Herkimer-Williams EIS
Chapter 19: Construction

A. INTRODUCTION

This chapter describes the preliminary construction plans under the Proposed Actions and assesses the potential for the Proposed Actions to result in significant adverse construction impacts in accordance with 2021 *City Environmental Quality Review* (CEQR) *Technical Manual* guidance. Construction impacts, although temporary, can include noticeable and disruptive effects from a project that is associated with construction or could induce construction. As stated in the 2021 *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, vibration, and/or air quality conditions.

The Proposed Actions would facilitate the redevelopment of the several projected development sites within the Project Area. The projected development sites are Projected Development Site 1A (Block 1555, Lot 19), Projected Development Site 1B (Block 1576, Lots 1 and 34), Projected Development Site 1C (Block 1577, Lots 17 and 26), Projected Development Site 1D (Block 1577, Lots 32, 35, 51, and 53), and Projected Development Site 1E (Block 1577, Lots 1, 7, 56, and 58). Additionally, Projected Development Site 2 comprises Block 1576, Lot 9 which contains an existing building that would remain. Projected Development Sites 1A through 1E are coterminous with the LSGD. Projected Development Site 2 is owned by Calvary Church and is not under the ownership or control of the Applicant and is not included within the LSGD. Within the Project Area, no redevelopment would occur on Block 1555, Lot 1 and Block 1576, Lots 13 and 32; therefore, these lots are not considered projected development sites.

Approval of the Proposed Actions would facilitate the development of five new buildings and potentially, a small retail kiosk on the projected development sites in the Project Area. The new mixed-use development on the projected development sites would either contain a combined total of approximately 1,589,202 gross square feet (gsf) under the Proposed Development, or a combined total of approximately 1,620,348 gsf under the Alternate Community Facility Scenario. A Reasonable Worst Case Development Scenario (RWCDS) has been established for the Proposed Actions for an analysis year of 2036.

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

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

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

B. PRINCIPAL CONCLUSIONS

In accordance with 2021 *CEQR Technical Manual* guidance, detailed analyses of potential construction period impacts related to air quality and noise conditions were conducted and determined that the Proposed Actions would not result in construction period impacts related to air quality and noise conditions. An assessment of transportation demand determined that potential significant adverse traffic impacts could occur during construction. The mitigation measures identified in **Chapter 20, "Mitigation,"** for 2036 operational traffic impacts would likely be similarly effective at mitigating any potential construction traffic impacts. In addition, preliminary assessments were conducted for other technical areas in accordance with 2021 *CEQR Technical Manual* guidance, and determined that the Proposed Actions would not result in construction period impacts related to land use and neighborhood character, socioeconomic conditions, community facilities and services, open space, historic and cultural resources, and/or hazardous materials.

Transportation

The second quarter of 2035 was selected as the reasonable worst-case analysis period for assessing potential cumulative transportation impacts from operational trips from completed portions of either the Proposed Development or the Alternate Community Facility Scenario and construction trips associated with construction activities. An assessment of transportation demand generated during this peak period is presented below.

Traffic

During construction, traffic would be generated by construction workers commuting via autos and by trucks making deliveries to the Project Area. Each worker vehicle was assumed to arrive in the morning and then depart in the afternoon or early evening, while truck deliveries would occur throughout the construction day. In the second quarter of 2035, construction-related traffic is expected to peak during the 6 to 7 AM and 3 to 4 PM periods. During the 6 to 7 AM peak hour, there would be 120 PCE vehicle trips, including 96 inbound trips and 24 outbound trips. During the 3 to 4 PM peak hour, there would be 102 PCE trips, including 15 inbound trips and 87 outbound trips.

As the construction vehicle trips would exceed the 50-trip threshold in both the construction AM and PM peak hours, it is expected that potential significant adverse traffic impacts could occur during construction and that these impacts would be within the range of impacts identified for the 2036 With-Action condition. The mitigation measures identified in **Chapter 20, "Mitigation,"** for 2036 operational traffic impacts would likely be similarly effective at mitigating any potential construction traffic impacts.

Pedestrians

During the second quarter of 2035 peak construction period, net incremental construction travel demand on area sidewalks, corners, and crosswalks is expected to total approximately 59 trips in the 6 to 7 AM and 3 to 4 PM peak construction hours. These trips would be widely distributed among the projected development sites in the Project Area that would be under construction in the second quarter of 2035 and would primarily occur outside the weekday AM and PM peak commuter periods and weekday midday and Saturday peak periods when area pedestrian facilities typically experience their greatest demand.

As peak construction worker pedestrian demand generated by would not meet the 200 trips/hour 2021 *CEQR Technical Manual* analysis threshold for a detailed pedestrian analysis, significant adverse impacts to pedestrian elements are not expected to occur in the construction peak hours during the second quarter of 2035 peak construction period.

Transit

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

During the construction peak period, the net incremental construction travel demand is expected to generate approximately 47 transit trips (31 by subway, 11 by rail, and 5 by bus) in the 6 to 7 AM and 3 to 4 PM peak construction hours. Transit conditions during the 6 to 7 AM and 3 to 4 PM construction peak hours are expected to be generally better than during the analyzed operational peak hours with full build-out under the Proposed Actions in 2036 as incremental demand would be lower during construction, and most construction trips would not occur during the peak hours of commuter demand. As peak construction worker transit demand generated by would not meet the 200 trips/hour 2021 *CEQR Technical Manual* analysis threshold for a detailed transit analysis, significant adverse impacts to transit services are not expected to occur in the construction peak hours during the second quarter of 2035 peak construction period.

Parking

With full build-out under the Proposed Actions in 2036, operational parking demand is estimated at more than a thousand vehicles during the weekday midday period. Parking conditions during the second quarter of 2035 peak construction period are expected to be generally better than during the analyzed operational peak hours with full build-out under the Proposed Actions in 2036. Consequently, there would be less likelihood of a parking shortfall during the peak construction hours in the cumulative analysis year (second quarter of 2035) than with full build-out under the Proposed Actions in 2036. While the second quarter of 2035 construction worker parking demand could contribute to a shortfall in the midday, the Project Area is well served by alternate modes of transportation, and any such parking shortfall is unlikely to be considered significant based on 2021 *CEQR Technical Manual* guidance.

Air Quality

Maximum predicted concentrations during the representative worst-case construction periods for either the Proposed Development or the Alternate Community Facility Scenario were estimated. To estimate the maximum total pollutant NO_2, CO, and PM_{10} concentrations, the modeled concentrations were added to a background value that accounts for existing pollutant concentrations from other nearby sources. As described herein, the maximum predicted total concentrations of NO_2, CO, and PM_{10} are below the applicable NAAQS. In addition, the maximum predicted $PM_{2.5}$ concentrations would not exceed the applicable 2021 *CEQR Technical Manual de minimis* thresholds in the 24-hour and annual averaging periods.[1] Emissions from the other less intensive construction periods would be less than the emissions during the modeled worst-case periods; therefore, the resulting concentrations from these non-peak periods are expected to be less than the concentrations estimated for the representative worst-case construction periods. Therefore, construction of either the Proposed Development or the Alternate

[1] The 2021 *CEQR Technical Manual* 24-hour $PM_{2.5}$ *de minimis* criterion is equal to half the difference between the 24-hour background concentration (21.3 $\mu g/m^3$) and the 24-hour standard (35 $\mu g/m^3$).

Community Facility Scenario would not result in significant adverse air quality impacts due to construction sources.

Noise

Construction of either the Proposed Development or the Alternate Community Facility Scenario is predicted to result in elevated noise levels at surrounding sensitive noise receptors, including existing and future residential buildings, commercial offices, and outdoor recreational spaces. At some of these existing and future receptors, construction activities would, for some portion of the construction period, result in noise level increases that would be perceptible to noticeable and at times, "objectionable," i.e., equal to or greater than 15 dBA. However, at these receptors, any "objectionable" noise level increases would occur for less than 12 consecutive months. Consequently, while construction noise at these receptors would be perceptible, it would not rise to the level of a significant impact according to the impact criteria described above. Construction activities would typically occur during weekday daytime hours and would therefore not produce noise during nighttime hours when residents would be most sensitive to noise. Further, construction would comply with *New York City Noise Control Code* regulations. Per *New York City Noise Control Code* regulations, both the Proposed Development and the Alternate Community Facility Scenario would be required to prepare a Construction Noise Mitigation Plan, which may identify more control measures that would further reduce construction noise levels. Therefore, the predicted levels of construction noise were determined not to rise to the level of a significant adverse impact at existing noise receptors.

