Chapter 19: Construction

19.1 Introduction

This chapter assesses the potential impacts of the construction of buildings expected to result on sites in the Bronx Metro-North Station Study from the Proposed Actions. The following sections discuss the potential impacts resulting from the construction of the projected development sites as described in the Reasonable Worst-Case Development Scenario (RWCDS) presented in Chapter 1, "Project Description." Construction impacts, although temporary, can include noticeable and disruptive effects from an action that is associated with construction or could induce construction. As stated in the *City Environmental Quality Review (CEQR) Technical Manual*, determination of the significance of construction impacts and need for mitigation is generally based on the duration and magnitude of the impacts. Construction impacts are usually important when construction activity could affect traffic conditions, hazardous materials, archaeological resources, the integrity of historic resources, community noise patterns, and air quality conditions.

As described in Chapter 1, "Project Description," the New York City Department of City Planning is proposing a series of land use actions, including zoning map amendments, zoning text amendments (including mapping a special purpose district and designating a Mandatory Inclusionary Housing (MIH) area to ensure affordable housing is part of any future development), and changes to the City Map that would facilitate the implementation of a multi-year planning study conducted in the Parkchester, Van Nest, and Morris Park neighborhoods of the Bronx in partnership with local stakeholders, City agencies, and the Metropolitan Transportation Authority (MTA). The Proposed Actions would affect an approximately 46-block area primarily along main corridors – East Tremont Avenue, White Plains Road, Bronxdale Avenue, Eastchester Road, and Stillwell Avenue—near the future Parkchester/Van Nest and Morris Park Metro-North Stations in Bronx Community Districts 9, 10, and 11 (the "Affected Area"). The approximately 28-block area closest to the future Parkchester/Van Nest Station is generally bounded by Baker Avenue and Van Nest Avenue to the north, Silver Street to the east, East Tremont Avenue to the south, and St. Lawrence Avenue to the west. The approximately 18-block area closest to the future Morris Park Station is generally bounded by Pelham Parkway to the north, Marconi Street to the east, Williamsbridge Road to the south, and Eastchester Road to the west. The Proposed Actions are intended to leverage new planned Metro-North service to promote economic growth, facilitate the development of housing, including affordable housing, as well as guide investment in the public realm around stations to improve pedestrian safety and comfort.

A total of 60 projected development sites have been identified for analysis purposes. In the RWCDS, the Proposed Actions would result in the incremental development of up to approximately 7,474 dwelling

units (DUs); 1,231,973 gross square feet (gsf) of commercial uses; 1,290,628 gsf of community facility uses; and 3,765 accessory parking spaces; as well as a net reduction of 405,096 gsf of industrial uses.

As described in other chapters of this Environmental Impact Statement (EIS), the projected developments resulting from the Proposed Actions are expected to range from 30 to 215 feet in height. The 60 projected development sites are expected to be completed in the nine years following the adoption of the Proposed Actions, i.e., by the analysis year of 2033. In addition, there are 36 potential development sites considered less likely to be developed by the 2033 analysis year and are therefore not considered in this assessment.

According to the *CEQR Technical Manual*, construction duration is often broken down into short-term (less than two years) and long-term (two or more years). Where the duration of construction is expected to be short-term, any impacts resulting from such short-term construction generally do not require detailed assessment. As described below, it is estimated that most of the projected development sites would generally take less than 24 months to complete construction and would therefore be considered short-term. However, as construction activity associated with the RWCDS would occur on multiple development sites within the same geographic area, such that there is the potential for several construction timelines to overlap, a preliminary assessment of potential construction impacts was prepared in accordance with the guidelines of the *CEQR Technical Manual* and is presented in this chapter.

The findings of the preliminary assessment identified the need to undertake more detailed construction impact assessments for transportation, air quality, and noise. To conduct these detailed assessments, this chapter describes the City, state, and federal regulations and policies that govern construction, followed by the conceptual construction schedule and the types of activities likely to occur during construction of the 60 projected development sites. The types of construction equipment are also discussed, along with the expected number of workers and truck deliveries. Finally, the potential impacts from construction activity are assessed and the methods that may be employed to avoid significant adverse construction-related impacts are presented.

19.2 Principal Conclusions

TRANSPORTATION

Construction travel demand is expected to peak in the first quarter of 2028 and was selected as a reasonable worst-case analysis period for assessing potential cumulative transportation impacts from operational trips from completed portions of the project and construction trips associated with construction activities. Construction of the Proposed Actions are expected to result in significant adverse traffic impacts, as described below. No significant adverse impacts to parking, transit, or pedestrian conditions are anticipated.

Traffic

During construction, traffic would be generated by construction workers commuting via autos and by trucks making deliveries to projected development sites. The results of a detailed traffic analysis for 2028 (Q1) show that the Proposed Actions would result in significant adverse impacts at nine intersections during the construction 6-7 AM peak hour and 25 intersections during the construction 3-4 PM peak hour. Measures to address these impacts are described in Chapter 21, "Mitigation Measures."

Transit

The construction sites are located in an area that is well served by public transportation, with a total of seven subway stations and 14 bus routes located in the vicinity of the Affected Area. In 2028 (Q1), transit conditions during the 6-7 AM and 3-4 PM construction peak hours are expected to be generally better than during the analyzed operational peak hours with full build-out of the Proposed Actions in 2033. No subway station impacts are expected during construction as the Proposed Actions are not expected to result in any significant subway station impacts. The Proposed Actions' significant adverse bus impact would also be less likely to occur during construction than with full build-out of the Proposed Actions in 2033 as incremental demand would be lower during construction and would not occur during the peak hours of commuter demand. It is expected that the mitigation measures identified for 2033 operational transit impacts in Chapter 21, "Mitigation Measures," would also be effective at mitigating any potential impacts from construction transit trips during the 2028 (Q1) construction periods.

Pedestrians

In 2028 (Q1), pedestrian trips by construction workers would be widely distributed among the twenty projected development sites that would be under construction in this period and would primarily occur outside of the weekday AM and PM commuter peak periods and weekday midday peak period when area pedestrian facilities typically experience their greatest demand. Pedestrian conditions during the 6-7 AM and 3-4 PM construction peak hours are expected to be generally better than during the analyzed operational peak hours with full build-out of the Proposed Actions in 2033. The Proposed Actions' significant adverse sidewalk, corner area and crosswalk impacts would therefore be less likely to occur during this construction period than with full build-out of the Proposed Actions in 2033. It is expected that mitigation measures identified for 2033 operational pedestrian impacts in Chapter 21, "Mitigation Measures," would also be effective at mitigating any potential impacts from construction pedestrian trips during the 2028 (Q1) construction period.

Parking

Based on the extent of available on-street parking spaces within ¼-mile of the Affected Area, projected construction worker parking demand during the 2028 (Q1) cumulative construction and operational parking demand could potentially contribute to a shortfall in the weekday midday. The shortfall would not be considered significant under *CEQR Technical Manual* criteria given the availability of alternative

modes of transportation near the Affected Area. Therefore, significant parking shortfall during construction is not anticipated.

AIR QUALITY

Measures required to reduce pollutant emissions during construction include all applicable laws, regulations, and the City's building codes as well as New York City Local Law 77. These include dust suppression measures, idling restriction, and the use of ultra-low sulfur diesel (ULSD) fuel and best available tailpipe reduction technologies. With the implementation of these emission reduction measures, the dispersion modeling analysis of construction-related air emissions for both on-site and on-road sources determined that particulate matter ($PM_{2.5}$ and PM_{10}), annual-average nitrogen dioxide (NO_2), and carbon monoxide (CO) concentrations would be below their corresponding *de minimis* thresholds or National Air Quality Ambient Standards (NAAQS), respectively. Therefore, construction under the Proposed Actions would not result in significant adverse air quality impacts.

NOISE AND VIBRATION

Noise

Based on the projected construction predicted at each development site, construction-generated noise is expected to exceed the *CEQR Technical Manual* noise impact thresholds as well as result in "objectionable" and "very objectionable" noise level increases at some receptors. One peak construction period per year was analyzed at each development site from 2025 to 2033. Receptors where noise level increases were predicted to exceed the construction noise evaluation thresholds for extended durations were identified.

The noise analysis results show that the predicted noise levels due to construction could exceed the *CEQR Technical Manual* impact criteria throughout the Affected Area, including at projected development sites that are completed and occupied while other nearby or adjacent projects are under construction. Construction could produce noise levels that would be noticeable and potentially intrusive during the most noise-intensive construction activities. While the highest levels of construction noise would not persist throughout construction, and noise levels would fluctuate resulting in noise increases that would be intermittent, these locations would experience construction noise levels whose magnitude and duration could constitute significant adverse impacts.

At locations predicted to experience an exceedance of the noise impact threshold criteria, the exceedances would be due principally to noise generated by on-site construction activities (rather than construction-related traffic). The noise analysis examined the reasonable worst-case peak hourly noise levels resulting from construction in an analyzed month and is therefore conservative in predicting increases in noise levels. Typically, the loudest hourly noise level during each month of construction would not persist throughout the entire month. This analysis is based on RWCDS conceptual site plans and construction schedules, with the possibility that the actual construction may be of less magnitude, or that

construction on multiple projected development sites may not overlap, in which case construction noise would be less than the analysis predicts.

Vibration

The buildings of most concern with regard to the potential for structural or architectural damage due to vibration are historic buildings and structures immediately adjacent to the projected development sites. Vibration levels at these buildings and structures within 52.4 feet of a projected development site may exceed the 0.50 in/sec PPV during impact pile driving. Because these historic buildings and structures would be within 90 feet of the projected development sites, vibration monitoring would be required per DOB TPPN #10/88 regulations, and construction means and methods would need to be altered as necessary to avoid generating vibration exceeding the 0.50 inches/second threshold.

For non-historic buildings and other structures immediately adjacent to projected development sites, vibration levels within 21 feet of pile driving may result in PPV levels between 0.50 and 2.0 in/sec, which is generally considered acceptable for a non-historic building or structure.

In terms of potential vibration levels that would be perceptible and annoying, the equipment that would have the most potential for producing levels that exceed the 65 VdB limit is also the impact pile driver. For typical conditions, it would have the potential to produce perceptible vibration levels (i.e., vibration levels exceeding 65 VdB) at receptor locations within a distance of approximately 500 feet depending on soil conditions. However, the operation would only occur for limited periods of time, typically four months or less at a particular location and therefore would not result in any significant adverse impacts.

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

OTHER ANALYSIS AREAS

Historic and Cultural Resources

The Proposed Actions would result in direct and indirect significant adverse impacts to the State and National Registers of Historic Places (S/NR)-eligible Parkchester Special Planned Community Preservation District. In addition, the Proposed Actions may result in construction-related impacts to contributing properties located within the boundaries of the S/NR-eligible Parkchester Special Planned Community Preservation District if the proper vibration protection measures are not used during construction.

As described in greater detail Chapter 7, “Historic and Cultural Resources,” the Proposed Actions may also result in significant adverse impacts to archaeological resources. A Phase 1A Study confirmed the potential for two historical archaeological resource types to exist on a portion of Projected Development Site 19; 19th century shaft features associated with the existing church on the western section of the site, and potential human remains associated with the Methodist Episcopal Church of Westchester cemetery on the eastern section of the site. The Phase 1A study recommends additional archaeological

investigation for the potentially sensitive sections of the site in the form of Phase 1B Archaeological Testing. While there are no mechanisms currently in place to ensure that this archaeological analysis would occur on the privately owned site subsequent to rezoning, if redevelopment would involve either federal or state funding or permitting, or if the site were to be developed through future discretionary actions that would be subject to review under CEQR, then further environmental review could be required, and historic resource issues could be addressed. Environmental review could necessitate Phase 1B archaeological testing and possibly mitigation for identified significant archaeological resources through avoidance or data recovery (e.g., Phase 2 or Phase 3 excavations). If future development does not entail federal or state funding or permitting and occurs as-of-right, the Proposed Actions could result in significant adverse impacts to archaeological resources.

19.3 Regulatory Framework

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 19-1, "Construction Oversight in New York City," 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 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 (DOT) reviews and approves any traffic lane and sidewalk closures. New York City Transit (NYCT) is in charge of bus stop relocations, and any subsurface construction within 200 feet of a subway. 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.

On 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 (DOL) licenses asbestos workers. 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.

Table 19-1: 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 Environmental Protection (DEP)	Noise, hazardous materials, dewatering, dust
Fire Department (FDNY)	Compliance with Fire Code, tank operation
Department of Transportation (DOT)	Traffic lane and sidewalk closures
New York City Transit (NYCT)	Bus stop relocation; any subsurface construction within 200 feet of a subway
Landmarks Preservation Commission	Archaeological and historic architectural protection
New York State	
Department of Labor (DOL)	Asbestos workers
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

Source: STV Incorporated, 2023.

19.4 Conceptual Construction Schedule and Activities

This chapter presents a description of the construction process for the purposes of quantification of environmental-effect-causing activities only. It is not intended to describe the precise construction methods that may ultimately be used, nor is it intended to dictate or confine the construction process. Actual construction methods and materials may vary, depending in part on how the construction contractors choose to implement their work to be most cost effective, within the requirements set forth in bid, contract, and construction documents. Construction specifications will require that construction contractors comply with applicable environmental regulations and obtain necessary permits for the duration of construction. Construction of each development site would follow applicable federal, state, and local laws for building and safety, as well as local noise ordinances, as appropriate.

