. This work would be coordinated with and approved by DOT's OCMC. Overall, construction activities associated with the Proposed Actions would not result in any significant adverse impacts on surrounding businesses.

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

Community Facilities

No community facilities would be directly affected by construction activities. The Development Site will be surrounded by construction fencing and barriers that would limit the effects of construction on any nearby community facilities. Construction workers would not place any burden on public schools and would have minimal, if any, demands on libraries, child care facilities, and health care. Construction of the Proposed Development would not block or restrict access to any facilities in the area, and would not materially affect emergency response times. The NYPD and FDNY emergency services and response times would not be significantly affected due to the geographic distribution of the police and fire facilities and their respective coverage areas.

Open Space

There are no publicly accessible open spaces within the Development Site and no open space resources would be used for staging or other construction activities. Construction of the two towers comprising the

Proposed Development would not occur immediately adjacent to Grand Ferry Park. However, the park is adjacent to the southern limit of construction for the proposed waterfront park (which includes demolition of existing waterfront and in-water structures and pile installation for new in-water structures). As discussed above, there would be no significant adverse air quality impacts on open spaces taking into account dust control measures and other emission reduction measures incorporated in the project. The construction noise analysis above demonstrated there would be a potentially significant temporary adverse noise impact to the park. While the maximum total noise level at the park observed during construction would be 75 dBA (L_{eq}) for a period of 5 months, the noise level at the park would be in the low to mid 60s of dBA (L_{eq}) for the majority of construction. The predicted noise levels are not atypical for open space resources in New York City, and would not result in a major change in the usability of the park. Therefore, the temporary construction noise impact would not result in a significant adverse construction-related open space impact.

Historic and Cultural Resources

The Development Site does not possess archaeological significance, and therefore, the Proposed Development does not have the potential to result in construction period archaeological impacts.

The New York City Building Code provides some measures of protection for all properties against accidental damage from adjacent construction by requiring that all buildings, lots, and service facilities adjacent to foundation and earthwork areas be protected and supported. Additional protective measures apply to NYCLPC-designated Landmarks and State and National Register-listed (State/National Registers of Historic Places- (S/NR-) listed) historic buildings located within 90 linear feet of a proposed construction site. For these structures, the NYCDOB's Technical Policy and Procedure Notice (TPPN) #10/88 applies. TPP #10/88 supplements the standard building protections afforded by the Building Code by requiring, among other things, a monitoring program to reduce the likelihood of construction damage to adjacent NYCLPC-designated or S/NR- listed resources (within 90 feet) and to detect at an early stage the beginnings of damage so that construction procedures can be changed. Adjacent historic resources, as defined in the procedure notice, only include designated New York City Landmarks (NYCLs), properties within NYCL historic districts, and listed S/NR properties that are within 90 feet of a lot under development or alteration. They do not include S/NR-eligible, NYCL-eligible, potential, or unidentified architectural resources.

Construction period impacts on any designated historic resources would be minimized, and the historic structures would be protected, by ensuring that adjacent development projected as a result of the Proposed Actions adheres to all applicable construction guidelines and follows the requirements laid out in TPPN #10/88. As the Development Site is located within 90 feet of the S/NR-listed and NYCL-eligible Austin, Nichols & Co. Warehouse, construction of the Proposed Development would be subject to TPPN #10/88. Under the TPPN, a construction protection plan would be provided to the LPC for review and approval prior to any work in the Project Area. As such, the Proposed Actions would not cause any significant adverse construction-related impacts to historic resources.

Natural Resources

As discussed in Chapter 9, "Natural Resources," the Proposed Development could temporarily affect water quality due to temporary erosion and sedimentation as a consequence of disturbing soil during construction. The Proposed Development would comply with the New York Guidelines for Urban Erosion and Sediment Control. The East River's water quality would be protected from construction activities by protection measures that follow an approved Stormwater Pollution Protection Plan (SWPPP). The SWPPP would address erosion control measures during construction, as well as post-development water quality

treatment in accordance with NYSDEC regulations. Anticipated erosion control measures include stabilized construction entrances, a silt fence, inlet protection, and turbidity curtains. Post-development water quality treatment is expected to consist of a combination of hydrodynamic separators or stormwater infiltration practices. These treatment practices would be designed to remove or reduce suspended solids and nitrogen from the stormwater runoff prior to being discharged to the East River. In addition, the Applicant would be required to incorporate Best Management Practices (BMPs) to treat and improve the water quality of the stormwater runoff leaving the site. Stormwater would be treated in accordance with the NYS DEC SPDES General Permit Regulations.

The construction related to the waterfront public space would be performed from both upland using large equipment upland from the mean high water (MHW) and waterside using equipment mounted on construction barges. These barges would temporarily be stationed in deep water areas during in-water and waterfront construction activities. Activities related to pile-supported structures would be done via construction barges, while the excavation of beach and tide pools and assemblage of materials and cut-fill work would largely be completed on land. Equipment would move throughout the waterfront public space area during the construction as necessary, and any effects from their presence would be temporary.

Because construction activities would be subject to an approved SWPPP and would be temporary in nature, the Proposed Development would not result in any significant adverse construction-related impacts on natural resources.

Hazardous Materials

A detailed assessment of potential impacts on hazardous materials is described in Chapter 8, "Hazardous Materials." The hazardous materials assessments identified various potential sources of subsurface contamination on, or in close proximity to, the Development Site. To reduce the potential for adverse impacts associated with new construction resulting from the Proposed Actions, further environmental investigations and remediation will be required. To ensure that these investigations are undertaken, a hazardous materials (E) designation would be placed on the upland portions of the tax lots comprising the Development Site. The (E) designation requires approval by the New York City Office of Environmental Remediation (OER) prior to obtaining NYC Buildings Department (DOB) permits for any new development entailing soil disturbance. The environmental requirements for the (E) designation also include a mandatory Construction Health and Safety Plan (CHASP), which must be approved by OER.

Adherence to these existing regulations would prevent impacts from construction activities at the Development Site.