Other Technical Areas

Land Use and Neighborhood Character

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

Socioeconomic Conditions

Construction activities could temporarily affect pedestrian and vehicular access. However, lane and/or sidewalk closures would not obstruct entrances to any existing businesses, and businesses are not expected to be significantly affected by any temporary reductions in the amount of pedestrian foot traffic or vehicular delays that could occur because of construction activities. Overall, construction activities associated with the Proposed Actions would not result in any significant adverse impacts on surrounding businesses.

Construction would create direct benefits resulting from expenditures on labor, materials, and services, and indirect benefits created by expenditures by material suppliers, construction workers, and other

employees involved in the direct activity. Construction also would contribute to increased tax revenues for the City and State of New York, including those from personal income taxes.

Community Facilities and Services

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

Open Space

There are currently no publicly accessible open spaces in the projected development sites in the Project Area and no open space resources would be used for staging or other construction activities. As discussed above, there would be no significant adverse air quality impacts on open spaces in the surrounding area considering dust control measures and other emission reduction measures incorporated into construction activities associates with the Proposed Actions. The construction noise analysis (discussed above) shows that, while construction noise could be perceptible at some of the nearby open spaces, the predicted construction noise levels would not rise to the level of a significant adverse impact and would therefore not result in a major change in the usability of these open space resources.

Historic and Cultural Resources

The Project Area does not possess archaeological significance, and therefore, the Proposed Actions do not have the potential to result in construction period archaeological impacts. The Proposed Actions would not result in any significant adverse direct impacts to architectural resources as no historic architectural resources are located within the Project Area. Moreover, no architectural resources are located within 90 feet of the Project Area. Therefore, the Proposed Actions would not result in any significant adverse construction-related impacts to historic architectural resources.

Hazardous Materials

An assessment of potential impacts on hazardous materials is described in **Chapter 9, "Hazardous Materials."** The hazardous materials assessment identified limited potential sources of subsurface contamination on, or in close proximity to, the projected development sites in the Project Area, including past or present industrial and automotive uses. To reduce the potential for significant adverse impacts associated with new construction resulting from the Proposed Actions, a hazardous materials (E) designation would be assigned to the lots comprising the projected development sites in the Project Area. The (E) designation requires approval by the New York City Office of Environmental Remediation (OER) prior to obtaining permits from the New York City Department of Buildings (DOB) for any new development entailing soil disturbance. The environmental requirements for the (E) designation also include a mandatory Construction Health and Safety Plan (CHASP), which must be approved by OER. Adherence to these existing regulations would prevent impacts from construction activities at the projected development sites in the Project Area.

C. GOVERNMENTAL COORDINATION AND OVERSIGHT

The governmental oversight of construction in New York City is extensive and involves several City, state, and federal agencies. **Table 19-1** shows the principal agencies involved in construction oversight and each agency's areas of responsibility. The primary responsibilities lie with New York City agencies. DOB has the primary responsibility for ensuring that 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. Areas of responsibility include the enforcement of regulations pertaining to the installation and operation of construction equipment, such as cranes and lifts, sidewalk sheds, and safety netting and scaffolding.

The New York City Department of Parks and Recreation (NYC Parks) oversees, enforces, and permits the replacement of street trees that are lost due to construction. The New York City Department of Environmental Protection (DEP) enforces the New York City Noise Control Code (also known as Chapter 24 of the Administrative Code of the City of New York, or Local Law 113); enforces the DEP Notice of Adoption Rules for Citywide Construction Noise Mitigation (also known as Chapter 28); approves Remedial Action Plans (RAPs) and 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 oversees 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 the loss of archaeological materials and damage to fragile historic structures.

On the state level, the New York State Department of Environmental Conservation (NYSDEC) regulates the discharge of water into rivers and streams, the disposal of hazardous materials, and the 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, although much of this responsibility is delegated to the state level. 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	Bus stop relocation; any subsurface construction within 200 feet of a subway
Landmarks Preservation Commission (LPC)	Archaeological and historic architectural protection
New York State	
Department of Labor (DOL)	Asbestos workers
Department of Environmental Conservation	Dewatering, hazardous materials, tanks, Stormwater Pollution Prevention Plan (SPDES), Industrial SPDES, if any discharge into the Hudson River
United States	
Environmental Protection Agency (EPA)	Air emissions, noise, hazardous materials, toxic substances
Occupation Safety and Health Administration (OSHA)	Worker safety

D. ANTICIPATED CONSTRUCTION SCHEDULE

Projected Development Sites 1A through 1E would be developed by the Applicant with either the Proposed Development or the Alternate Community Facility Scenario, which would both include four mixed-use buildings and a potential small retail kiosk. Additionally, Projected Development Site 2, which is not included within the LSGD and not controlled or owned by the Applicant, is anticipated to be developed with a mixed-use building.

The anticipated construction schedule reflects the preliminary sequencing of construction events as currently contemplated by the Applicant. Construction of either the Proposed Development or the Alternate Community Facility Scenario would occur in four parts over a total of approximately 10 years (120 months) commencing in 2026. It should be noted that the anticipated construction schedule would apply to both the Proposed Development and the Alternate Community Facility Scenario.

Initial development would include construction on Projected Development Sites 1A, 1B, and 2, beginning during the first quarter of 2026 and concluding during the third quarter of 2028. This would be followed by construction on Projected Development Site 1C, beginning during the first quarter of 2029 and concluding during the third quarter of 2031. The next stage would include construction on Projected Development Site 1D, beginning during the third quarter of 2031 and concluding during the fourth quarter of 2033. Finally, the last stage of development would include construction on Projected Development Site 1E, beginning during the fourth quarter of 2033 and concluding during the second quarter of 2036.

E. DESCRIPTION OF CONSTRUCTION ACTIVITIES

General Construction Practices

Hours of Work

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

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

Deliveries, Access, and Staging Areas

During construction, access to the projected development sites in the Project Area would be fully controlled. The work areas would be fenced off and limited access points for workers and construction-related trucks would be provided. Construction workers are generally prohibited from parking their vehicles on-site during the construction period. Truck movements would be spread throughout the day and would generally occur between the hours of 6:00 AM and 3:00 PM, depending on the stage of construction. Material deliveries to the projected development sites in the Project Area would be controlled and scheduled. To aid in adhering to the delivery schedules, as is normal for building construction in New York City, flaggers would be employed at each construction gate. The flaggers could be supplied by the subcontractor on-site at the time or by the construction manager. The flaggers would control trucks entering and exiting the projected development sites in the Project Area so that they would not interfere with one another. In addition, they would provide an additional traffic aid as the trucks enter and exit the on-street traffic streams.

DOT's Office of Construction Mitigation and Coordination (OCMC) reviews and approves all maintenance and protection of traffic (MPT) plans which specify any planned sidewalk or lane closures and staging for all construction sites. MPT plans would be developed for any required temporary sidewalk, lane, and/or street closures to ensure the safety of the construction workers and the public passing through the area surrounding the construction sites. Approval of these plans and implementation of the closures would be coordinated with DOT's OCMC. Measures specified in the MPT plans would likely include parking lane closures, safety signs, safety barriers, and construction fencing, as applicable.

Description of Construction Activities

Construction of large-scale buildings in New York City typically follows a general pattern. The first task is construction startup, which involves the siting of work trailers, installation of temporary power and

communication lines, and the erection of site perimeter fencing. If a site has existing structures, the structures are demolished with some of the materials (such as concrete, block, and brick) either recycled or crushed on-site to be reused as fill and the debris taken to a licensed disposal facility. Hazardous materials remediation typically occurs at this point. Excavation of the soils is next along with the construction of the foundations. When the below-grade construction is completed, construction of the superstructure of the new building begins. As the core and floor decks of the building are being erected, installation of the mechanical and electrical internal networks would start. As the building progresses upward, the exterior cladding is placed, and the interior fit-out begins. During what is typically considered the busiest time of building construction, the upper core and structure is being built while mechanical/electrical connections, exterior cladding, and interior finishing are progressing on lower floors.

The following provides a description of each of the anticipated construction tasks for both the Proposed Development and the Alternate Community Facility Scenario.