CONSTRUCTION SEQUENCING

Because the projected development sites within the area to be rezoned are predominantly in private ownership, the timing of the development of those sites is unknown. As such, the RWCDS presented in Chapter 1, "Project Description," does not describe which of the sites would be developed first or assume a particular sequence of development. However, it is conservatively assumed that construction of all projected development sites would be completed by the end of the 2033 analysis year. Market considerations would ultimately determine the demand for development.

A reasonable worst-case for the anticipated schedule of construction activities and phases was provided by the New York City Department of City Planning (DCP) for the purposes of assessing potential construction impacts. In estimating the duration of the construction for each development site, it is generally assumed that development sites less than 240,000 square feet in size would take less than 24 months to complete, whereas projected development sites with more floor area (e.g., Projected Development Sites 5, 7, 8, 9, 19, 22, 24, 29, 31, 38, 58, and 59) are assumed to take longer.

An anticipated construction sequencing for use in the analysis of the Proposed Actions was developed based on the above assumptions and is illustrated on Figure 19-1, "Assumed Construction Schedule for Assessment of Construction Impacts." Construction of the 60 projected development sites is anticipated to begin in 2025 and would be gradual, taking place over a nine-year period.



Source: NYC Department of City Planning; STV Incorporated, 2023.

Figure 19-1

ASSUMED CONSTRUCTION SCHEDULE FOR ASSESSMENT OF CONSTRUCTION IMPACTS

TYPICAL CONSTRUCTION ACTIVITIES

Construction of various components of the projected development sites would occur over a number of years, with construction activities and intensities varying, depending upon which components of the overall development sites are underway at a given time. Following is a general outline of typical construction stages on the development sites. It should be noted, however, that the duration and extent of new construction activities would vary based on which site is being developed. For smaller sites, the construction process is much simpler and shorter in duration, typically lasting 24 or fewer months, while construction of larger projected development sites such as Projected Development Sites 5, 7, 8, 9, 19, 22, 24, 29, 31, 38, 58, and 59 would be more intensive, and is conservatively estimated to last for approximately 25 to 44 months.

- Months 1-14: Site clearance, excavation, and foundation. The first four months of construction would entail site clearance (including demolition of existing buildings); digging, pile-driving, pile capping, and excavation for the foundation; dewatering (to the extent required); and reinforcing and pouring of the foundation. Typical equipment used for these activities would include excavators, backhoes, tractors, pile-drivers, hammers, and cranes. Trucks would arrive at the site with pre-mixed concrete and other building materials and would remove any excavated material and construction debris.

- Months 5-22: Underground parking foundation (if any), erection of the superstructure, and façade and roof construction. Once the foundations have been completed, the construction of the building's steel framework, parking ramp (if any), and decking would take place. This process involves the installation of beams, columns and decking, and would require the use of cranes, derricks, hoists, and welding equipment, as warranted. This stage of construction would also include the assembly of exterior walls and cladding, as well as roof construction.

- Months 15-24: Mechanical installation, interior and finishing work. This would include the installation of heating, ventilation, and air conditioning (HVAC) equipment and ductwork; installation and checking of elevator, utility, and life safety systems; and work on interior walls and finishes. During these activities, hoists and cranes would continue to be used, and trucks would remain in use for material supply and construction waste removal. It should be noted that this construction stage usually overlaps with the superstructure phase and since some of this stage of construction would occur when the building is enclosed, disruption to the surrounding neighborhood would be minimized.

The phases, duration, and overlap of construction activities specific to a particular development site are identified on Figure 19-1, "Assumed Construction Schedule for Assessment of Construction Impacts." It should be noted that the actual duration of such activities could vary based upon which site is developed. For example, the time necessary for each activity would vary depending upon such factors as work hours, traffic restrictions, and contractors' means and methods. Other factors would include the number and type of utilities requiring relocation and the location and condition of nearby surface and subsurface structures.

ESTIMATE OF CONSTRUCTION WORKERS AND CONSTRUCTION PERIOD TRUCKS

Worker and truck projections were based on representative sites of similar sizes and uses from the 2017 Jerome Avenue Rezoning Final Environmental Impact Statement (FEIS). Projected development sites were categorized based on similar size and use, and the most intense month from each stage of construction (demolition/excavation/foundation, superstructure/exterior, interior) for each site was identified and used as a scaling factor for projections. Each of the 60 projected development sites was then assigned to the appropriate size category and the projections were scaled on a worker or truck per square foot basis.

The resultant estimate of the number of trucks and workers per quarter are summarized in Table 19-2, "Estimated Total Number of Construction Workers and Construction Trucks On-Site Per Day (60 Projected Development Sites)." The number of workers and trucks would peak in the first quarter of 2028, with an estimated 1,756 workers and 219 trucks per day. During this peak construction worker and truck period, 20 of the 60 projected development sites are expected to be under construction (refer to Figure 19-1, "Assumed Construction Schedule for Assessment of Construction Impacts").

Table 19-2: Estimated Total Number of Construction Workers and Construction Trucks On-Site Per Day (60 Projected Development Sites)

Year	2025				2026				2027				2028				2029			
Quarter	*1st*	*2nd*	*3rd*	*4th*	*1st*	*2nd*	*3rd*	*4th*	*1st*	*2nd*	*3rd*	*4th*	*1st*	*2nd*	*3rd*	*4th*	*1st*	*2nd*	*3rd*	*4th*
Construction Workers	417	499	551	628	1,222	1,321	1,225	1,189	1,625	1,665	1,530	1,530	1,756	1,550	1,501	1,650	1,427	1,461	1,447	1,117
Construction Trucks	69	68	84	86	181	177	155	158	221	216	178	178	219	196	182	215	196	179	171	147
Year	**2030**				**2031**				**2032**				**2033**							
Quarter	*1st*	*2nd*	*3rd*	*4th*	*1st*	*2nd*	*3rd*	*4th*	*1st*	*2nd*	*3rd*	*4th*	*1st*	*2nd*	*3rd*	*4th*				
Construction Workers	1,212	1,446	1,305	1,258	1,409	1,263	1,230	1,230	1,240	1,203	1,214	1,114	917	911	514	514				
Construction Trucks	169	195	163	164	169	151	123	123	131	131	137	124	97	95	56	56				

	Project Total	
	Peak	**Average**
Construction Workers	**1,756**	**1139**
Construction Trucks	**219**	**141**

Source: STV Incorporated, 2023.

DETERMINING PEAK YEAR FOR CUMULATIVE CONSTRUCTION AND OPERATIONAL EFFECTS

According to the *CEQR Technical Manual*, if a project involves multiple development sites over varying construction timelines, a preliminary assessment must be undertaken to determine if the operational trips from completed portions of the project and construction trips associated with construction activities could overlap. For the purposes of establishing a reasonable worst-case for the construction assessment, based on the conceptual construction schedule presented in Figure 19-1, "Assumed Construction Schedule for

Assessment of Construction Impacts," the first quarter of 2028 was selected as the construction peak year for the transportation assessment in this chapter. As shown on Figure 19-1, "Assumed Construction Schedule for Assessment of Construction Impacts," in 2028, there would be 17 sites that are already completed and operational (Projected Development Sites 3, 10, 12, 16, 21, 23, 25, 28, 33, 39, 45, 46, 49, 50, 52, 57, and 60), and twenty sites that are under construction (1, 2, 7, 8, 11, 13, 18, 19, 24, 27, 29, 30, 32, 34, 36, 43, 47, 51, 53, and 55). Any prior year would not have sufficient operational sites in close proximity to one another for assessment purposes, whereas subsequent years would not have an adequate number of sites under construction.

CONSTRUCTION WORK HOURS

Construction activities for buildings in the City generally take place Monday through Friday, with exceptions that are discussed separately below. In accordance with City laws and regulations, construction work at the projected development sites would generally begin at 7 AM on weekdays, with workers arriving to prepare work areas between 6 and 7 AM. Construction work activities would typically finish around 3:30 PM, but on some occasions, the workday could be extended depending upon the need to complete some specific tasks beyond normal work hours, such as completing the drilling of piles, finishing a concrete pour for a floor deck, or completing the bolting of a steel frame erected that day. The extended workday would generally last until about 6 PM and would not include all construction workers on-site, but just those involved in the specific tasks requiring additional work time.

Occasionally, Saturday or overtime hours may be required to complete some time-sensitive tasks. Weekend work requires a permit from the DOB and, in certain instances, approval of a noise mitigation plan from DEP under the City's Noise Code. The New York City Noise Control Code, as amended in December 2005 and effective July 1st, 2007, limits construction (absent special circumstances as described below) to weekdays between the hours of 7 AM and 6 PM and sets noise limits for certain specific pieces of construction equipment. Construction activities occurring after hours (weekdays between 6 PM and 7 AM or on weekends) may be permitted only to accommodate: (i) emergency conditions; (ii) public safety; (iii) construction projects by or on behalf of City agencies; (iv) construction activities with minimal noise impacts; and (v) undue hardship resulting from unique site characteristics, unforeseen conditions, scheduling conflicts, and/or financial considerations. In such cases, the number of workers and pieces of equipment in operation would be limited to those needed to complete the particular authorized task. Therefore, the level of activity for any weekend work would be less than a normal workday. The typical weekend workday would be on Saturday from 7 AM with worker arrivals and site preparation to 5 PM for site cleanup.

CONSTRUCTION STAGING AREAS, SIDEWALK, AND LANE CLOSURES

Construction staging areas, also referred to as "laydown areas," are sites that would be used for the storage of materials and equipment and other construction-related activities. Work zones are those areas where the construction is occurring. Field offices for contractors and construction managers would be

situated in temporary job site trailers at staging areas or existing office space near the work areas. Staging areas would typically be fenced and lit for security and would adhere to New York City Building Codes.

Staging areas of adequate size and proximity to the construction sites are essential to minimize construction traffic through the Affected Area and to provide adequate space and access for construction activities. While vacant parcels are available within close proximity to several of the projected development sites that could be used for staging areas, it is anticipated that construction staging would most likely occur on the projected development sites themselves and may in some cases, extend within the curb and travel lanes and sidewalks of public streets adjacent to the construction site.

No rerouting of traffic is anticipated during construction activities and all moving lanes on streets are expected to be available to traffic at all times. It is anticipated that some sidewalks immediately adjacent to construction sites would be closed to accommodate heavy loading areas for at least several months of the construction period for each site. Pedestrians would either use a temporary walkway in a sectioned-off portion of the street or be diverted to walk on the opposite side of the street. Detailed Maintenance and Protection of Traffic (MPT) plans for each construction site would be submitted for approval to the DOT Office of Construction Mitigation and Coordination (OCMC), the entity that ensures critical arteries are not interrupted, especially in peak travel periods. Builders would be required to plan and carry out noise and dust control measures during construction.

Appropriate protective measures for ensuring pedestrian safety surrounding each of the projected development sites would be implemented under these plans. Construction activities would also be subject to compliance with the New York City Noise Code and by the EPA noise emission standards for construction equipment. In addition, there would be requirements for street crossing and entrance barriers, protective scaffolding, and compliance with applicable construction safety measures.

19.5 Preliminary Assessment

In accordance with the guidelines of the *CEQR Technical Manual*, this preliminary assessment evaluated the effects associated with the Proposed Actions' construction-related activities including transportation (traffic, transit, pedestrians, and parking), land use and neighborhood character, socioeconomic conditions, community facilities, open space, historic and cultural resources, and hazardous materials.

TRANSPORTATION

The Proposed Actions would result in the construction of predominantly mixed-use developments on 60 projected development sites in the Affected Area from 2025 to 2033. These developments would replace vacant land, as well as existing and anticipated No-Action uses on the development sites. During construction periods, projected development sites would generate trips by workers traveling to/from the construction sites, as well as trips associated with the movement of materials and equipment. Given typical construction hours, worker trips would be concentrated in the early morning and mid-afternoon

periods on weekdays and are generally not expected to represent a substantial increment during the area's peak travel periods.

Traffic

As discussed above, average daily on-site construction workers and trucks were forecast for new construction anticipated on each of the projected development sites. The number of workers and trucks would peak in the first quarter of 2028, with an estimated 1,756 workers and 219 trucks per day (see Table 19-2, "Estimated Total Number of Construction Workers and Construction Trucks On-Site Per Day (60 Projected Development Sites)"). These represent peak days of work, and many days during the construction period would have fewer construction workers and trucks on-site.

The first quarter of 2028 was selected as the reasonable worst-case analysis period for assessing potential cumulative traffic impacts from operational trips from completed portions of the project and construction trips associated with construction activities. During this peak construction period, 20 of the 60 projected development sites are expected to be under construction and 17 sites will be completed and operational.

Cumulative Construction and Operational Traffic – 2028 – (Q1)

Modal split and vehicle occupancy rates for construction workers were based on the 2000 Census journey-to-work data for New York City. It is anticipated that approximately 74 percent of construction workers are expected to travel by personal automobile at an average occupancy rate of approximately 1.19 persons per vehicle. 20 percent would use public transportation in their commute to and from the construction sites in the Affected Area.