Construction Startup Tasks

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

Demolition

Existing buildings and structures on the projected development sites in the Project Area would be demolished to facilitate construction of either the Proposed Development or the Alternate Community Facility Scenario. Before the commencement of demolition of any buildings and structures, buildings and structures would first be abated of any hazardous materials. A New York City-certified asbestos investigator would inspect the building for asbestos-containing materials (ACM), and if present, those materials would be removed by a DOL-licensed asbestos abatement contractor prior to interior demolition. Asbestos abatement is strictly regulated by DEP, DOL, EPA, and OSHA to protect the health and safety of construction workers and nearby residents, workers, and visitors. Depending on the extent and type of ACMs (if any), these agencies would be notified of the asbestos removal and may inspect the abatement area to ensure that work is being performed in accordance with applicable New York State and New York City regulations. Any activities with the potential to disturb lead-based paint (LBP) would be performed in accordance with the applicable OSHA regulation (including federal OSHA regulation 29 CFR 1926.62—Lead Exposure in Construction). In addition, any suspected polychlorinated biphenyls (PCB)-containing equipment (such as fluorescent light ballasts) would be evaluated prior to disturbance. Unless labeling or test data indicate the contrary, such equipment would be assumed to contain PCBs and would be removed and disposed of at properly licensed facilities in accordance with all applicable regulatory requirements.

Prior to demolition, any economically salvageable materials that could be reused would typically be removed. Then the building or structure would be demolished and demolition debris removed from the projected development site. Hand tools, excavators with hoe ram attachments, loaders, and generators, would be used during this stage of construction. Demolition debris would typically be sorted prior to being disposed at landfills to maximize recycling opportunities.

Excavation and Foundation

Both the Proposed Development and the Alternate Community Facility Scenario would require excavation for each of the proposed buildings' foundation, along with backfilling with clean soil to support building foundations. Excavators would be used to excavate soil, and the excavated materials would be loaded onto dump trucks for transport to a licensed disposal facility. This stage of construction would include the construction of the foundation and below-grade elements of the proposed buildings. No blasting is anticipated for construction of either the Proposed Development or the Alternate Community Facility Scenario. Piles would be installed with the use of drill rigs. If boulders are encountered during pile installation activities, the obstructions would be removed by a rock hammer. Concrete trucks would be used to pour the foundation and the below-grade structures. Excavation and foundation activities may also involve the use of rebar benders, generators, air compressors, cherry pickers, rock hammers, and saws.

Superstructure and Exterior Façade – Core and Shell Construction

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

Interior Fit-Out and Finishing

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

Estimate of Construction Workers and Construction Period Trucks

The number of workers and the number of truck trips associated with material deliveries vary with the scale of the project and the general construction task. Average daily on-site construction workers and trucks were forecast for the new construction anticipated on each of the projected development sites in the Project Area. As shown in **Table 19-2**, the average number of workers would peak at an estimated approximately 207 per day in the second quarter of 2035, while the average number of construction workers throughout the construction period would be approximately 97 per day. For truck trips, the average number of trucks would be approximately 15 per day, and the peak would occur in the second quarter of 2034, with approximately 34 trucks per day. The second quarter of 2035 would experience the

largest average travel demand when accounting for both construction worker travel, including personal vehicles, and construction truck trips.

TABLE 19-2
Average Incremental Number of Daily Construction Workers and Trucks by Year and Quarter

Year	2026				2027				2028			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	45	40	53	65	77	133	167	150	125	100	50	0
Trucks	10	19	18	15	13	10	13	15	15	15	10	0
Year	2029				2030				2031			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	13	27	40	85	85	120	158	150	117	83	13	33
Trucks	7	14	23	15	15	12	13	15	15	15	7	19
Year	2032				2033				2034			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	57	90	113	175	158	150	125	67	33	50	120	120
Trucks	20	15	13	10	13	15	15	15	21	34	21	21
Year	2035				2036							
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	Average	Peak		
Workers	183	207	183	133	92	75	---	---	97	207		
Trucks	15	18	20	20	20	20	---	---	15	34		

Determining Peak Year for Cumulative Construction and Operational Effects

According to the 2021 *CEQR Technical Manual*, if a project involves multiple development sites over varying construction timelines, there must be a preliminary assessment to determine whether 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 anticipated construction schedule, the second quarter of 2035 was selected as the peak construction year for the transportation assessment in this chapter. In 2035, Projected Development Sites 1A, 1B, 1C, 1D, and 2 would be completed and operational, while Projected Development Site 1E would be under construction.

F. DETAILED ANALYSES

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

Transportation

The Proposed Actions would result in the construction of five new buildings and potentially, a small retail kiosk on six projected development sites in the Project Area through 2036. During construction periods, the projected development sites would generate trips from workers traveling to and from the construction sites and from the movement of materials and equipment. Given typical construction hours,

worker trips would be more concentrated in the early morning and mid-afternoon periods on weekdays than during typical peak travel periods.

Traffic

As discussed above, average daily on-site construction workers and trucks were forecasted for the new construction anticipated on each of the projected development sites in the Project Area. As shown in **Table 19-2**, the second quarter of 2035 would experience the largest average travel demand for construction worker travel, including personal vehicles and construction truck trips. During the second quarter of 2035, the average number of workers is estimated to be approximately 207 per day and the average number of trucks is estimated to be approximately 18 per day.

In addition to ongoing construction during the second quarter of 2035, operational trips from the completed portions of either the Proposed Development or the Alternate Community Facility Scenario would simultaneously occur. As such, the second quarter of 2035 was selected as the reasonable worst case analysis period for assessing potential cumulative traffic impacts from operational trips from completed portions of either the Proposed Development or the Alternate Community Facility Scenario and construction trips associated with construction activities. An assessment of traffic generated during this peak period is presented below.

PEAK CONSTRUCTION WORKER TRAVEL DEMAND AND TRUCK TRIPS—2035 (SECOND QUARTER)

Modal split and vehicle occupancy rates for construction workers were based on 2000 U.S. Census data for construction workers in tracts encompassing the Project Area.[2] Based on these data, it is anticipated that construction workers' travel to the Project Area in the East New York neighborhood of Brooklyn would be primarily by motor vehicle (approximately 53.8 percent by private autos and 10.3 percent by taxis/rideshare services), with smaller numbers using public transportation (approximately 18.8 percent subway, 6.8 percent rail, and 2.9 percent bus) and walking or bicycling (approximately 7.4 percent). It is also estimated that auto/taxi occupancy would average approximately 1.24 persons per vehicle. These trip generation assumptions were used as the basis for assessing the potential transportation-related impacts during construction.

Table 19-3 shows a forecast of incremental hourly construction worker auto and construction truck trips during the second quarter of 2035 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.

As shown in **Table 19-3**, in the second quarter of 2035, construction-related traffic is expected to peak during the 6:00 to 7:00 AM and 3:00 to 4:00 PM periods. During the 6:00 to 7:00 AM peak hour there would be a total of 120 PCE vehicle trips, including approximately 96 inbound trips and 24 outbound trips.

[2] AASHTO CTPP 2000 reverse journey-to-work data for the area encompassed by 2000 Census Tracts 365.01, 365.02, 367, 369, 405, 1138, 1140, and 1142.01.

During the 3:00 to 4:00 PM peak hour there would be a total of approximately 102 PCE trips, including approximately 15 inbound trips and 87 outbound trips.

TABLE 19-3
2035 (Second Quarter) Peak Incremental Construction Vehicle Trip Projections (in PCEs)

	Worker Vehicle Trips								Truck Trips					Total Vehicle Trips		
	%		Auto			Taxi			In		Out					
Hour	In	Out	In	Out	Total	In	Out	Total	%	#	%	#	Total	In	Out	Total
6-7 AM	80%	0%	72	0	72	14	14	28	25%	25%	10	10	20	96	24	120
7-8 AM	20%	0%	18	0	18	4	4	8	10%	10%	4	4	8	26	8	34
8-9 AM	0%	0%	0	0	0	0	0	0	10%	10%	4	4	8	4	4	8
9-10 AM	0%	0%	0	0	0	0	0	0	10%	10%	4	4	8	4	4	8
10-11 AM	0%	0%	0	0	0	0	0	0	10%	10%	3	3	6	3	3	6
11 AM-12 PM	0%	0%	0	0	0	0	0	0	10%	10%	3	3	6	3	3	6
12-1 PM	0%	0%	0	0	0	0	0	0	10%	10%	3	3	6	3	3	6
1-2 PM	0%	0%	0	0	0	0	0	0	5%	5%	2	2	4	2	2	4
2-3 PM	0%	5%	0	5	5	1	1	2	5%	5%	2	2	4	3	8	11
3-4 PM	0%	80%	0	72	72	14	14	28	2.5%	2.5%	1	1	2	15	87	102
4-5 PM	0%	15%	0	13	13	3	3	6	2.5%	2.5%	1	1	2	4	17	21
5-6 PM	0%	0%	0	0	0	0	0	0	0%	0%	0	0	0	0	0	0

As discussed above, **Table 19-3** shows hourly worker auto trips and construction truck trips (in PCEs) in the second quarter of 2035 analysis period. Prior years would see the completion of substantially less new development, whereas subsequent years would see a decreasing intensity of construction activity and lower levels of construction traffic. During this peak period, construction travel demand would also simultaneously overlap with operational demand from completed portions of either the Proposed Development or the Alternate Community Facility Scenario. During this cumulative construction and operational traffic analysis period, Projected Development Sites 1A, 1B, 1C, 1D, and 2 would be completed and operational, while Projected Development Site 1E would be under construction.

As the construction vehicle trips would exceed the 50-trip threshold in both the construction AM and PM peak hours, a Level 2 screening analysis is warranted in both peak hours to determine which intersections (if any) would require a quantified analysis. The Level 2 screening assessment for construction-related trips would be produced between the certification of the DEIS and FEIS.

If quantified analysis is warranted, it is expected that potential significant adverse traffic impacts could occur during construction and that these impacts would be within the range of impacts identified for the 2036 With-Action condition. The mitigation measures identified in **Chapter 20, "Mitigation,"** for 2036 operational traffic impacts would likely be similarly effective at mitigating any potential construction traffic impacts.

STREET LANE AND SIDEWALK CLOSURES

Temporary curb lane and sidewalk closures are anticipated adjacent to construction sites, like other construction projects in New York City, and these would be expected to have dedicated gates, driveways, and/or ramps for access by trucks making deliveries. Truck movements would be spread throughout the workday between 6:00 AM and 5:00 PM, depending on the stage of construction. Flaggers are expected to be present during construction to manage the access and movement of trucks. Detailed MPT plans for each construction site would also need to be submitted for approval to DOT's OCMC that would detail the measures that would need to be implemented at each construction site to ensure the safe and efficient maintenance of vehicular and pedestrian traffic flows.

Transit

As previously discussed, and shown in **Table 19-2**, during the second quarter of 2035 peak period for construction travel demand, there would be a net increase of approximately 207 construction workers traveling to and from the projected development sites in the Project Area each day. Approximately 28.5 percent of these construction workers are expected to travel to and from the Project Area by public transit (i.e., subway, bus, and/or commuter rail). The Project Area is in a neighborhood that is well served by public transportation, with a total of three subway stations or station complexes, six local bus routes, and one commuter rail station located in proximity to the Project Area.

As noted above, it is estimated that approximately 80 percent of all construction workers would arrive and depart in the peak hour before and after each shift. Therefore, in the second quarter of 2035, construction worker travel demand is expected to generate a total of approximately 47 transit trips (31 by subway, 11 by rail, and 5 by bus) in each of the 6:00 to 7:00 AM and 3:00 to 4:00 PM construction peak hours. As stated above, construction worker transit trips are primarily outside of the peak AM and PM commuter periods when area transit facilities and services typically experience their greatest demand, and would be distributed among numerous subway stations, bus routes, and commuter rail stations, in proximity to the Project Area. As peak construction worker transit demand generated by would not meet the 200 trips/hour 2021 *CEQR Technical Manual* analysis threshold for a detailed transit analysis, significant adverse impacts to transit services are not expected to occur in the construction peak hours during the second quarter of 2035 peak construction period.

Pedestrians

As discussed above, during the second quarter of 2035 peak construction travel period it is estimated that there would be a net increment of approximately 207 construction workers on-site daily, approximately 28.5 percent of whom are expected to travel to and from the Project Area by transit, walking to and from area subway stops, rail stations, and bus stops. Up to an additional approximately 7.4 percent are expected to walk/bicycle to and from the Project Area. As approximately 80 percent of construction worker trips are expected to occur during any one peak hour, net incremental travel demand on area sidewalks, corners, and crosswalks is expected to total approximately 59 trips in the 6:00 to 7:00 AM and the 3:00 to 4:00 PM construction peak hours. These trips would primarily occur outside of the weekday AM and PM commuter peak periods and weekday midday and Saturday peak periods when area pedestrian facilities typically experience their greatest demand. It should be noted that at locations where temporary sidewalk closures are required during construction activities, adequate protection or temporary sidewalks and appropriate signage would be provided in accordance with DOT requirements. As peak construction worker pedestrian demand generated by would not meet the 200 trips/hour 2021 *CEQR Technical Manual* analysis threshold for a detailed pedestrian analysis, significant adverse impacts to pedestrian elements are not expected to occur in the construction peak hours during the second quarter of 2035 peak construction period.

Parking

During the 2035 peak construction traffic period, it is estimated that there would be approximately 207 construction workers on-site daily, approximately 53.8 percent of whom would be expected to travel to the Project Area by private auto. Based on an average vehicle occupancy of approximately 1.24 persons per vehicle, the maximum daily parking demand from construction workers would total approximately 90 spaces (see **Table 19-4**). These workers are expected to park on-street in proximity to the Project Area. However, comparatively, with full build-out under the Proposed Actions in 2036, operational parking demand is estimated at more than a thousand vehicles during the weekday midday period. Parking

conditions during the second quarter of 2035 peak construction period are expected to be generally better than during the analyzed operational peak hours with full build-out under the Proposed Actions in 2036. Consequently, there would be less likelihood of a parking shortfall during the peak construction hours in the cumulative analysis year (second quarter of 2035) than with full build-out under the Proposed Actions in 2036. As the Project Area is located outside of CEQR Parking Zones 1 and 2 (i.e., within which a parking shortfall from a project would not be considered significant), the inability of the Proposed Actions and the surrounding area to accommodate future parking demands under either the Proposed Development or the Alternate Community Facility Scenario could potentially be considered significant. However, as described in **Chapter 13, "Transportation,"** the Project Area is well served by alternate modes of transportation, and any such parking shortfall is unlikely to be considered significant based on 2021 *CEQR Technical Manual* guidance.

TABLE 19-4
2035 (Second Quarter) Construction Worker Parking Accumulation

	2035 (Q2)		
Hour	**In**	**Out**	**Total**
6-7 AM	72	0	72
7-8 AM	18	0	90
8-9 AM	0	0	90
9-10 AM	0	0	90
10-11 AM	0	0	90
11 AM-12 PM	0	0	90
12-1 PM	0	0	90
1-2 PM	0	0	90
2-3 PM	0	5	85
3-4 PM	0	72	13
4-5 PM	0	13	0
5-6 PM	0	0	0

Air Quality

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

Emissions from non-road construction equipment and on-road vehicles have the potential to affect air quality. In addition, emissions from dust-generating construction activities (i.e., truck loading and unloading operations) also have the potential to affect air quality. A quantitative analysis of the overall combined impact of both non-road and on-road sources of construction-related air emissions, including dust emissions, was performed to determine the potential for significant adverse impacts from these sources of air emissions generated during construction of either the Proposed Development or Alternate Community Facility Scenario.

Emission Reduction Measures

Construction activity in general, and large-scale construction in particular, has the potential to adversely affect air quality as a result of diesel emissions. Measures would be taken to reduce pollutant emissions during construction in accordance with all applicable laws, regulations, and building codes. These include:

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

In addition, the following measures would be implemented as in the Project Component Related to the Environment (PCREs) beyond New York City regulations to further reduce air pollutant emissions during construction:

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

[3] The first federal regulations for new non-road diesel engines were adopted in 1994, and adopted by EPA into regulation in a 1998 Final Rulemaking. The 1998 regulation introduces Tier 1 emissions standards for all equipment 50 hp and greater and phases in the increasingly stringent Tier 2 and Tier 3 standards for equipment manufactured in 2000 through 2008. In 2004, 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 non-road diesel engines were unregulated. These engines are typically referred to as Tier 0.

road engines rated at 50 hp or greater would utilize DPFs, either installed by the original equipment manufacturer or retrofitted. Retrofitted DPFs must be verified by EPA or the California Air Resources Board. Active DPFs or other technologies proven to achieve an equivalent reduction may also be used. The use of DPFs for diesel engines meeting the Tier 3 emissions standard achieves similar emission reductions as the newer Tier 4 particulate matter emission standard.

Overall, this emissions reduction program is expected to substantially reduce diesel emissions.

On-Site Construction Activity Assessment

ANALYSIS PERIODS

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

Based on the resulting multi-year profiles of annual average and peak day average emissions of $PM_{2.5}$ and the proximity of the construction activities to sensitive uses (i.e., residences, hospitals) in the area, January 2026 and the 12-month period from January 2026 to December 2026 were identified as worst-case short-term and annual periods of construction, respectively, since the highest project-wide emissions were predicted in these periods. During the worst-case short-term period, site clearing activities are anticipated to occur at Projected Development Site 1A and demolition activities at Projected Development Sites 1B and 2. During the worst-case annual period, site clearing and landscaping activities are anticipated to occur at Projected Development Site 1A and demolition, foundation, and superstructure activities are anticipated to occur at Projected Development Sites 1B and 2.