Table 19-3, "2028 (Q1) Peak Incremental Construction Vehicle Trip Projections (in PCEs)," lists the forecast of hourly construction worker auto and construction truck trips during the 2028 (Q1) peak construction period. The temporal distribution for these vehicle trips was based on typical work shift allocations and conventional arrival/departure patterns for construction workers. Each worker vehicle was assumed to arrive in the morning and depart in the afternoon or early evening, whereas truck deliveries would occur throughout the construction day. To avoid congestion and ensure that materials are on-site for the start of each shift, construction truck deliveries would often peak during the hour before the regular day shift, overlapping with construction worker arrival traffic. Each truck delivery was assumed to result in two truck trips during the same hour (one inbound and one outbound). For analysis purposes, truck trips were converted into Passenger Car Equivalents (PCEs) based on one truck being equivalent to an average of two PCEs.

Table 19-3: 2028 (Q1) Peak Incremental Construction Vehicle Trip Projections (in PCEs)

Hour	Auto Trips					Truck Trips					Total Vehicle Trips		
	In		Out		Total	In		Out		Total	In	Out	Total
	%	#	%	#		%	#	%	#				
6-7 AM	80%	879	0%	0	879	15%	33	15%	33	66	912	33	945
7-8 AM	20%	220	0%	0	220	15%	32	15%	32	64	252	32	284
8-9 AM	0%	0	0%	0	0	15%	32	15%	32	64	32	32	64
9-10 AM	0%	0	0%	0	0	10%	22	10%	22	44	22	22	44
10-11 AM	0%	0	0%	0	0	10%	22	10%	22	44	22	22	44
11-12 PM	0%	0	0%	0	0	10%	22	10%	22	44	22	22	44
12-1 PM	0%	0	0%	0	0	10%	22	10%	22	44	22	22	44
1-2 PM	0%	0	0%	0	0	5%	11	5%	11	22	11	11	22
2-3 PM	0%	0	5%	55	55	5%	11	5%	11	22	11	66	77
3-4 PM	0%	0	80%	879	879	2.5%	5	2.5%	5	10	5	884	889
4-5 PM	0%	0	15%	165	165	2.5%	5	2.5%	5	10	5	170	175
Total		1098		1098			217		217		1315	1315	2631

Source: STV Incorporated, 2023.

During this cumulative construction and operational traffic analysis period, there would be 17 sites that are already completed and operational and 20 sites that are under construction. Prior years are unlikely to see completion of substantial concentrations of new development, whereas subsequent years would see a decreasing intensity of construction activity and lower levels of construction traffic. During the 6-7 AM construction peak hour 945 vehicle trips (in PCEs), including 912 inbound trips and 33 outbound trips, are anticipated; during the 3-4 PM construction peak hour a total of 889 PCE trips, including five inbound trips and 884 outbound trips, are anticipated (see Table 19-3, "2028 (Q1) Peak Incremental Construction Vehicle Trip Projections [in PCEs]"). By comparison, construction vehicle trips would total approximately 174 (averaging the 7-8 AM and 8-9 AM totals) during the 7:30-8:30 AM operational peak hour and 131 (using a weighted average of the 4-5 PM and 5-6 PM totals) during the 4:15-5:15 PM operational peak hour.

There would be net increases of 1,016 vehicle trips during the 6-7 AM construction peak hour and 1,271 trips during the 3-4 PM construction peak hour (see Table 19-4, "2028 (Q1) Peak Incremental Construction and Operational Traffic Volumes (in PCEs)"). As these levels of trip generation would exceed the *CEQR Technical Manual* threshold of 50 peak-hour vehicle trips, a secondary traffic screening analysis was prepared for the weekday 6-7 AM and 3-4 PM construction peak hours and is provided in the Detailed Assessment section. By comparison, during the 7:30-8:30 AM and 5-6 PM operational peak hours, combined operational and construction vehicle trips would total 597 and 515 PCEs, respectively. During these operational peak hours, construction vehicles would only account for 174 of the combined trips in the AM and 131 in the PM.

Table 19-4: 2028 (Q1) Peak Incremental Construction and Operational Traffic Volumes (in PCEs)

Hour	Construction Trips	Operational Trips[1]	Total Trips
6-7 AM	945	71	1,016
7:30-8:30[2] AM	174	423	597
3-4 PM	889	382	1,271
4:15 – 5:15[3] PM	131	384	515

Notes:
[1] Operational trips reflect the net increment from With-Action developments expected to be completed by the 2028 (Q1) cumulative analysis period.
[2] Construction trips during this period based on the average for the 7-8 AM and 8-9 AM periods.
[3] Construction trips during this period based on the weighted average for the 4-5 PM and 5-6 PM periods.

Source: STV Incorporated, 2023.

Street Lane and Sidewalk Closures

Temporary curb lane and sidewalk closures are anticipated adjacent to construction sites, similar to other construction projects in New York City, and these would be expected to have dedicated gates, driveways, and/or ramps for access by trucks making deliveries. Truck movements would be spread throughout the day and would generally occur between 6 AM and 5 PM, depending on the stage of construction. As noted above, no rerouting of traffic is anticipated during construction activities and all moving lanes on streets are expected to be available to traffic at all times. Flaggers are also expected to be present during construction to manage the access and movement of trucks. As also noted above, detailed MPT plans for each construction site would be submitted for approval by DOT OCMC.

Transit

It is estimated that approximately 1,756 construction workers would travel to and from projected development sites each day during the 2028 (Q1) peak analysis period for cumulative construction and operational travel demand (see Table 19-2, "Estimated Total Number of Construction Workers and Construction Trucks On-Site Per Day (60 Projected Development Sites)"). Approximately 20 percent of these construction workers are expected to travel to and from the Affected Area by public transit (subway, bus, and/or commuter rail). The construction sites are located in an area that is well served by public transportation, with a total of seven subway stations and 14 bus routes located in the vicinity of the Affected Area.

As noted above, it is estimated that approximately 80 percent of all construction workers would arrive and depart in the peak hour before and after each shift. Therefore, construction worker travel demand is expected to generate a total of approximately 281 transit trips in both the 6-7 AM and 3-4 PM construction peak hours. During these same periods, operational transit trips from completed projected development sites would total approximately 222 and 894, respectively. By comparison, transit trips with full build-out of the Proposed Actions in 2033 would be substantially greater in number, totaling 7,713 and 6,753 during the analyzed weekday commuter peak periods when overall demand on area transit facilities and services typically peaks. Therefore, 2028 (Q1) transit conditions during the 6-7 AM and 3-4 PM construction peak hours are expected to be generally better than during the analyzed commuter peak hours with full build-out of the Proposed Actions in 2033. No subway station or line-haul impacts are expected during construction in 2028 (Q1) as the construction phase would have fewer transit trips than the Proposed Actions and the Proposed Actions are not expected to result in any significant subway

station or line-haul impacts. For buses, there would be less likelihood of significant adverse impacts during the construction peak hours than during the 2033 operational peak hours with full build-out as the number of transit trips would be less during the construction phase. It is expected that the mitigation measures identified for 2033 operational transit impacts in Chapter 21, "Mitigation Measures," would also be effective at mitigating any potential impacts from construction transit trips during the 2028 (Q1) peak quarter for cumulative construction and operational travel demand.

Pedestrians

As discussed above, during the 2028 (Q1) peak analysis period for cumulative construction and operational travel demand, it is estimated that there would be approximately 1,756 construction workers on-site daily. Approximately six percent of these workers would be expected to walk to the Affected Area, in addition to the 20 percent who would be expected to travel to the Affected Area by transit, walking to and from area subway stations and bus stops.

Construction worker travel demand on area sidewalks and crosswalks is expected to total approximately 365 trips in both the 6-7 AM and 3-4 PM construction peak hours, when 80 percent of construction workers are expected to arrive and depart. These trips would be widely distributed among the 20 projected development sites that would be under construction in 2028 (Q1) and would primarily occur outside of the weekday AM and PM commuter peak periods and weekday midday peak period when area pedestrian facilities typically experience their greatest demand. During the 6-7 AM and 3-4 PM construction peak hours under construction in 2028 (Q1), operational pedestrian trips (including walk trips and bus and subway trips) from completed projected development sites would total approximately 101 and 1,435, respectively. By comparison, pedestrian trips (including walk trips and transit trips) with full build-out of the Proposed Actions in 2033 would be substantially greater in number, totaling 14,014, 13,973, and 13,745 during the analyzed weekday 7:30-8:30 AM, 1-2 PM midday, and 5-6 PM operational peak hours, respectively. Therefore, 2028 (Q1) pedestrian conditions during the 6-7 AM and 3-4 PM construction peak hours are expected to be generally better than during the analyzed operational peak hours with full build-out of the Proposed Actions in 2033. Consequently, there would be less likelihood of significant adverse pedestrian impacts during the construction peak hours in the cumulative analysis year than with full build-out of the Proposed Actions in 2033. It is expected that the mitigation measures identified for 2033 operational pedestrian impacts in Chapter 21, "Mitigation Measures," would also be effective at mitigating any potential impacts from construction pedestrian trips during the 2028 (Q1) analysis period for cumulative construction and operational travel demand. Adequate protection or temporary sidewalks and appropriate signage would be provided in accordance with DOT requirements at locations where temporary sidewalk closures are required during construction activities.

Parking

The 2028 (Q1) peak analysis period for cumulative construction and operational travel demand would result in approximately 1,756 workers on-site daily, approximately 74 percent of whom would be expected to travel to the Affected Area by private auto. Based on an average vehicle occupancy of 1.19

persons per vehicle, the maximum daily parking demand from project site construction workers would total approximately 1099 spaces (see Table 19-5, "2028 (Q1) Construction Worker Parking Accumulation"). The majority of workers are expected to park on-street and at off-street public parking facilities in proximity to projected development sites. As discussed in Chapter 13, "Transportation," within a ¼-mile radius of the Affected Area, there are approximately 12,283 and 12,142 on- and off-street parking spaces in the weekday overnight and midday periods in existing conditions, respectively. There would be approximately 1,980 and 1,297 available spaces in the 2033 No-Action, but a shortage of 400 and 7,683 spaces in the 2033 With-Action operational conditions during the weekday overnight and midday periods, respectively. Based on the extent of available parking spaces, particularly during the midday period, there would be sufficient on- and off-street parking capacity to accommodate construction working demand. Parking demand from the completed projected development sites would need to be accommodated by less than 200 available spaces. Consequently, there is some small potential for a midday parking shortfall to occur during the 2028 (Q1) peak construction period. While construction worker parking demand during the 2028 (Q1) peak construction period could potentially contribute to a shortfall in the weekday midday, it would not be considered a significant under *CEQR Technical Manual* criteria given the availability of alternative modes of transportation near the Affected Area. As such, construction activities the peak construction traffic period would not result in a significant parking shortfall.

Table 19-5: 2028 (Q1) Construction Worker Parking Accumulation

Hour	2028 (Q1)		
	In	Out	Total Accumulation
6-7 AM	879	0	879
7-8 AM	220	0	1099
8-9 AM	0	0	1099
9-10 AM	0	0	1099
10-11 AM	0	0	1099
11 AM-12 PM	0	0	1099
12-1 PM	0	0	1099
1-2 PM	0	0	1099
2-3 PM	0	55	1043
3-4 PM	0	879	165
4-5 PM	0	165	0

Source: STV Incorporated, 2023.

OTHER TECHNICAL AREAS

Land Use and Neighborhood Character

According to the *CEQR Technical Manual*, a construction impact analysis for land use and neighborhood character is typically needed if construction would require continuous use of property for an extended duration, thereby having the potential to affect the nature of the land use and character of the neighborhood. A land use and neighborhood character assessment for construction impacts examines construction activities that would occur on the site (or portions of the site) and their duration. The analysis determines whether the type and duration of the activities would affect neighborhood land use patterns

or neighborhood character. For example, a single property might be used for staging for several years, resulting in a "land use" that would be industrial in nature. Depending upon the nature of existing land uses in the surrounding area, the use of a single piece of property for an extended duration and its compatibility with neighboring properties may be assessed to determine whether it would have a significant adverse impact on the surrounding area.

Construction of the 60 projected development sites, based on the RWCDS construction schedule, would be spread out over a period of approximately nine years, throughout an approximately 46-block Affected Area, and construction of most of the projected development sites would be short-term (i.e., lasting up to 24 months). Throughout the construction period (as required by City regulations), access to residences, businesses, and institutions in the area surrounding the development sites would be maintained. In addition, measures would be implemented to control noise, vibration, emissions, and dust on construction sites, including the erection of construction fencing incorporating sound reducing measures. Since none of these impacts would be continuous or ultimately permanent, they would not create significant impacts on land use patterns or neighborhood character in the area. Therefore, while construction of the new buildings resulting from the Proposed Actions would cause temporary impacts, particularly related to noise, it is expected that such impacts in any given area would be relatively short term, even under the worst-case construction sequencing and, therefore, would not create a neighborhood character impact. Therefore, no significant construction impacts to land use and neighborhood character are expected.