Dispersion of the relevant air pollutants from the construction sites during these periods were analyzed. Broader conclusions regarding potential concentrations during non-peak periods are discussed qualitatively, based on the reasonable worst-case analysis period results.

ENGINE EMISSIONS

The sizes, types, and number of units of construction equipment was estimated based on the construction activity schedule developed for activities for the Proposed Development and/or Alternate Community Facility Scenario. Emission rates for NO_x, CO, PM_{10}, and $PM_{2.5}$ from truck engines was developed using the EPA Motor Vehicle Emission Simulator (MOVES4) emission model. Emission factors for NO_x, CO, PM_{10}, and $PM_{2.5}$ from on-site construction engines were developed using the NONROAD emission module included in the MOVES emission model. The emission factor calculations took into account any emissions reduction measures as described above, under “Emissions Reduction Measures.”

ON-SITE DUST EMISSIONS

In addition to engine emissions, dust emissions from operations (e.g., excavation and transferring of excavated materials into dump trucks) was calculated based on EPA procedures delineated in AP-42 Table

13.2.3-1. Since construction is required to follow DEP's *Construction Dust Rules* regarding construction-related dust emissions, a 50 percent reduction in particulate emissions from fugitive dust was conservatively assumed in the calculation (dust control methods, such as wet suppression, would often provide at least a 50 percent reduction in particulate emissions).

DISPERSION MODELING

Potential impacts from 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

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

METEOROLOGICAL DATA

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

BACKGROUND CONCENTRATIONS

To estimate the maximum expected total pollutant concentrations, the calculated impacts from the emission sources must be added to a background value that accounts for existing pollutant concentrations from other sources. The background levels were based on concentrations monitored at the nearest NYSDEC ambient air monitoring stations.

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, at adjacent sidewalk locations, and at publicly accessible open spaces where applicable.

On-Road Sources

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

ON-ROAD VEHICLE EMISSIONS

Vehicular engine emission factors were computed using the EPA mobile source emissions model, MOVES4. This emissions model 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, inspection and maintenance programs and various other factors that influence emissions. The inputs and use of MOVES incorporate the most current resource available from NYSDEC.

ON-ROAD DUST EMISSIONS

$PM_{2.5}$ emission rates were determined with road dust to account for their impacts. However, road dust was not included in the annual average $PM_{2.5}$ microscale analyses, as per current 2021 *CEQR Technical Manual* guidance used for mobile source analysis. Road dust emission factors were calculated according to the latest procedure delineated by EPA.[4]

Construction Air Quality Results

Maximum predicted concentrations during the representative worst-case construction periods for the Proposed Project are presented in **Table 19-5**. To estimate the maximum total pollutant NO_2, CO, and PM_{10} concentrations, the modeled concentrations were added to a background value that accounts for existing pollutant concentrations from other nearby sources. As shown in **Table 19-5**, the maximum predicted total concentrations of NO_2, CO, and PM_{10} are below the applicable NAAQS. In addition, the maximum predicted $PM_{2.5}$ concentrations would not exceed the applicable 2021 *CEQR Technical Manual de minimis* thresholds in the 24-hour and annual averaging periods.[5] Emissions from the other less intensive construction periods would be less than the emissions during the modeled worst-case periods; therefore, the resulting concentrations from these non-peak periods are expected to be less than the concentrations presented in **Table 19-5**. Therefore, construction of either the Proposed Development or the Alternate Community Facility Scenario would not result in significant adverse air quality impacts due to construction sources.

TABLE 19-5
Maximum Pollutant Concentrations

Pollutant	Averaging Period	Units	Maximum Modeled Impact	Background Concentration(1)	Total Concentration	*De minimis*	NAAQS
NO_2	Annual	µg/m³	8.1	32.3	40.4	-	100
CO	1-hour	ppm	0.7	1.9	2.6	-	35
	8-hour	ppm	0.3	1.4	1.7	-	9
PM_{10}	24-hour	µg/ m³	5.5	34.6	40.1	-	150
$PM_{2.5}$	24-hour	µg/ m³	5.1	16.3	21.4	9.4	35
	Annual—Local	µg/m³	0.22	6.6	6.8	0.3	9
	Annual—Neighborhood	µg/m³	0.003	6.6	<6.6	0.1	9

Notes:
N/A—Not Applicable
[1] The background levels are based on the most representative concentrations monitored at NYSDEC ambient air monitoring stations (2017-2019).

[4] 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.
[5] The 2021 *CEQR Technical Manual* 24-hour $PM_{2.5}$ *de minimis* criterion is equal to half the difference between the 24-hour background concentration (21.3 µg/m³) and the 24-hour standard (35 µg/m³).

Noise

The following analysis was completed to evaluate the potential magnitude and duration of noise generated by construction of either the Proposed Development or the Alternate Community Facility Scenario, including operation of construction equipment on the construction sites and construction-related vehicles traveling to and from the construction work areas on adjacent roadways. The potential for noise impacts due to construction at sensitive noise receptors in proximity of either the Proposed Development or the Alternate Community Facility Scenario, including existing and future receptors, is discussed below.

Sound Level Descriptors

Chapter 16, "Noise," defines the sound level descriptors. The $L_{eq(1)}$ is the noise descriptor recommended for use in the 2021 *CEQR Technical Manual* for vehicular traffic and construction noise impact evaluation, and is used to provide an indication of highest expected sound levels. The 1-hour L_{10} is a noise descriptor used in the 2021 *CEQR Technical Manual* noise exposure guidelines. The maximum 1-hour equivalent sound level ($L_{eq(1)}$) and maximum 1-hour L_{10} were selected as the noise descriptors used in the construction noise impact evaluation.

Construction Noise Analysis Fundamentals

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

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

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

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

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

Construction Noise Analysis Methodology

A detailed modeling analysis was conducted to quantify potential construction noise effects at existing noise receptors (e.g., residences, etc.) near the Project Area. The construction noise methodology involves the following process:

1. *Select analysis hours for cumulative on-site equipment and construction truck noise analysis*. The 7:00 AM to 8:00 AM hour was selected as the analysis hour because this would be the hour when the highest number of truck trips to and from the construction sites would overlap with on-site equipment operation.
2. *Select receptor locations for construction noise analysis.* Selected receptors represent open space, residential, commercial office, or other noise-sensitive uses potentially affected by the construction associated with either the Proposed Development or the Alternate Community Facility Scenario during operation of on-site construction equipment and/or along routes taken to and from the Project Area by construction trucks.
3. *Establish existing noise levels at selected receptors.* Existing condition noise levels were measured at nine locations representing receptors near the proposed construction area. A CadnaA model representing the existing conditions (including existing condition traffic levels) was calibrated based on the measured existing noise levels and used to calculate baseline noise levels at the other noise receptor locations included in the analysis.
4. *Establish worst-case noise analysis periods under the anticipated construction schedule.* The worst-case noise analysis periods were selected to be the periods during the construction schedule that would be expected to have the greatest potential to result in construction noise effects. The selected time periods are described below in the "Analysis Periods" section.
5. *Calculate construction noise levels for each analysis period at each receptor location*. Given the on-site equipment and construction truck trips expected during each of the analysis periods, and the anticipated location of the equipment, which is based construction truck and worker vehicle trip assignments, a CadnaA model for each analysis period was created. All models include each of the construction noise sources during the analysis period and hour, calculation points representing multiple locations on various façades and floors of the associated receptors previously identified, as well as the noise control measures that would be used on the construction sites.
6. *Determine total noise levels and noise level increments during construction.* For each analysis period and each noise receptor, the calculated level of construction noise was logarithmically added to the existing noise level to determine the cumulative total noise level. The existing noise level at each receptor was arithmetically subtracted from the cumulative noise level in each analysis period to determine the noise level increments.
7. *Compare construction noise increments to impact criteria*. For each analysis period and each noise receptor, the predicted noise increments due to construction was compared to CEQR noise impact thresholds and objectionable or very objectionable noise increase thresholds as described below.
8. *Establish construction noise duration*. For each receptor, the noise level increments, and interior noise levels in each analysis period were evaluated to determine the duration during construction that the receptor would experience exceedances of impact criteria.
9. *Estimate interior noise levels, as necessary*. At receptors representing interior locations where noise increments due to construction are predicted to exceed incremental construction noise impact thresholds, window/wall attenuation will be estimated based on field observations. Predicted construction noise levels and estimated window/wall attenuation will be used to estimate interior noise levels.
10. *Identify potential construction noise impacts.* Based on the affected area, magnitude, and duration of predicted construction noise, as well as interior noise levels, a determination was made as to whether

construction of either the Proposed Development or the Alternate Community Facility Scenario would have the potential to result in significant adverse construction noise impacts.