Socioeconomic Conditions

According to the *CEQR Technical Manual*, construction impacts on socioeconomic conditions are possible if a proposed action would involve construction of a long duration that could affect access to and the viability of businesses, and if the failure of those businesses has the potential to affect neighborhood character.

Construction could, in some instances, temporarily affect pedestrian and vehicular access on street frontages immediately adjacent to the development sites. However, lane and/or sidewalk closures are expected to be of very limited duration and would not restrict access to any existing or planned retail businesses (i.e., alternative access routes need to be provided). Utility service would also be maintained to all businesses, although there may be very short-term interruptions (i.e., hours) when new equipment (e.g., a transformer, or a sewer or water line) is put into operation. Overall, construction resulting from the Proposed Actions is not expected to result in any significant adverse impacts on surrounding businesses.

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

Community Facilities

According to the *CEQR Technical Manual*, construction impacts to community facilities are possible if a community facility were directly affected by construction (e.g., if construction would disrupt services provided at the facility or close the facility temporarily, etc.). The construction sites would be surrounded by construction fencing and barriers that would limit the impacts of construction on nearby community facilities. Construction of buildings on the projected development sites would not block or restrict access to or from any facilities in the area and would not affect emergency response times of the New York City Police Department (NYPD) and FDNY given the geographic distribution of the police and fire facilities and their respective coverage areas. Therefore, no construction impacts would be expected to community facilities as a result of the Proposed Actions.

Open Space

According to the *CEQR Technical Manual*, construction impacts to open space are possible if the open space is taken out of service for a period of time during the construction process. As described in Chapter 5, "Open Space," there are no publicly accessible open spaces on any of the projected development sites. While several of the projected development sites are located close to existing open space resources, access to publicly accessible open space would not be impeded during construction within the Affected Area. In addition, measures would be implemented to control air emissions, dust, noise, and vibration on the construction sites. While construction under the Proposed Actions may cause temporary disruptions to the community, particularly related to noise, it is expected that such disruptions in any given area would be temporary and would not be ongoing for the full duration of the construction period. Therefore, no significant construction impacts are anticipated on open space.

Historic and Cultural Resources

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

Potential Construction Impacts to Eligible Architectural Resources within the Affected Area

<u>Individual Property – 1595 Unionport Road</u>

Projected Development Site 7 is located adjacent and within 90 feet of the S/NR-eligible 1595 Unionport Road, which is located within the S/NR-eligible Parkchester Special Planned Community Preservation District. As the S/NR-eligible 1595 Unionport Road is not designated or calendared for landmark designation by LPC or SHPO, it would not be afforded the protections of TPPN #10/88. 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 the foundation and earthwork areas be protected and supported. However, without the particular protections of TPPN

#10/88, or similar protections in place, the Proposed Actions could result in construction impacts on the S/NR-eligible 1595 Unionport Road, with the development of Projected Development Site 7.

Historic District – Parkchester Special Planned Community Preservation District

Projected Development Site 8 is located within the S/NR-eligible Parkchester Special Planned Community Preservation District and is adjacent, substantially contiguous, and within 90 feet of several buildings within the historic district. As the S/NR-eligible Parkchester Special Planned Community Preservation District is not designated or calendared for landmark designation by LPC or SHPO, it would not be afforded the protections of TPPN #10/88. 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 the foundation and earthwork areas be protected and supported. However, without the particular protections of TPPN #10/88, or similar protections in place, the Proposed Actions could result in construction impacts on the S/NR-eligible Parkchester Special Planned Community Preservation District with the development of Projected Development Site 8.

Potential Construction Impacts to Archaeological Resources within the Affected Area

As described in greater detail Chapter 7, "Historic and Cultural Resources," the Proposed Actions may also result in significant adverse impacts on archaeological resources. A Phase 1A Study confirmed the potential for two historical archaeological resource types to exist on a portion of Projected Development Site 19; 19th century shaft features associated with the church on the western section of the site, and potential human remains associated with the Methodist Episcopal Church of Westchester cemetery on the eastern section of the site.

The Phase 1A study recommended additional archaeological investigation for the potentially sensitive sections of the site in the form of Phase 1B Archaeological Testing and would require the preparation of an Archaeological Work Plan in consultation with LPC before any subsurface work could be undertaken. The Archaeological Work Plan would provide details of subsurface investigations appropriate to identify both potential shaft features and human remains as part of the archaeological investigation. The Archaeological Work Plan would be submitted to and require concurrency by LPC for all potential investigations.

In order to mitigate potential significant adverse impacts on archaeological resources, additional archaeological analysis would be required on the site before it is redeveloped. While there are no mechanisms currently in place to ensure that this archaeological analysis would occur on the privately owned site subsequent to rezoning, if redevelopment would involve either federal or state funding or permitting, or if the site were to be developed through future discretionary actions that would be subject to review under CEQR, then further environmental review could be required, and historic resource issues could be addressed. Environmental review could necessitate Phase 1B archaeological testing and possibly mitigation for identified significant archaeological resources through avoidance or data recovery (e.g., Phase 2 or Phase 3 excavations). If future development does not entail federal or state funding or permitting and occurs as-of-right, the Proposed Actions could result in significant adverse impacts to archaeological resources during construction.

Hazardous Materials

A preliminary screening of potential hazardous materials impacts was performed for all 60 projected and 36 potential development sites. The hazardous materials assessment identified that all but two of the projected and potential development sites has some associated concern regarding environmental conditions. As a result, the proposed zoning map modification actions include (E) designations for all but two of the projected and potential development sites.

As discussed in greater detail in Chapter 9, "Hazardous Materials," the potential for significant adverse impacts related to hazardous materials resulting from the Proposed Actions would be precluded through compliance with existing regulatory requirements (for the hazardous materials in any on-site structures) and with the placement of (E) designations or comparable institutional controls for all projected and potential development sites with potential hazardous or contaminated materials concerns. This (E) designation requires, prior to change of use or redevelopment requiring ground disturbance, that the fee-owner of the property conduct a Phase I Environmental Site Assessment, subsurface testing, and remediation (where appropriate) to the satisfaction of the New York City Mayor's Office of Environmental Remediation (OER). DOB permits associated with such actions cannot be issued without OER approval. The OER review would ensure protection of human health and the environment from known or suspected hazardous materials. Therefore, with the above measures in place, the Proposed Actions are not expected to result in significant adverse impacts related to hazardous materials. Projected Developments Sites 58 (Block 4205, Lot 1) and 59 (Block 4205, Lot 40) are City-owned, and therefore, would not receive (E) designations. It is expected that measures to require testing and remediation would be included as part of future Land Disposition Agreements (LDA), Restrictive Declarations (RD), or comparable binding mechanisms between the City of New York and a developer, and would require measures similar to those required by an (E) Designation.

19.6 Detailed Analysis

TRANSPORTATION

Traffic

Traffic volumes for the 6-7 AM and 3-4 PM construction peak hours were developed from Automatic Traffic Recorder (ATR) and manual turning movement counts (TMC) collected in 2023. These data indicate that background traffic volumes from 6-7 AM are approximately 39 percent lower than 7:30-8:30 AM volumes, which is the AM peak hour analyzed in Chapter 13, "Transportation," and that background traffic volumes from 3-4 PM are approximately two percent lower than 4:15-5:15 PM volumes, which is the PM peak hour analyzed in Chapter 13, "Transportation." Baseline traffic volumes during peak construction activities in the first quarter of 2028 were established by applying a background growth rate and traffic volumes associated with No-Action development projects.

Vehicles generated by construction activities were assigned to the street network to determine the critical intersections most likely to be used by concentrations of project-generated trips. Autos used by workers to commute to construction sites were assigned to nearby off-street parking facilities with available spaces, and trucks making deliveries to construction sites were assigned using DOT designated local truck routes in the area, which include East Tremont and Morris Park avenues as well as White Plains, Williamsbridge, and Eastchester roads. The Cross-Bronx and Bruckner expressways are through truck routes in the vicinity of the Affected Area. Vehicle trips associated with completed projects within the Affected Area were also included in the project-generated traffic volumes.

Intersections that would experience an increase of 50 or more PCEs from construction-related traffic (personal autos used by construction workers and trucks making deliveries to construction sites) during the 6-7 AM and 3-4 PM construction peak hours were selected for analysis based on the 2028 cumulative incremental construction traffic volumes and operational traffic volumes for completed projected development sites. Table 19-6, "2028 [Q1] Construction Analysis Intersections," shows which intersections would experience an increase of 50 or more PCEs from construction-related traffic and thus were selected for analysis during the AM and PM construction peak periods.

Table 19-6: 2028 (Q1) Construction Analysis Intersections

Intersection	Peak Hour	
	6-7 AM	3-4 PM
East Tremont Avenue & Boston Road/West Farms Road		X
East Tremont Avenue & East 177th Street		X
East Tremont Avenue & Devoe Avenue		X
East Tremont Avenue & Bronx Park Avenue		X
East Tremont Avenue & Morris Park Avenue		X
East Tremont Avenue & Van Nest Avenue		X
East Tremont Avenue & Rosedale Avenue/East 180th		X
East Tremont Avenue & St Lawrence Avenue	X	X
East Tremont Avenue & Beach Avenue/Taylor Avenue	X	X
East Tremont Avenue & Leland Avenue	X	X
East Tremont Avenue & White Plains Road	X	X
East Tremont Avenue & Unionport Road	X	X
East Tremont Avenue & Purdy Street	X	X
East Tremont Avenue & Bronxdale Avenue	X	X
East Tremont Avenue & Castle Hill Avenue	X	X
East Tremont Avenue & Seddon Street	X	X
East Tremont Avenue & Overing Street	X	X
East Tremont Avenue & Silver Street	X	X
East Tremont Avenue & St Raymond Avenue		
White Plains Road & Baker Avenue/Unionport Road		
White Plains Road & Guerlain Street	X	X
Bronxdale Avenue & Van Nest Avenue		
Bronxdale Avenue & Pierce Avenue		
Bronxdale Avenue & Sackett Avenue		
Bronxdale Avenue & Poplar Street		
Williamsbridge Road & Pelham Parkway N Service Road		
Williamsbridge Road & Pelham Parkway N Mainline		X
Williamsbridge Road & Pelham Parkway S	X	X
Williamsbridge Road & Morris Park Avenue	X	X
Williamsbridge Road & Poplar Street	X	X
Williamsbridge Road & Eastchester Road/Silver Street	X	X
Williamsbridge Road & St Raymond Avenue		
Eastchester Road & Pelham Parkway N Service Road		
Eastchester Road & Pelham Parkway N Mainline	X	
Eastchester Road & Pelham Parkway S Mainline/Service	X	
Eastchester Road & Rhinelander Avenue	X	
Eastchester Road & Seminole Street	X	
Eastchester Road & McDonald Street	X	
Eastchester Road & Stillwell Avenue	X	X
Eastchester Road & Morris Park Avenue	X	X

Table 19-6: 2028 (Q1) Construction Analysis Intersections (cont.)

Intersection	Peak Hour	
	6-7 AM	3-4 PM
Eastchester Road & Loomis Street	X	X
Eastchester Road & Sackett Avenue	X	X
Eastchester Road & Bassett Avenue	X	X
Eastchester Road & Waters Place	X	X
Eastchester Road & Blondell Avenue	X	X
Eastchester Road & Jarrett Place	X	X
Stillwell Avenue & Pelham Parkway	X	X
Stillwell Avenue & Pelham Parkway South		X
Stillwell Avenue & Rhinelander Avenue		X
Stillwell Avenue & Seminole Street		X
Stillwell Avenue & McDonald Street		X
Waters Place & Marconi Street	X	X
Waters Place & Fink Avenue/Hutchinson River	X	X
Waters Place & Westchester Avenue		X
Bassett Avenue & Morris Park Avenue		
Bassett Avenue & Loomis Street		

Source: STV Incorporated, 2023.

These intersections were analyzed using the traffic analysis methodology and impact criteria described in Chapter 13, "Transportation." Significant adverse impacts from cumulative incremental construction and operational trips were identified at eight intersections during the AM construction peak hour and 23 intersections during the PM construction peak hour (see Table 19-7, "Summary of Significant Adverse Traffic Impacts 2028 [Q1]"). Chapter 21, "Mitigation Measures," addresses practicable measures to address these impacts.