Noise Receptor Sites

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

Within the study area, multiple receptor locations close to the construction areas were selected for the construction noise analysis to represent buildings or noise-sensitive open space locations that have the potential to experience elevated noise as a result of construction. These receptors were located adjacent to planned areas of activity or streets where construction trucks would pass. At some buildings, multiple façades were analyzed as receptors. At buildings with multiple floors, noise receptors at multiple elevations were analyzed. Receptors at street level were used to represent open space locations. The receptor sites selected for detailed analysis represented locations where maximum project effects due to construction noise would be expected.

Within the study area, 66 representative receptor locations were selected for the construction noise analysis. This includes 54 existing receptor locations and 12 future receptor locations within either the Proposed Development or the Alternate Community Facility Scenario. **Table 19-6** lists the noise measurement sites (i.e., sites M1 to M9) as well as the noise receptor sites (i.e., sites 1 to 66) and the associated land use at these sites. These receptor locations are also shown in **Figure 19-1**.

TABLE 19-6
Noise Receptors by Location and Land Use

Receptor	Location	Block / Lot	Associated Land Use
M1	Block 1576 Mid-Block Along Rail Line [Elevated]	N/A	N/A
M2	Block 1577 East Boundary between Fulton and Herkimer Streets	N/A	N/A
M3	Herkimer Street North of East New York Avenue [Elevated]	N/A	N/A
M4	Van Sinderen Avenue between Herkimer Street and Atlantic Avenue	N/A	N/A
M5	Williams Place between Herkimer Street and Atlantic Avenue	N/A	N/A
M6	East New York Avenue between Williams Place and Herkimer Street	N/A	N/A
M7	Herkimer Street East of Williams Place	N/A	N/A
M8	Fulton Street East of Williams Place	N/A	N/A
M9	Herkimer Street between Van Sinderen Avenue and Williams Place	N/A	N/A
1	2402 ATLANTIC AVENUE	Block 1437 / Lot 8	Public Facilities and Institutions
2, 3	2416 ATLANTIC AVENUE	Block 1437 / Lot 15	Hotels
4	1725 EAST NEW YORK AVENUE	Block 1444 / Lot 27	Residential with Commercial Below
5	1721 EAST NEW YORK AVENUE	Block 1444 / Lot 30	Residential
6	1719 EAST NEW YORK AVENUE	Block 1444 / Lot 31	Residential
7	164 SOMERS STREET	Block 1544 / Lot 19	Residential
8	113 TRUXTON STREET	Block 1544 / Lot 47	Residential

9, 10	CALLAHAN-KELLY PLAYGROUND	Block 1546 / Lot 1	Open Space and Outdoor Recreation
11, 12	2501 FULTON STREET	Block 1547 / Lot 1	Residential with Commercial Below
13-16	1495 HERKIMER STREET	Block 1554 / Lot 16	Commercial and Office Buildings
17	1465 HERKIMER STREET	Block 1554 / Lot 52	Residential
18	13 JARDINE PLACE	Block 1574 / Lot 4	Residential
19	1 JARDINE PLACE	Block 1574 / Lot 10	Residential
20	1488 HERKIMER STREET	Block 1574 / Lot 19	Residential
21	14 HAVENS PLACE	Block 1574 / Lot 21	Residential
22	18 HAVENS PLACE	Block 1574 / Lot 22	Residential
23	2473 ATLANTIC AVENUE	Block 1576 / Lot 32	Hotels
24	21 FANCHON PLACE	Block 3483 / Lot 11	Residential
25	44 MARGINAL ST WEST	Block 3483 / Lot 36	Residential
26	14 PENNSYLVANIA AVENUE	Block 3659 / Lot 4	Commercial and Office Buildings
27	91 VERMONT STREET	Block 3662 / Lot 104	Residential
28	2531 ATLANTIC AVENUE	Block 3665 / Lot 24	Residential with Commercial Below
29	2519 ATLANTIC AVENUE	Block 3665 / Lot 28	Public Facilities and Institutions
30	2511 ATLANTIC AVENUE	Block 3665 / Lot 30	Residential with Commercial Below
31	2509 ATLANTIC AVENUE	Block 3665 / Lot 32	Residential with Commercial Below
32	17 WILLIAMS AVENUE	Block 3666 / Lot 5	Residential with Commercial Below
33, 34	1838 EAST NEW YORK AVENUE	Block 3666 / Lot 10	Residential with Commercial Below
35, 36	2562 EAST NEW YORK AVENUE	Block 3666 / Lot 18	Hotels
37	28 ALABAMA AVENUE	Block 3666 / Lot 25	Residential
38	30 ALABAMA AVENUE	Block 3666 / Lot 26	Residential
39	19 ALABAMA AVENUE	Block 3667 / Lot 11	Residential with Commercial Below
40	2572 FULTON STREET	Block 3667 / Lot 13	Public Facilities and Institutions
41	2586 FULTON STREET	Block 3667 / Lot 18	Residential with Commercial Below
42	JEWEL SQUARE	Block N/A / Lots N/A	Open Space and Outdoor Recreation
43	33 GEORGIA AVENUE	Block 3668 / Lot 8	Public Facilities and Institutions
44	62 PENNSYLVANIA AVENUE	Block 3669 / Lot 7501	Residential with Commercial Below
45	1 JUNIUS STREET	Block 3679 / Lot 30	Public Facilities and Institutions
46	22 HINSDALE STREET	Block 3681 / Lot 34	Residential
47	28 HINSDALE STREET	Block 3681 / Lot 37	Residential
48	41 HINSDALE STREET	Block 3682 / Lot 10	Residential
49, 50	2534 ATLANTIC AVENUE	Block 3682 / Lot 30	Residential
51, 52	60 WILLIAMS AVENUE	Block 3682 / Lot 33	Public Facilities and Institutions
53	70 WILLIAMS AVENUE	Block 3682 / Lot 42	Residential
54	45 HINSDALE STREET	Block 3682 / Lot 109	Residential
55-58	Building on Projected Development Site 1B	Block 1576 / Lot 1	Residential
59-61	Building on Projected Development Site 1C	Block 1577 / Lot 17	Residential with Commercial Below

62-66	Building on Projected Development Site 1D	Block 1577 / Lot 53	Residential, Community Facility, with Commercial Below

CONSTRUCTION NOISE MODELING

Noise effects from construction activities were evaluated using the CadnaA model, a computerized model developed by DataKustik for noise prediction and assessment. The model can be used for the analysis of a wide variety of noise sources, including stationary sources (e.g., construction equipment, industrial equipment, power generation equipment), transportation sources (e.g., roads, highways, railroad lines, busways, airports), and other specialized sources (e.g., sporting facilities). The model takes into account the reference sound pressure levels of the noise sources at 50 feet, attenuation with distance, ground contours, reflections from structures, attenuation due to shielding, etc. The CadnaA model is based on the acoustic propagation standards promulgated in International Standard ISO 9613-2. This standard is currently under review for adoption by the American National Standards Institute (ANSI) as an American Standard. The CadnaA model is a state-of-the-art tool for noise analysis and is approved for construction noise level prediction by the 2021 *CEQR Technical Manual*.

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

Construction equipment source strength was determined by the L_{max} levels presented in Table 22-1 of the 2021 *CEQR Technical Manual*. For construction equipment not included in this table, other reference sources, manufacturer specifications, or field measured noise levels were used.

In addition, construction-related vehicles were assigned to the adjacent roadways. The model calculated A-weighted $L_{eq(1)}$ noise levels at each receptor location for each analysis period, as well as the contribution from each noise source. The $L_{10(1)}$ noise levels were conservatively estimated by adding 3 dBA to the $L_{eq(1)}$ noise levels, as is standard practice.