Table 19-7: Summary of Significant Adverse Traffic Impacts 2028 (Q1)

Intersection	Peak Hour	
	6-7 AM	3-4 PM
East Tremont Avenue at Boston Road/West Farms	*Not analyzed*	NB-LR, WB-L
East Tremont Avenue at Morris Park Avenue	*Not analyzed*	EB-L, WB-TR
East Tremont Avenue at Leland Avenue	WB-T	--
East Tremont Avenue at White Plains Road	WB-LTR, NB-TR, SB-T	EB-L, WB-LTR, NB-TR
East Tremont Avenue at Unionport Road	--	WB-LTR
East Tremont Avenue at Bronxdale Avenue	--	SB-L
East Tremont Avenue at Castle Hill Avenue	--	WB-L, WB-TR
East Tremont Avenue at Silver Street	EB-L, SB-R	SB-R
White Plains Road at Guerlain Street	*Not analyzed*	SB-T
Williamsbridge Road at Pelham Parkway S Mainline/Service Road	--	NB-TR
Williamsbridge Road at Morris Park Avenue	--	NB-LTR, SB-LTR
Williamsbridge Road and Poplar Street	--	SB-R
Williamsbridge Road at Eastchester Road/Silver	NB-LTR	NB-LTR, SB-LTR
Eastchester Road at Stillwell Avenue	--	NB-LT, NB-R
Eastchester Road at Morris Park Avenue	--	NB-L, NB-TR, SB-LTR, EB-L, EB-
Eastchester Road at Loomis Street	--	EB-LTR, WB-LTR
Eastchester Road at Sackett Avenue	--	NB-T
Eastchester Road at Bassett Avenue	NB-TR	NB-TR
Eastchester Road at Waters Place	NB-T, WB-L	NB-T, NB-R, SB-L, WB-L
Eastchester Road at Blondell Avenue	--	SB-TR
Waters Place at Marconi Street	WB-T	WB-T
Waters Place at Fink Avenue/Hutchinson River	WB-R	SB-TR
Waters Place at Westchester Avenue	*Not analyzed*	SB-L, SB-TR
Stillwell Avenue at McDonald Street	*Not analyzed*	EB-LTR

Notes: EB = Eastbound; WB = Westbound; NB = Northbound; SB = Southbound; L = Left Turn; T = Through; R = Right Turn

Source: STV Incorporated, 2023.

AIR QUALITY

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

In general, much of the heavy equipment used in construction is powered by diesel engines that have the potential to produce relatively high levels of nitrogen oxides (NO_x) and particulate matter (PM) emissions. Fugitive dust generated by construction activities is also a source of PM. Gasoline engines produce relatively high levels of carbon monoxide (CO). Since the EPA mandates the use of ULSD fuel for all highway and non-road diesel engines, sulfur oxides (SO_x) emitted from the Proposed Actions' construction

activities would be negligible. Therefore, the pollutants analyzed for the construction period are NO_2,[1] particles with an aerodynamic diameter of less than or equal to 10 micrometers (PM_{10}), particles with an aerodynamic diameter of less than or equal to 2.5 micrometers ($PM_{2.5}$), and CO. These pollutants and averaging periods are shown in Table 19-8, "Pollutants for Analysis and Averaging Periods."

Table 19-8: Pollutants for Analysis and Averaging Periods

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

Source: STV Incorporated, 2023.

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

The detailed approach for assessing the effect of construction activities resulting from the Proposed Actions on air quality is discussed further below.

On-Site Construction Activity Assessment

For the purposes of analysis, Projected Development Site 7 was used for the detailed analysis as an example of a single larger site. The selection of this site is conservative as its total size of 560,000 square feet is much higher than most of projected development sites and it would be developed in an early stage of the construction timeline, which indicates that its construction-related air pollutant emission intensity would be higher than similar or smaller sites or sites to be built later throughout the construction duration. Projected Development Site 29 and Projected Development Site 30 were selected for detailed analysis as examples of a cluster of large sites that may result in cumulative impact since these two sites are adjacent to one another, and their construction periods would overlap.

$PM_{2.5}$ was selected for determining the worst-case air pollutant impact periods for all pollutants analyzed, because the ratio of predicted $PM_{2.5}$ incremental concentrations to impact criteria is anticipated to be higher than for other pollutants. Therefore, initial estimates of $PM_{2.5}$ emissions throughout the construction years of these three sites were used for determining the worst-case periods for analysis of all pollutants. Generally, emission patterns of PM_{10} and NO_2 would follow $PM_{2.5}$ emissions since they are

[1] NO_2 is a component of NO_x which is a regulated pollutant.

related to diesel engines by horsepower. CO emissions may have a somewhat different pattern but would also be anticipated to be highest during periods when the most activity would occur.

Engine Emissions

The sizes, types, and number of units of construction equipment were estimated based on the construction activity schedule developed for the Proposed Actions. Emission rates for NO_X, CO, PM_{10}, and $PM_{2.5}$ from truck engines were developed using the EPA Motor Vehicle Emission Simulator (MOVE3) emission model. Emission factors for NO_x, CO, PM_{10}, and $PM_{2.5}$ from on-site construction engines were developed using the NONROAD emission module included in the MOVES3 emission model. The emission factor calculations take into account any emissions reduction measures required for the projected development sites.

On-Site Dust Emissions

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

Analysis Periods

The construction sites closest to sensitive receptors—both off-site and completed portions of the projected development sites—and construction periods with the most intense activities and highest emissions were selected as the worst-case periods for analysis. The dispersion analysis included modeling of short-term (i.e., 24-hour, 8-hour, and 1-hour) and annual averaging periods in accordance with NAAQS criteria in Table 19-8, "Pollutants for Analysis and Averaging Periods." For Projected Development Site 7, the worst-case short-term period was identified as January 2025 and the worst-case annual period was identified as January 2025 to December 2025 because of the maximum construction intensity predicted. For Projected Development Site 29, its highest short-term emission period would be January 2026; its highest annual emission period would be January 2026 to December 2026. For Projected Development Site 30, its highest short-term emission period would be December 2026; its highest annual emission period would be December 2026 to November 2027. Cumulative impacts resulting from Projected Development Sites 29 and 30 were analyzed since these two sites are adjacent to one another, and their construction activities would overlap. In order to conservatively predict the cumulative impacts of Projected Development Site 29 and Projected Development Site 30, the dispersion modeling analysis assumed that both the highest short-term emissions and highest annual emissions from these two sites would occur simultaneously. By combining the highest short-term and annual emissions from the two sites together, the modeling analysis for Projected Development Site 29 and Projected Development Site 30 has demonstrated the highest possible cumulative short-term and annual impact to nearby sensitive receptors.

Dispersion Modeling

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

Source Simulation

All stationary sources were simulated as area sources. For periods of eight hours or less (less than the length of a shift), it was assumed that all engines would be active simultaneously.

Meteorological Data

The meteorological data set consists of five consecutive years of latest available meteorological data: surface data collected at the nearest representative National Weather Service Station (LaGuardia Airport) from 2017 to 2021 and concurrent upper air data collected at Brookhaven, New York. The meteorological data provide hour-by-hour wind speeds and directions, stability states, and temperature inversion elevation over the 5-year period. These data were processed using the EPA AERMET program to develop data in a format which can be readily processed by the AERMOD model.

Background Concentrations

To estimate the maximum expected total pollutant concentrations, the calculated impacts from the emission sources must be added to a background value that accounts for existing pollutant concentrations from other sources. The background levels are based on concentrations monitored at the nearest DEC ambient air monitoring stations and are consistent with the background concentrations to be used for the operational stationary source air quality analysis.

Receptor Locations

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

On-Road Sources

As presented above under "Transportation," the traffic increments during construction are lower than the operational traffic increments for the full build-out with the Proposed Actions. In addition, construction worker commuting trips and construction truck deliveries would generally occur during off-peak hours. Further, when distributed over the transportation network, the construction trip increments would not

be concentrated at any single location. Nevertheless, since emissions from on-site construction equipment and on-road construction-related vehicles may contribute to concentration increments concurrently, on-road emissions adjacent to the construction sites were included with the on-site dispersion analysis (in addition to on-site truck and non-road engine activity) to address all local project-related emissions cumulatively.

On-Road Vehicle Emissions

Vehicular engine emission factors were computed using the EPA mobile source emissions model, MOVES3. This emissions model is capable of calculating engine emission factors for various vehicle types, based on the fuel type (gasoline, diesel, or natural gas), meteorological conditions, vehicle speeds, vehicle age, roadway type and grade, number of starts per day, engine soak time, and various other factors that influence emissions, such as inspection maintenance programs. The inputs and use of MOVES incorporate the most current guidance available from DEC.

On-Road Fugitive Dust

$PM_{2.5}$ emission rates were determined with fugitive road dust to account for their impacts. However, fugitive road dust was not included in the annual average $PM_{2.5}$ microscale analyses, per *CEQR Technical Manual* guidance for mobile source analyses. Road dust emission factors were calculated according to the latest procedure delineated by EPA.[2] An average weight of 17.5 tons and 2.5 tons was assumed for construction trucks and worker vehicles in the analyses, respectively.

Traffic Data

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

Impact Criteria

Per the guidance of the 2021 *CEQR Technical Manual*, the significance of a predicted consequence of a project (i.e., whether it is material, substantial, large or important) should be assessed in connection with its setting (e.g., urban or rural), its probability of occurrence, its duration, its irreversibility, its geographic scope, its magnitude, and the number of people affected.[3] In terms of the magnitude of air quality impacts, any action predicted to increase the concentration of a criteria air pollutant to a level that would exceed the concentrations defined by the NAAQS would be deemed to have a potential significant adverse impact. Additionally, to maintain concentrations lower than the NAAQS in attainment areas, or to ensure that concentrations will not be significantly increased in non-attainment areas, threshold levels have been defined for certain pollutants; any action predicted to increase the concentrations of these pollutants above the thresholds would be deemed to have a potential significant adverse impact, even in cases where violations of the NAAQS are not predicted.

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

[3] New York City. *CEQR Technical Manual*. Chapter 1, section 222. December 2021; and New York State Environmental Quality Review Regulations, 6 NYCRR § 617.7

Emissions Control Measures

Measures would be taken to reduce pollutant emissions during construction in the future with the Proposed Actions in accordance with all applicable laws, regulations, and building codes. These required measures include dust suppression measures as specified in the DEP *Construction Dust Rules*, diesel- and gas-powered equipment reduction and truck idling restrictions. In addition, development sites that receive financing from the City are subject to New York City Local Law 77 (LL77)[4] to further minimize the effects of construction on air quality. LL77 requires the use of ULSD fuel and Best Available Technology (BAT) for equipment at the time of construction:

- *Clean Fuel.* ULSD[5] fuel would be used exclusively for all diesel engines throughout the development site.

- *Utilization of Newer Equipment.* EPA's Tier 1 through 4 standards for non-road diesel engines regulate the emission of criteria pollutants from new engines, including PM, CO, NO_x, and hydrocarbons. To the extent practicable, excavator, compressor, and generator with diesel-powered would meet at least the Tier 3[6] emissions standard, and pile driver, concrete pump, and crane with diesel-powered would meet at least the Tier 4 emissions standard.

- *Best Available Tailpipe Reduction Technologies.* Under LL77, non-road diesel engines with a power rating of 50 hp or greater and truck fleets including but not limited to concrete mixing and pumping trucks would utilize the best available tailpipe (BAT) technology for reducing diesel particulate matter (DPM) emissions. Diesel particulate filters (DPFs) have been identified as being the tailpipe technology currently proven to have the highest reduction capability. The use of DPFs for diesel engines meeting the Tier 3 emissions standard achieves similar emission reductions as the newer Tier 4 particulate matter emission standard.

For development sites not subject to LL77, it is expected that the emissions control measures under LL77 would likely be implemented during construction to the extent practicable and feasible as these measures are commonly used in the New York City construction industry today. Regardless, since construction in the future with the Proposed Actions is anticipated to occur over an approximately 8-year period through 2033, there would be an increasing percentage of in-use newer and cleaner vehicles and engines for construction in future years, resulting in greatly reduced air pollutant emissions that would be consistent with the emission reduction levels associated with LL77.

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

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

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

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

Analysis Results

Maximum predicted concentration increments from construction activities on Projected Development Sites 7, 29, and 30 in the future with the Proposed Actions, and maximum overall concentrations including background concentrations, are presented in Table 19-9, "Maximum Pollutant Concentrations Resulting from Construction Activities on Projected Development Site 7," and Table 19-10, "Maximum Pollutant Concentrations Resulting from Construction Activities on Projected Development Sites 29 and 30," for the construction peak period analyzed. The sensitive receptors are similar around Projected Development Sites 29 and 30 since these two sites are attached. Therefore, the maximum predicted concentration increments from these two projected development sites are presented in Table 19-10, "Maximum Pollutant Concentrations Resulting from Construction Activities on Projected Development Sites 29 and 30." For $PM_{2.5}$, monitored background concentrations are not added to modeled concentrations from sources, since impacts are determined by comparing the predicted increment from construction activities to the CEQR *de minimis* criteria. The maximum predicted concentration increments include both on-site construction sources and on-road construction sources.

Table 19-9: Maximum Pollutant Concentrations Resulting from Construction Activities on Project Development Site 7

Pollutant	Averaging Period	Units	Maximum Modeled Impact	Background Concentration (1)	Total Concentration	*De Minimis* Criteria	Criterion
CO	1-hour	ppm	0.2	1.6	1.8	-	35
	8-hour	ppm	0.1	1.1	1.2	-	9
NO2	Annual	µg/m3	5.7	32.8	38.5	-	100
PM_{10}	24-hour	µg/m^3	2.2	44.0	46.2	-	150
$PM_{2.5}$	24-hour[1]	µg/m^3	1.2	-	-	8.0[2]	-
	Annual[2]	µg/m^3	0.24	-	-	0.3	-

Notes:
Results for any other time period and/or location are expected to be comparable or lower.
$PM_{2.5}$ concentration increments were compared with the applicable *de minimis* criteria. Total concentrations were compared with the NAAQS.
[1] Monitored concentrations are not added to modeled $PM_{2.5}$ values.
[2] $PM_{2.5}$ *de minimis* criteria—24-hour average, not to exceed more than half the difference between the background concentration and the 24-hour standard of 35 µg/m^3.

Source: STV Incorporated, 2023.

Table 19-10: Maximum Pollutant Concentrations Resulting from Construction Activities on Projected Development Sites 29 and 30

Pollutant	Averaging Period	Units	Maximum Modeled Impact	Background Concentration (1)	Total Concentration	*De Minimis* Criteria	Criterion
CO	1-hour	ppm	0.3	1.6	1.9	-	35
	8-hour	ppm	0.15	1.1	1.25	-	9
NO2	Annual	µg/m3	9.6	32.8	42.4	-	100
PM_{10}	24-hour	µg/m³	2.8	44.0	46.8	-	150
$PM_{2.5}$	24-hour[1]	µg/m³	1.6	-	-	8.0[2]	-
	Annual[2]	µg/m³	0.25	-	-	0.3	-

Notes:
Results for any other time period and/or location are expected to be comparable or lower.
$PM_{2.5}$ concentration increments were compared with the applicable *de minimis* criteria. Total concentrations were compared with the NAAQS.
[1] Monitored concentrations are not added to modeled $PM_{2.5}$ values.
[2] $PM_{2.5}$ *de minimis* criteria—24-hour average, not to exceed more than half the difference between the background concentration and the 24-hour standard of 35 µg/m³.

Source: STV Incorporated, 2023.

As shown in Table 19-9, "Maximum Pollutant Concentrations Resulting from Construction Activities on Projected Development Site 7," and Table 19-10, "Maximum Pollutant Concentrations Resulting from Construction Activities on Projected Development Sites 29 and 30," the maximum predicted total concentrations of PM_{10}, CO, and annual-average NO_2 are below the applicable NAAQS, and the maximum predicted $PM_{2.5}$ incremental concentrations are below the applicable CEQR *de minimis* criterion of 8.0 µg/m³ in the 24-hour average period or 0.30 µg/m³ in the annual average period.

Although the modeled results are based on the representative peak construction periods, conclusions regarding other periods could be derived based on the lower concentration increments from construction that would generally be expected during periods with lower construction emissions.

Conclusions

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

NOISE AND VIBRATION

Noise

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

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

Construction Noise Impact Criteria

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

If noise levels at a given receptor are predicted to exceed the screening criteria described above, further consideration of the intensity and duration of construction noise at that receptor would be warranted. Noise level increases that would be considered objectionable (i.e., equal to or greater than 15 dBA) lasting 12 consecutive months or more and noise level increases considered very objectionable (i.e., equal to or greater than 20 dBA) lasting three months or more would also be considered significant adverse impacts.

Construction Noise Analysis Fundamentals

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

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

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

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

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

Mobile Source Construction Noise Analysis Methodology

At roadway segments leading to the construction site, construction truck and worker commute trips that would occur during the construction period are included in the modeling of construction noise as discussed below.

On-Site Construction Noise Analysis Methodology

A detailed modeling analysis was used to evaluate potential construction noise effects at existing noise receptors (e.g., residences) near projected development sites as well as at completed and occupied projected development sites. A noise-sensitive receptor is defined in Chapter 19, "Noise," Section 114, of the *CEQR Technical Manual* and includes indoor receptors such as residences, hotels, health care facilities, nursing homes, schools, houses of worship, court houses, public meeting facilities, museums, libraries, theaters, and commercial offices. Outdoor sensitive receptors include parks, outdoor theaters, golf courses, zoos, campgrounds, and beaches.

Construction noise levels were calculated for each phase of construction at two selected projected development sites. The results of the construction noise analyses at these selected sites were used along with the conceptual construction schedule to extrapolate construction noise from all projected development sites. Based on the extrapolated construction noise levels, the intensity and duration of construction noise at each receptor was evaluated to identify potential noise impacts from construction.

Specifically, the construction noise analysis involved the following process:

1. Select analysis hours for cumulative on-site equipment and construction truck noise analysis. The peak hour with highest traffic and truck volume was selected as the analysis hour to overlap with on-site equipment operation.

2. Select representative construction sites for analysis. The two selected sites included one of the largest projected developments (i.e., Projected Development Site 59) and a typical projected development (i.e., Projected Development Site 8). Projected Development Site 59 was used to represent construction noise from large projected development sites (i.e., Projected Development Sites 7, 9, 29, 58, and 59), and Projected Development Site 8 was used to represent all other development sites whose construction duration is considered long-term (two years or more (i.e., Project Development Sites 5, 8, 19, 22, 24, 31, and 38). Based on the location of the two projected development sites selected for quantitative analysis, construction from each site would not have the potential to simultaneously affect noise levels at any surrounding receptor sites. Consequently, the projected development sites were analyzed independently. No significant adverse construction noise impacts are expected from construction of development sites whose construction duration would be considered short-term (less than 24 months).

3. Select analysis time period. At Projected Development Sites 59 and 8, construction noise levels were calculated during each major construction phase (i.e., excavation/foundation work, superstructure work, and interior fit-out work). Because the analysis is based on construction phases, it does not capture the natural daily and hourly variability of construction noise at each receptor. The level of noise produced by construction fluctuates throughout the days and months of the construction stages, while the construction noise analysis is based on the worst-case time periods only, which makes the analysis conservative.

4. Select receptor locations for construction mobile source and on-site equipment cumulative noise analysis at the selected projected development sites. Selected receptors were representative of

all projected development sites to be completed per the conceptual construction schedule and occupied as well existing/future buildings. Additional receptors were added in a distance of 50, 100, 150, and 200 feet from the site boundary of Projected Development Sites 59 and 8. These additional receptors were extended up to a height of five stories to reflect the neighborhood characteristics of the Affected Area.

5. Establish existing noise levels at selected receptors. Noise levels were measured at several at-grade locations and calculated for the other noise receptor locations included in the analysis. Noise measurement locations are shown in Figure 16-1a and 16-1b in Chapter 16, "Noise." Existing noise levels at noise receptors other than the selected noise measurement locations were established using the CadnaA model along with existing condition traffic information collected during noise measurements. The calculated existing noise levels were used to represent No-Action condition noise levels, since noise levels are not projected to increase substantially between the Existing and No-Action conditions.

6. Calculate construction noise levels for each construction phase at each receptor location based on the sound power level, acoustical usage factor, and physical placement of each piece of equipment. Given the on-site equipment and construction auto and truck trips that are expected during each of the analysis periods at each construction site, and the location of the equipment, which was based on construction logistics and construction truck and worker vehicle trip assignments, a CadnaA model for each construction phase was created for both projected development sites. All models included each of the construction noise sources during the construction phase and analysis hour, calculation points representing multiple locations on various façades and floors of the associated receptors previously identified, as well as the noise control measures that would be used on the site, as described below.

7. Determine total noise levels and noise level increments during construction at the selected receptor locations during construction of Projected Development Sites 59 and 8. For each analysis period, the calculated construction noise level at each receptor location was logarithmically added to the existing noise level to determine the cumulative total noise level. The existing noise level at each receptor was then arithmetically subtracted from the cumulative noise level in each analysis period to determine the noise level increments during construction.

8. Compare total noise levels and noise level increments with impact criteria as described above in "Construction Noise Impact Criteria." The predicted noise levels were compared with the thresholds for objectionable and very objectionable noise increase to determine the potential effects of construction noise based on the magnitude of construction noise at each receptor.

9. Establish range of objectionable and very objectionable noise increase for each analyzed projected development site in terms of distance from each construction site. Based on the results

of the quantitative construction noise analyses at Projected Development Sites 59 and 8 as described above, the range from each site where noise levels are predicted to exceed the objectionable and very objectionable noise increase was established.

10. Establish magnitude of construction noise at noise receptors near other projected development sites other than those analyzed. Extrapolating from the construction noise analysis results at the selected construction sites, based on the expected stages of construction during each year at each projected development site according to the conceptual construction schedule and the ranges established in item 9, above, noise receptors were identified that would be expected to experience exceedances of the impact criteria due to construction of the other projected development sites.

11. Establish construction noise duration. For each receptor, the noise level increments in each analysis period were examined to determine the phases of construction at the nearby construction sites that would result in exceedances of the *CEQR Technical Manual* impact criteria. Based on the conceptual construction schedule and the ranges established in item 9 above, at each projected development site, the worst-case month per year of the construction schedule was used to determine conservatively the duration of construction noise at the analyzed receptors.

12. Identify and describe potential significant adverse construction noise impacts. At each receptor, based on the magnitude and duration of predicted noise level increases due to construction, a determination was made as to whether the Proposed Actions would have the potential to result in significant adverse construction noise impacts.

Construction Noise Modeling

Noise effects from construction activities were evaluated using the CadnaA model, a computerized model developed by DataKustik for noise prediction and assessment. The model can be used for the analysis of a wide variety of noise sources, including stationary sources (e.g., construction equipment, industrial equipment, power generation equipment), transportation sources (e.g., roads, highways, railroad lines, busways, airports), and other specialized sources (e.g., sporting facilities). The model takes into account the reference sound pressure levels of the noise sources at 50 feet, attenuation with distance, ground contours, reflections from barriers and structures, attenuation due to shielding, etc. The CadnaA model is based on the acoustic propagation standards promulgated in International Standard ISO 9613-2. This standard is currently under review for adoption by the American National Standards Institute (ANSI) as an American Standard. The CadnaA model is a state-of-the-art tool for noise analysis and is approved for construction noise level prediction by the *CEQR Technical Manual*.

Geographic input data used with the CadnaA model included drawings that define site work areas, adjacent building footprints, and heights, locations of streets, and locations of sensitive receptors. For each analysis period, the geographic location and operational characteristics—including equipment usage rates for each piece of construction equipment operating at the projected development sites, as well as

noise control measures—were put into the model. Reflections and shielding by barriers erected on the construction site and shielding from adjacent buildings were accounted for in the model. In addition, construction-related vehicles were assigned to the adjacent roadways. The model produced A-weighted $L_{eq(1)}$ noise levels at each receptor location for each analysis period, as well as the contribution from each noise source. The $L_{10(1)}$ noise levels were conservatively estimated by adding three dBA to the $L_{eq(1)}$ noise levels, as is standard practice.[7]

Construction Noise Analysis Time Period Selection

At both of the representative projected development sites, construction noise levels were analyzed for each major construction phase (i.e., excavation/foundation, superstructure, and interior fit-out). The noise emission levels and extent of potential impacts during each analyzed construction scenario were used to represent noise effects from the other projected development sites.

The month with the maximum potential to result in construction noise screening threshold[8] exceedances at nearby receptors was identified for each year (i.e., the month of the year with the most noise-intensive construction activities). Projections of the construction noise from the projected development sites at which detailed construction noise modeling analyses were not conducted was conservatively assumed that the worst-case month of each year would represent the entire year, and the year was modeled according to its peak month. The most noise-intensive construction activity considered during each year at each projected development site is shown below in Table 19-11, "Construction Activities at Projected Development Sites."

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

[8] The noise impact criteria in Section 410 of Chapter 19 of the *CEQR Technical Manual* serve as screening thresholds for potential construction noise impacts, i.e., if construction noise would not exceed those thresholds at a given receptor, then there would be no potential for impact at that receptor, but if these thresholds would be exceeded, than it would be necessary to consider the intensity and duration of construction noise at that receptor to determine whether construction noise would rise to the level of a significant adverse impact.

Table 19-11: Construction Activities at Projected Development Sites

Site ID	2025	2026	2027	2028	2029	2030	2031	2032	2033
1			D	I					
2				D	I				
3		D	S						
4					D	I			
5							D	S	I
6								D	
7	D	S	S	I					
8				D	S	S	I		
9a					D	D	D		
9b						S	S	S	I
9c							S	S	S
10	D	I							
11			D	I					
12		D	I						
13				D	I				
14						D	I		
15					D	I			
16		D	I						
17							D	S	
18				D	S				
19			D	S	I				
20						D	I		
21		D	I						
22				D	D	S			
23	D	I							
24			D	S	I				
25	D	I							
26					D	I			
27				D	I				
28	D	I							
29		D	D	S	I				
30		D	D	S					
31					D	S	I		
32			D	S					
33	D	I							
34			D	I					
35							D	S	
36				D	I				
37								D	S
38				D	D	S			
39	D	S	I						
40					D	I			
41				D	S	I			
42								D	I

Table 19-11: Construction Activities at Projected Development Sites (cont.)

Site ID	2025	2026	2027	2028	2029	2030	2031	2032	2033
43			D	S					
44					D	S			
45		D	S						
46	D	S							
47				D	I				
48					D	I			
49		D	S						
50	D	S							
51			D	I					
52	D	I							
53				D	I				
54					D	I			
55			D	I					
56									D
57		D	I						
58						D	D	S	S
59						D	S	S	I
60		D	I						

Note: Demolition/Excavation/Foundation is abbreviated as "D", Superstructure and Exteriors is abbreviated as "S", and Interior Fit-Out is abbreviated as "I".