DETERMINATION OF NON-CONSTRUCTION NOISE LEVELS

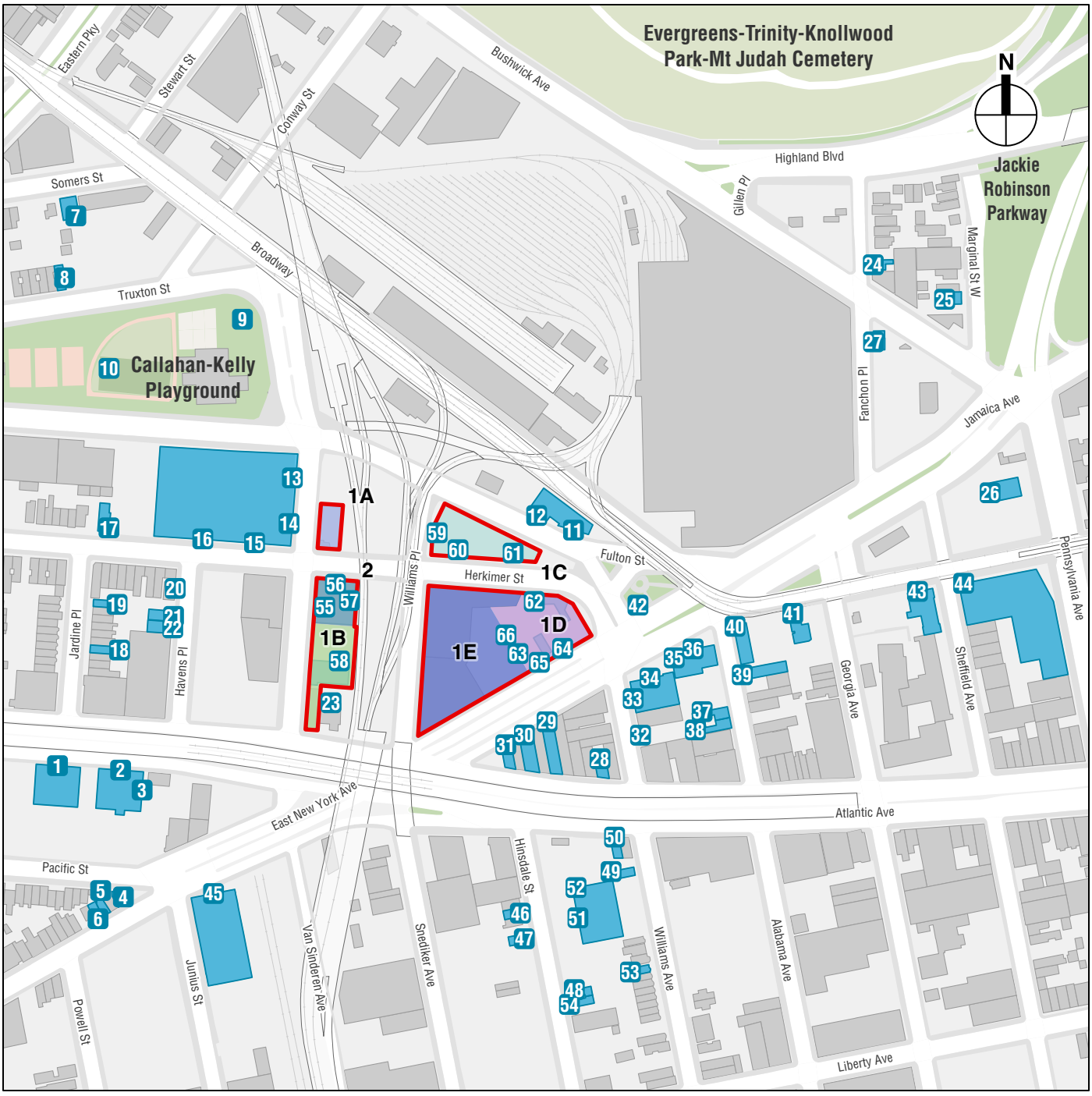
Noise generated by construction activities (calculated using the CadnaA model as described above) were added to baseline (i.e., non-construction) noise levels, including noise generated by non-construction traffic on adjacent roadways and rail traffic on adjacent rail lines, to determine the total noise levels at each receptor location. Baseline noise levels were calculated using the CadnaA model using existing condition traffic data presented within **Chapter 13, "Transportation"**, and sources representing rail lines calibrated based on measured noise levels adjacent to the rail lines.

The existing condition CadnaA model included the noise measurement locations described in **Chapter 16, "Noise,"** for the purpose of validating the calculated existing condition noise level modeling.

Analysis Time Period Selection

The construction noise analysis estimated construction noise levels based on projected activity and equipment usage as well as the level of construction traffic for various stages of construction of either the Proposed Development or the Alternate Community Facility Scenario.

Based on the construction schedule described above and preliminary construction estimates, specific time periods during construction were selected for detailed analysis. The periods were selected to capture each



Construction Noise Receptor Locations

HERKIMER WILLIAMS

Figure 19-1

major construction stage (e.g., excavation/foundation work, superstructure work, interior fit-out work) at the building to be constructed, including major overlaps of construction stages. These would be the time periods with the potential to result in the maximum incremental construction noise at nearby receptors. Each analysis time period conservatively represented 1 to 13 months of time based on the duration of activities that would be underway during the time period.

The four worst-case time periods selected for the detailed construction noise analysis are shown in **Table 19-7**.

TABLE 19-7
Summary of Construction Noise Analysis Periods

Months	Building/Projected Development Site	Construction Activity
Months 1-4	1B, 2	Demolition
Months 5-7		Foundation Construction
Months 8-14		Superstructure Construction
Months 15-19		Façade Installation
Months 20-32		Finishes
Months 33-37	n/a	No Construction
Months 38-41	1C	Demolition
Months 42-45		Foundation Construction
Months 46-52		Superstructure Construction
Months 53-56		Façade Installation
Months 57-66		Finishes
Month 67	n/a	No Construction
Months 68-70	1D	Demolition
Months 71-74		Foundation Construction
Months 75-80		Superstructure Construction
Months 81-85		Façade Installation
Months 86-95		Finishes
Months 96-98	1E	Demolition
Months 99-102		Foundation Construction
Months 103-108		Superstructure Construction
Months 109-113		Façade Installation
Months 114-124		Finishes

Note: Projected Development Site 1A would be developed alongside the buildings on Projected Development Sites 1B and 2. However, construction on Projected Development Site 1A is not included in the construction noise analysis periods because construction of the public open space and potential 1,000-gsf retail kiosk on Projected Development Site 1A would be short-term in duration.

Construction Noise Impact Criteria

Chapter 22 of the 2021 *CEQR Technical Manual* breaks construction duration into "short-term" and "long-term" and states that construction noise is not likely to require analysis unless it "affects a sensitive receptor over a long period of time." Consequently, the construction noise analysis considers the potential for construction of a project to create high noise levels (the "intensity"), whether construction noise would occur for an extended period of time (the "duration"), and the locations where construction has the potential to produce noise ("receptors") in evaluating potential construction noise effects.

The noise impact criteria described in Chapter 19, Section 410 of the 2021 *CEQR Technical Manual* serve as a screening-level threshold for potential construction noise impacts. If construction of a project would

not result in any exceedances of these criteria at a given receptor, then that receptor would not have the potential to experience a construction noise impact.

If noise levels during construction would exceed the screening thresholds at a given receptor, the specific intensity and duration of construction noise level increases would be considered further to determine the potential for significant adverse impacts. Noise level increases that would be considered "objectionable" (i.e., equal to or greater than 15 dBA) lasting 12 consecutive months or more and noise level increases considered "very objectionable" (i.e., equal to or greater than 20 dBA)[6] lasting three consecutive months or more could be considered significant impacts.

For receptors representing interior spaces (i.e., not open space) where construction of a project is predicted to result in objectionable noise level increments lasting 12 consecutive months or more or very objectionable noise level increments lasting three consecutive months or more, and where the façade attenuation can be determined based on readily available information, interior noise levels may also be considered in the determination of impact significance. Portions of the construction period during which predicted interior noise levels would be in the acceptable range (i.e., not greater than 45 dBA for residential and community facility uses or not greater than 50 dBA for commercial office uses), would not be counted toward the consecutive duration of construction noise impact as described above.

Note that for future receptors created due the project development, there is no No-Action noise level by which to determine a noise level increase, since the receptor does not exist in the No-Action condition. Since potential residents within such dwellings would occupy the residence with the understanding that construction at adjacent building sites is ongoing, it is assumed that the impact of construction activity is well understood and considered acceptable when agreeing to occupy these spaces. Nevertheless, to be conservative, these receptors were evaluated as if they existed prior to the start of the project.

Noise Reduction Measures

Construction activities must follow the requirements of the *New York City Noise Control Code* (also known as Chapter 24 of the *Administrative Code of the City of New York*, or Local Law 113) for construction noise control measures.