Source: HDR, 2023.

Determination of Non-Construction Noise Levels

Noise generated by construction activities (calculated using the CadnaA model as described above) was added to noise generated by non-construction traffic on adjacent roadways to determine the total noise levels at each receptor location. Noise levels generated by existing traffic were used as non-construction noise levels to which construction noise levels would be added.

At-grade noise measurements were conducted at 18 locations to determine existing noise levels in the study area as described in Chapter 16, "Noise." Figures 16-1a and 16-1b, "Noise Receptor Locations," show the locations of the noise monitoring locations. The baseline noise levels at each of the noise survey locations are described in detail in Chapter 16, "Noise." At all noise measurement locations, the dominant existing noise source was from vehicular traffic on the adjacent roadways and train activity from the planned Metro-North Railroad service.

Construction Noise Reduction Measures

Construction of the Proposed Actions would be required to follow the requirements of the NYC Noise Control Code for construction noise control measures. Specific noise control measures would be incorporated in noise mitigation plan(s) required under the *NYC Noise Control Code*. These measures could include a variety of source and path controls.

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

- Equipment that meets the sound level standards specified in Subchapter 5 of the NYC Noise Control Code would be utilized from the start of construction. Table 19-12, "Typical Construction Equipment Noise Emission Levels (dBA)," shows the noise levels for typical construction equipment that would be used for construction under the Proposed Actions.

Table 19-12: Typical Construction Equipment Noise Emission Levels (dBA)

Equipment Description	L_{max} at 50 Feet[1]
All Other Equipment > 5 HP	85
Concrete (Drum) Mixer	80
Concrete Pumps Truck	82
Concrete Mixer Truck	85
Concrete Vibratory Mixer	80
Crane	85
Crawl Crane	85
Dozer	85
Excavator	85
Fork Lift	64[2]
Front End Loader	80
Generator	82
Hoist	75[3]
Jackhammer	85
Impact Pile Driver	95
Pump	77
Rebar Bender	80
Scissor Lift	63
Trowel	70
Welder	73

Notes:
[1] *CEQR Technical Manual* Table 22-1, except where noted.
[2] Dantruck.com.
[3] "Noise Control for Construction Equipment…" Report for Hydro Quebec, 1985

Source: HDR, 2023.

- As early in the construction period as logistics would allow, diesel- or gas-powered equipment would be replaced with electrical-powered equipment such as welders, water pumps, bench saws, and table saws (i.e., early electrification) to the extent feasible and practicable.

- Where feasible and practicable, construction sites would be configured to minimize back-up alarm noise. In addition, all trucks, other than those whose engine is used to operate a loading, unloading or processing device, would not be allowed to idle more than three minutes at the construction site based upon Title 24, Chapter 1, Subchapter 7, Section 24-163 of the NYC Administrative Code.

- Contractors and subcontractors would be required to properly maintain their equipment and mufflers.

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

- Where logistics allow, noisy equipment, such as cranes, concrete pumps, concrete trucks, and delivery trucks, would be located away from and shielded from sensitive receptor locations.
- Noise barriers constructed from plywood or other materials would be erected to provide shielding; and
- Path noise control measures (i.e., portable noise barriers, panels, enclosures, and acoustical tents, where feasible) for certain dominant noise equipment would be employed to the extent feasible and practical based on the results of the construction noise calculations. The details to construct portable noise barriers, enclosures, tents, etc. are shown in DEP's Rules for Citywide Construction Noise Mitigation.9

Construction Noise Receptor Sites

Within the Affected Area, all projected development sites to be completed and occupied were considered as sensitive noise receptors for each representative projected development site's construction noise impact. Additionally, receptor locations were placed at buildings or noise-sensitive open spaces near the analysis locations for the construction noise analysis. These receptors are either located adjacent to planned areas of activity or streets where construction trucks would travel. At some buildings, multiple building façades were analyzed. At high-rise buildings, noise receptors were selected at multiple elevations. The receptor sites selected for detailed analysis are representative locations where maximum project effects due to construction noise would be expected. Furthermore, additional receptors were placed at a distance of 50, 100, 150, and 200 feet and up to five stories even when there are no existing buildings/floors in order to ensure that the extent of potential construction noise impact is more comprehensively analyzed. Additional receptors towards south of Projected Development Site 8 in the direction of Parkchester North Condominium Park were also considered.

Construction Noise Analysis Results

Projected Development Site 59

Using the methodology described above and considering the noise abatement measures for source and path controls to satisfy DEP's Rules for Citywide Construction Noise Mitigation, cumulative noise analyses were performed to determine maximum 1-hour equivalent ($L_{eq(1)}$) noise levels that would be expected during one (1) worst-case month for each phase of construction at Projected Development Site 59. This resulted in a predicted range of peak hourly construction noise levels throughout the construction period. Construction of Projected Development Site 59 is predicted to result in significant noise level increases at noise-sensitive receptors in the study area at some times during the construction period. The results of the detailed construction noise analysis for Projected Development Site 59 are summarized in Table 19-13, "Projected Development Site 59 Noise Analysis Results (dBA)."

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

Table 19-13: Projected Development Site 59 Noise Analysis Results (dBA)

Address	Existing Leq		Total Leq		Increment	
	Min	Max	Min	Max	Min	Max
1225 MORRIS PARK AVENUE	56.2	56.2	56.2	72.5	0.0	16.3
1301 MORRIS PARK AVENUE	56.2	56.2	56.2	71.5	0.0	15.3
1400 PELHAM PARKWAY SOUTH	56.2	63.6	56.2	79.4	0.0	23.2
1491 BASSETT AVENUE	56.2	56.2	57.3	63.0	1.1	6.8
1504 STILLWELL AVENUE	57.5	59.7	58.8	66.6	1.3	7.1
1506 STILLWELL AVENUE	62.4	63.4	63.4	67.9	1.0	4.8
1508 STILLWELL AVENUE	60.0	63.0	62.5	71.8	1.0	11.5
1511 SEMINOLE STREET	56.2	56.2	56.4	64.2	0.2	8.0
1512 SEMINOLE ROAD	56.2	56.2	57.9	70.8	1.7	14.6
1513 SEMINOLE STREET	56.2	56.2	56.4	62.9	0.2	6.7
1514 SEMINOLE ROAD	56.2	56.2	56.8	69.9	0.6	13.7
1516 MC DONALD STREET	56.2	56.2	56.5	61.6	0.3	5.4
1516 SEMINOLE ROAD	56.2	56.2	56.5	66.5	0.3	10.3
1517 SEMINOLE STREET	56.2	56.2	56.4	63.9	0.2	7.7
1518 SEMINOLE ROAD	56.2	56.2	56.5	65.8	0.3	9.6
1520 MC DONALD STREET	56.2	56.2	56.5	62.4	0.3	6.2
1522 SEMINOLE ROAD	56.2	56.2	56.6	63.7	0.4	7.5
1523 SEMINOLE STREET	56.2	56.2	56.3	65.1	0.1	8.9
1524 SEMINOLE ROAD	56.2	56.2	56.4	65.0	0.2	8.8
1527 SEMINOLE STREET	56.2	56.2	56.3	63.2	0.1	7.0
1528 MC DONALD STREET	56.2	56.2	56.4	63.1	0.2	6.9
1530 MC DONALD STREET	56.2	56.2	56.4	63.1	0.2	6.9
1530 STILLWELL AVENUE	56.2	64.6	56.2	74.2	0.0	12.4
1531 SEMINOLE STREET	56.2	56.2	56.2	62.0	0.0	5.8
1534 STILLWELL AVENUE	61.6	61.6	62.3	65.7	0.7	4.1
1536 STILLWELL AVENUE	61.6	62.0	62.2	66.4	0.6	4.6
1540 MC DONALD STREET	56.2	56.2	56.4	64.7	0.2	8.5
1543 STILLWELL AVENUE	56.2	62.9	56.3	71.4	0.1	14.7
1544 MC DONALD STREET	56.2	56.2	56.3	63.8	0.1	7.6
1548 MC DONALD STREET	56.2	56.2	56.2	61.4	0.0	5.2
1925 EASTCHESTER ROAD	56.2	62.2	56.3	73.8	0.1	17.6
1960 EASTCHESTER ROAD	61.7	63.6	64.6	68.1	2.1	5.7
1964 EASTCHESTER ROAD	60.1	67.1	62.1	72.8	1.7	10.4
2008 EASTCHESTER ROAD	63.0	66.0	63.7	74.5	0.2	9.3
2020 EASTCHESTER ROAD	62.6	65.6	63.0	72.6	0.3	7.0
2022 EASTCHESTER ROAD	63.3	66.1	63.6	71.6	0.3	5.5
2030 EASTCHESTER ROAD	56.2	65.7	58.2	71.3	0.2	6.2
2038 EASTCHESTER ROAD	56.2	65.6	58.1	71.3	1.9	6.9
2040 EASTCHESTER ROAD	56.2	65.7	57.0	71.4	0.8	5.7
2048 EASTCHESTER ROAD	56.2	67.6	57.9	73.0	1.7	14.3
2050 EASTCHESTER ROAD	65.2	65.7	67.0	70.5	1.7	5.0
2070 EASTCHESTER ROAD	65.3	65.3	66.9	68.4	1.6	3.1
2100 EASTCHESTER ROAD	57.7	65.4	59.6	68.5	1.5	6.7
2034 EASTCHESTER ROAD	56.2	65.7	59.1	72.1	2.8	10.0
1510 STILLWELL AVENUE	61.6	62.4	62.6	67.0	0.9	5.2
1522 MC DONALD STREET	56.2	56.2	56.4	62.7	0.2	6.5
Large - 50ft	56.2	69.9	57.7	80.1	1.5	22.7
Large - 100ft	56.2	67.0	57.4	75.8	1.2	19.0
Large - 150ft	56.2	64.3	57.2	72.6	1.0	16.4
Large - 200ft	56.2	65.2	56.9	71.9	0.7	14.2

Source: HDR, 2023.

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

During demolition, excavation, and foundation activities at Projected Development Site 59, the primary noise sources would include impact pile drivers, excavators, and bulldozers. The pile driver would operate intermittently during a portion of the approximately 12 months of this construction period. Excavators and bulldozers would operate on the site regularly during demolition activities and excavation activities, but infrequently during foundation activities; there would be relatively little time during which both of these sources would overlap on the site. The construction noise analysis, however, is conservatively based on a worst-case time period including all of these sources. The maximum predicted noise level increment during this construction phase would be approximately 23.2 dBA, which would be considered very objectionable. This maximum incremental change in noise levels would occur at a receptor immediately north adjacent to the Projected Development Site 59 and would only occur intermittently during the 12 month period when the pile driver is operating. Noise levels within 50 ft of the construction activities would experience approximately 22.7 dBA and continue to decrease with distance, with 14.2 dBA within 200 ft of the construction activities, which is considered very objectionable to less than objectionable. Objectionable noise levels were predicted to occur within approximately 322 feet, and very objectionable noise levels were predicted to occur within approximately 51 feet during demolition, excavation, and foundation construction at Projected Development Site 59.

During building superstructure and exteriors construction at Projected Development Site 59, the primary noise sources would include generators, concrete mixer trucks, and crawler cranes. The concrete mixer trucks would operate on the site regularly during building superstructure activities, while the crawler crane and generator would be expected to operate on the site throughout both building superstructure and exterior activities. The construction noise analysis, however, is conservatively based on a worst-case time period including all of these sources. The maximum predicted noise level increment during this construction phase would be 16.4 dBA, which would be considered objectionable. Objectionable noise increases were predicted to occur within approximately 101 feet of the construction site during superstructure and exterior construction at Projected Development Site 59.

During interior fit-out construction at Projected Development Site 59, the primary noise sources would include crawler cranes and hoists. The maximum predicted noise level increment during this construction phase would be approximately 11.1 dBA, which would be considered readily noticeable to less than objectionable.

Projected Development Site 8

Using the methodology described above and considering the noise abatement measures for source and path controls to satisfy DEP's Rules for Citywide Construction Noise Mitigation specified above,

cumulative noise analyses were performed to determine maximum 1-hour equivalent ($L_{eq(1)}$) noise levels that would be expected during one (1) worst-case month for each phase of construction at Projected Development Site 8. This resulted in a predicted range of peak hourly construction noise levels throughout the construction period. Construction of Projected Development Site 8 is predicted to result in significant noise level increases at noise-sensitive receptors in the study area at some times during the construction period. The results of the detailed construction noise analysis for Projected Development Site 8 are summarized in Table 19-14, "Projected Development Site 8 Noise Analysis Results (dBA)."

Table 19-14: Projected Development Site 8 Noise Analysis Results (dBA)

Address	Existing Leq		Total Leq		Change in Leq	
	Min	Max	Min	Max	Min	Max
1598 UNIONPORT ROAD	59.2	62.7	59.2	76.1	0.0	16.9
2213 EAST TREMONT AVENUE	59.2	62.8	59.7	67.4	0.5	7.2
2175 EAST TREMONT AVENUE	59.2	63.4	60.6	68.7	1.4	6.2
2205 EAST TREMONT AVENUE	59.2	62.5	60.0	67.8	0.8	5.3
1601 BRONXDALE AVENUE	59.2	59.2	59.3	65.0	0.1	5.8
Typical - 50ft	59.2	63.8	61.3	80.5	2.1	19.8
Typical - 100ft	59.2	63.7	61.5	76.6	2.3	17.4
Typical - 150ft	59.2	64.6	61.4	73.6	2.2	14.4
Typical - 200ft	59.2	65.2	60.4	72.0	1.2	12.8

Source: HDR, 2023.

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

During demolition, excavation, and foundation activities at Projected Development Site 8, the primary noise sources would include impact pile drivers, excavators, and bulldozers. The pile drivers would operate intermittently during a portion of the approximately ten months of this construction period. Excavators and bulldozers would operate on the site regularly during demolition activities and excavation activities, but infrequently during foundation activities; there would be relatively little time during which both of these sources would overlap on the site. The construction noise analysis, however, is conservatively based on a worst-case time period including all of these sources. The maximum predicted noise level increment during this construction phase would be approximately 19.8 dBA, which would be considered objectionable. Objectionable noise levels were predicted to occur within approximately 135 feet of the construction site during demolition, excavation and foundation construction at Projected Development Site 8.

During building superstructure and exteriors construction at Projected Development Site 8, the primary noise sources would include generators, concrete mixer trucks, and crawler cranes. The concrete mixer trucks would operate on the site regularly during building superstructure activities, while the crawler crane and generator would be expected to operate on the site throughout both building superstructure and exterior activities. The construction noise analysis, however, is conservatively based on a worst-case

time period including all of these sources. The maximum predicted noise level increment during this construction phase would be approximately 19.8 dBA, which would be considered objectionable. Objectionable noise levels were predicted to occur within approximately 135 feet of the construction site during superstructure and exteriors construction at Projected Development Site 8.

During interior fit out at Projected Development Site 8, the primary noise sources would include crawler cranes and hoists. The maximum predicted noise level increment during this construction phase would be approximately 9.0 dBA, which would be considered readily noticeable to less than objectionable.

Construction Noise Analysis Assessment

Using the methodology described above and considering the noise abatement measures for source and path controls to satisfy DEP's Rules for Citywide Construction Noise Mitigation specified above, construction mobile source and on-site cumulative noise analyses were performed to determine maximum 1-hour equivalent ($L_{eq(1)}$) noise levels that would be expected to occur during each of the major construction stages of Projected Development Sites 59 and 8.

For impact determination purposes, the significance of adverse noise impacts is determined based on whether predicted incremental noise levels at sensitive receptor locations would be greater than the noise impact threshold criteria for an extended period of time as described a previously in "Construction Noise Impact Criteria." While increases exceeding the noise impact threshold criteria for short periods of time may be noisy and intrusive, they are not considered to be significant adverse noise impacts using the *CEQR Technical Manual* methodology unless they reach the "very objectionable" or "objectionable" categories.

Based on the construction stage predicted to occur at each development site according to the conceptual construction schedule during each of the selected analysis periods as shown in Table 19-1, "Construction Oversight in New York City," receptors expected to experience the objectionable threshold or the very objectionable thresholds were identified. Receptors where noise level increases were predicted to meet or exceed the objectionable threshold for one year or more or meet or exceed the very objectionable threshold for three months or more would experience significant construction noise impacts.

The construction noise analysis indicates that the predicted noise levels could result in significant adverse impacts throughout the study area and beyond. Figure 19-2, "Construction Noise Impacts," shows where receptor locations are predicted to experience noise level increases during construction that would constitute significant impacts based on the analysis and criteria discussed above.

Areas immediately adjacent to construction work areas would experience the highest levels of construction noise (while construction is ongoing immediately adjacent), whereas receptors located further from the construction site would experience less noise because of the greater distance from the on-site construction equipment. At locations predicted to experience an exceedance of the noise impact criteria, the exceedances would be due principally to noise generated by on-site construction activities (rather than construction-related traffic). As previously discussed, this noise analysis examined the reasonable worst-case peak hourly noise levels that would result from construction in an analyzed month, and consequently is conservative in predicting significant increases in noise levels. Typically, the loudest

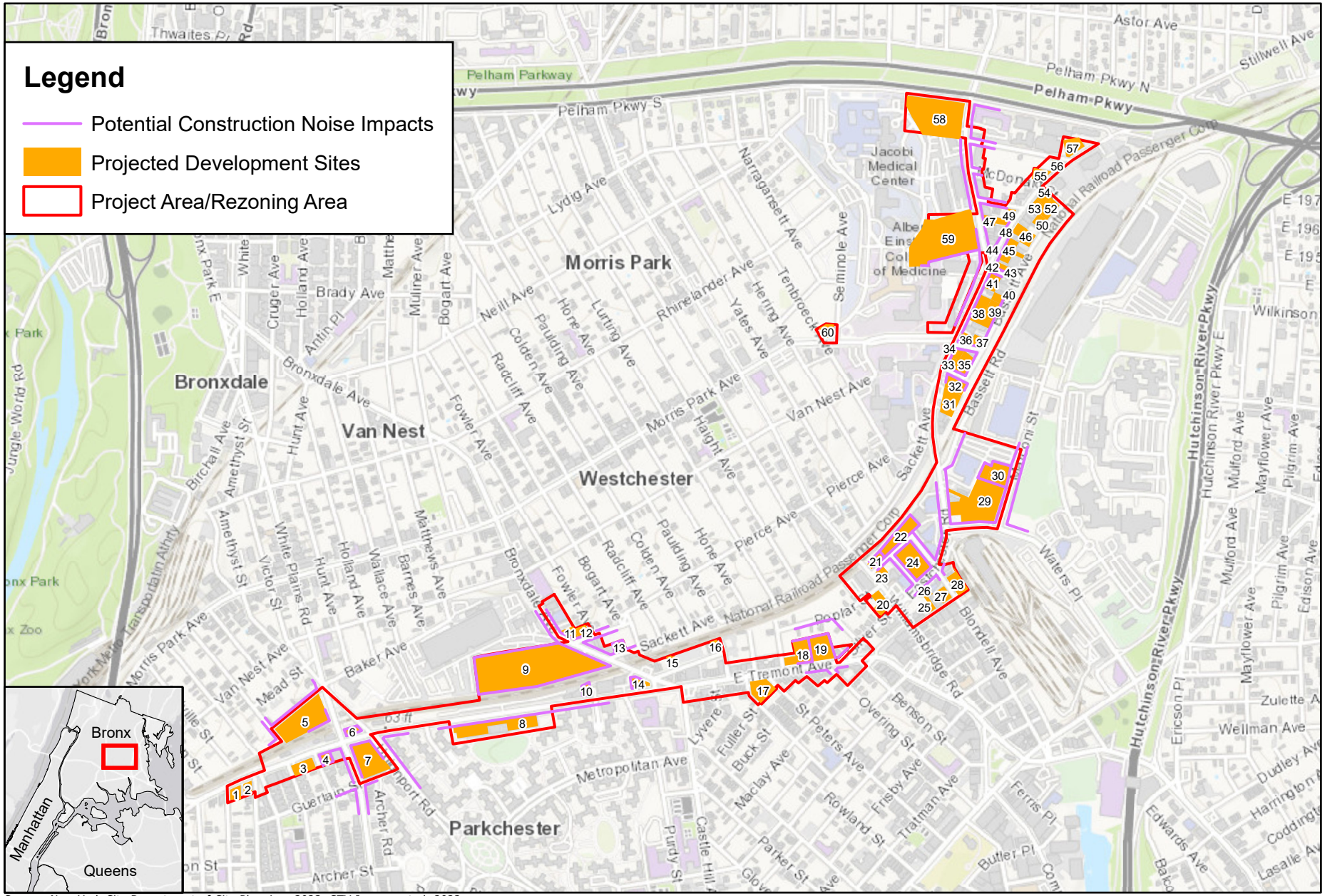
hourly noise level during each month of construction would not persist throughout the entire month. Furthermore, this analysis is based on conceptual site plans and construction schedules. It is possible that the actual construction may be of less magnitude, or that construction on multiple projected development sites may not overlap, in which case construction noise would be less intense than the analysis predicts.

Construction Noise at Completed and Occupied Development Sites

Since certain projected development sites are expected to include noise-sensitive uses (e.g., residential, community facility) that may be exposed to construction noise (i.e., when a building is completed and occupied, but other development assumed under the Proposed Actions would still be under construction), there is the potential that all of the projected development sites within the study area identified in Figure 19-2, "Construction Noise Impacts," could experience significant construction noise impacts. Based on Figure 19-2, Projected Development Sites 3-14, 18-19, 21-30, 32-49, and 58-59may have the potential to experience significant construction noise impacts should they be completed and occupied while construction is occurring on other sites.

Based on the modeling analysis and extrapolation of analyzed results, there is potential to experience noise increase exceeding objectionable and very objectionable impact at completed and occupied projected development sites. These exceedances would be intermittent and temporary and would not occur during the nighttime hour when residences are most sensitive to noise. However, due to the spacing and configuration of the projected development sites and the potential for construction to occur in a sequencing other than the conceptual schedule assumed for the purposes of the construction noise analysis, the potential for objectionable and very objectionable impact construction noise impacts might exist at all of the projected development sites listed above.

As with the existing receptors, the predicted exceedances of acceptable noise levels at the completed and occupied projected development sites would be due principally to noise generated by on-site construction activities (rather than construction-related traffic). As previously discussed, this noise analysis examined the reasonable worst-case peak hourly noise levels that would result from construction in an analyzed month, and consequently is conservative in predicting significant increases in noise levels.



Source: New York City Department of City Planning, 2023; STV Incorporated, 2023.

N

0 0.15 0.3 Mile

Figure 19-2

Bronx Metro-North Station Study

Construction Noise Impacts

Typically, the loudest hourly noise level during each month of construction would not persist throughout the entire month. In addition, this analysis is based on conceptual site plans and construction schedules. It is possible that the actual construction may be of less magnitude, or that a site would not be completed and occupied during construction immediately adjacent, in which case the site would not experience the predicted levels of construction noise.

Vibration

Construction activities have the potential to result in vibration levels that may result in structural or architectural damage, and/or annoyance or interference with vibration-sensitive activities. Vibratory levels at a receiver are a function of the source power (which is dependent upon the construction equipment and methods utilized), the distance between the equipment and the receiver, the characteristics of the transmitting medium, and the receiver building construction. Construction equipment operation induces ground vibrations which propagate through the ground, decreasing in amplitude with distance. Vehicular traffic, even in locations close to major roadways, typically does not result in perceptible vibration levels unless there are discontinuities in the roadway surface. With the exception of fragile and possibly historically significant structures or buildings, construction activities generally do not reach the levels that can cause architectural or structural damage but can achieve levels that may be perceptible and annoying to occupants of buildings very close to a construction site.

Construction Vibration Criteria

For purposes of assessing potential structural or architectural damage, the determination of a significant impact was based on the vibration impact criterion of a Peak Particle Velocity (PPV) of 0.50 inches/second as specified in DOB TPPN #10/88. For non-fragile buildings, vibration levels between 0.5 inches/second and 2.0 inches/second would typically not be expected to result in any structural or architectural damage.

For purposes of evaluating potential annoyance or interference with occupant vibration-sensitive activities, vibration levels greater than 65 VdB (re: one microinch/second) would have the potential to result in significant adverse effects if they were to occur for a prolonged period of time.

Analysis Methodology

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

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

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

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

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

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

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

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

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

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

Table 19-15, "Vibration Source Levels," shows vibration source levels for typical construction equipment.

Table 19-15: Vibration Source Levels

Equipment		PPV_{ref} (in/sec)	Approximate L_v(ref) (VdB)
Pile Driver	Upper Range	1.518	112
	Typical	0.644	104
Dozer		0.089	87
Loaded Trucks		0.076	86
Jackhammer		0.035	79

Source: Transit Noise and Vibration Impact Assessment. FTA Report No. 0123, September 2018.

Construction Vibration Analysis Results

The buildings of most concern with regard to the potential for structural or architectural damage due to vibration are historic buildings and structures immediately adjacent to the projected development sites. Vibration levels at these buildings and structures within 52.4 feet of a projected development site may exceed the 0.50 in/sec PPV during impact pile driving. However, because these historic buildings and structures would be within 90 feet of the projected development sites, vibration monitoring would be required per DOB TPPN #10/88 regulations, and construction means and methods would need to be altered as necessary to avoid generating vibration exceeding the 0.50 inches/second threshold.

For non-historic buildings and other structures immediately adjacent to projected development sites, vibration levels within 21 feet of pile driving may result in PPV levels between 0.50 and 2.0 in/sec, which is generally considered acceptable for a non-historic building or structure.

In terms of potential vibration levels that would be perceptible and annoying, the equipment that would have the most potential for producing levels that exceed the 65 VdB limit is also the impact pile driver. For typical conditions, it would have the potential to produce perceptible vibration levels (i.e., vibration levels exceeding 65 VdB) at receptor locations within a distance of approximately 500 feet depending on soil conditions. However, the operation would only occur for limited periods of time, typically four months or less at a particular location and therefore would not result in any significant adverse impacts.

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