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

- Equipment that meets the sound level standards specified in Subchapter 5 of the *New York City Noise Control Code* and Table 22-1 of the 2021 *CEQR Technical Manual* would be utilized from the start of construction. **Table 19-8** shows the noise levels for typical construction equipment and the mandated noise levels for the equipment that would be used for construction of either the Proposed Development or the Alternate Community Facility Scenario.
- As early in the construction period as logistics allows, 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

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

electrical equipment cannot be used, diesel or gas-powered generators and pumps would be located within buildings to the extent feasible and practicable.

- Where feasible and practicable, the construction site would be configured to minimize back-up alarm noise. In addition, all trucks would not be allowed to idle more than 3 minutes at the construction site based upon Title 24, Chapter 1, Subchapter 7, Section 24-163 of the New York City Administrative Code.
- Contractors and subcontractors would be required to properly maintain their equipment and mufflers.

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

- Noisy equipment, such as cranes, concrete pumps, concrete trucks, and delivery trucks, would be located away from and shielded from sensitive receptor locations to the extent practicable given site limitations (i.e., receptors on multiple sides).
- Path noise control measures (i.e., portable noise barriers, panels, enclosures, and acoustical tents) for certain dominant noise equipment as necessary to remain consistent with **Table 19-8**. The details to construct portable noise barriers, enclosures, tents, etc. are shown in DEP's *Rules for Citywide Construction Noise Mitigation.*[7]

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

TABLE 19-8
Construction Equipment Noise Emissions in dBA

Equipment List	Typical L_{max} Noise Level at 50 feet[1]
Bar Bender	80
Compressor	80
Concrete Mixer Truck	85
Concrete Pump Truck	82
Concrete Saw	90
Concrete Trowel (Riding)	81[2]
Concrete Vibrator	76
Crane	85
Dump Truck	84
Excavator	85
Front End Loader	80
Generator	82
Hoist	75
Impact Pile Driver	95
Rivet Buster/Chipping Gun	85
Welder/Torch	73

Notes:
[1] Rules for Citywide Construction Noise Mitigation, Chapter 28, DEP, 2007, except where noted.
[2] Previous project equipment noise certification.

Existing Noise Levels

Using the noise measurement methodology described in **Chapter 16, "Noise,"** a noise survey was conducted at nine locations near the proposed construction work areas during the analysis hour for cumulative on-site equipment and construction trucks. The results of the AM peak hour measurements of existing noise levels are summarized in **Table 19-9**. Roadway traffic was the dominant noise source at locations M4 and M6, and railway was the dominant noise source at all other locations.

TABLE 19-9
Measured Existing Noise Levels (in dBA)

Site	Location	L_{eq}	L_{10}
M1	Block 1576 Mid-Block Along Rail Line [Elevated]	74.7	79.5
M2	Block 1577 East Boundary between Fulton and Herkimer Streets	66.5	69.2
M3	Herkimer Street north of East New York Avenue [Elevated]	70.4	72.7
M4	Van Sinderen Avenue between Herkimer Street and Atlantic Avenue	65.6	68.8
M5	Williams Place between Herkimer Street and Atlantic Avenue	76.0	81.9
M6	East New York Avenue between Williams Place and Herkimer Street	65.3	67.6
M7	Herkimer Street east of Williams Place	69.0	74.3
M8	Fulton Street east of Williams Place	69.1	72.8
M9	Herkimer Street between Van Sinderen Avenue and Williams Place	80.6	78.0

Note: Field measurements were performed by AKRF

As described in **Chapter 16, "Noise,"** in terms of the 2021 *CEQR Technical Manual* criteria, existing noise levels at each receptor are categorized as "marginally acceptable" at M4, and M6; "marginally unacceptable" at M2, M7, and M8; and "clearly unacceptable" at M1, M3, M5, and M9.

Construction Noise Analysis Results

CUMULATIVE ON-SITE AND MOBILE CONSTRUCTION NOISE SOURCES

Using the methodology described and considering the noise abatement measures specified above, cumulative noise analysis was performed to determine maximum 1-hour equivalent ($L_{eq[1]}$) noise levels that would be expected at each of the 66 noise receptor locations during each of the 22 selected construction periods. As is standard practice, the $L_{10(1)}$ noise level was estimated to be 3 dBA greater than the $L_{eq(1)}$. The $L_{10(1)}$ noise levels are presented in the analysis discussion below.

The full results of the detailed construction noise analysis are shown in **Appendix G**. The results of the detailed construction noise analysis at locations where "objectionable" noise level increases are predicted are summarized in **Table 19-10**.

TABLE 19-10
Construction Noise Analysis Results in dBA

Receptor	Address	Existing L_{10}	Max Total L_{10}	Max Change in L_{10}	Maximum Continuous Duration (months)	
					"Objectionable" Increase	"Very Objectionable" Increase
11, 12	2501 FULTON STREET	72.1	87.5	15.5	4	0
23	2473 ATLANTIC AVENUE	77.4	93.2	15.8	4	0
62-66	Building on Projected Development Site 1D	72.2	91.1	19.5	7	0

The Total L_{10} noise levels shown in **Table 19-10** are maximum 1-hour noise levels; however, noise levels resulting from construction typically fluctuate throughout the day and from day to day during each construction phase and would not be sustained at these maximum values. Additionally, noise levels expected to result from construction of either the Proposed Development or the Alternate Community Facility Scenario would be comparable to those from typical construction sites in New York City involving a new building with concrete slab floors and foundation.

At some existing and future receptors, construction of either the Proposed Development or the Alternate Community Facility Scenario would result in increments that would be considered objectionable (i.e., 15 dBA or greater). The potential for significant adverse impacts at these receptors was determined by evaluating the duration of these increments and, where applicable, interior noise levels above the acceptable range, as described below.

EXISTING RECEPTORS

Receptors 11 and 12 represent a mixed-use building with ground floor commercial and residential uses on upper floors, located at 2501 Fulton Street, northeast of either the Proposed Development or the Alternate Community Facility Scenario. Receptor 23 represents the East New York Inn, a hotel located southwest of either the Proposed Development or the Alternate Community Facility Scenario at 2473 Atlantic Avenue.

Existing noise levels at Receptors 11, 12, and 23 are in the low-to-high-70s dBA, which would be considered "marginally unacceptable" according to 2021 *CEQR Technical Manual* noise exposure criteria.

At Receptors 11 and 12, construction is predicted to result in noise levels in the mid-to-high 80s dBA resulting in noise level increments of up to approximately 16 dBA during the most noise-intensive stages of construction (i.e. demolition and footings) of the proposed building on Projected Development Site 1C, whose duration would be approximately four months. According to 2021 *CEQR Technical Manual* noise

exposure criteria, maximum construction noise levels at these receptors would be in the "clearly unacceptable" category. Based on the prediction of no "very objectionable" noise level increments and "objectionable" increments lasting no more than approximately four months, predicted construction noise would not rise to the level of a significant adverse noise impact at these receptors.

At Receptor 23, construction is predicted to result in noise levels in the mid-90s dBA resulting in noise level increments of up to approximately 16 dBA during the most noise-intensive stages of construction (i.e. demolition and footings) of the proposed building on Projected Development Site 1B, whose duration would be approximately four months. According to 2021 *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these receptors would be in the "clearly unacceptable" category. Based on the prediction of no "very objectionable" noise level increments and "objectionable" increments lasting no more than approximately four months, predicted construction noise would not rise to the level of a significant adverse noise impact at this receptor.

RECEPTORS AT PROJECTED DEVELOPMENT SITE 1D

The analysis assumes that the building on Projected Development Site 1D would be completed and occupied during approximately two and a half years of construction at the building on Projected Development Site 1E. Receptors 62-66 represent residential receptors at the building on Projected Development Site 1D.

Existing noise levels at Receptors 62-66 are in the low-70s dBA, which would be considered "marginally unacceptable" according to 2021 *CEQR Technical Manual* noise exposure criteria.

At Receptors 62-66, construction is predicted to result in noise levels in the low 90s dBA resulting in noise level increments of up to approximately 19.5 dBA during the most noise-intensive stages of construction (i.e. demolition and footings) of the proposed building on Projected Development Site 1E, whose duration would be approximately seven months. According to 2021 *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these receptors would be in the "clearly unacceptable" category. Based on the prediction of no "very objectionable" noise level increments and "objectionable" increments lasting no more than approximately seven months, predicted construction noise would not rise to the level of a significant adverse noise impact at these receptors.

OTHER NEARBY RECEPTORS

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

CONSTRUCTION MOBILE SOURCE NOISE

Construction worker vehicles and trucks traveling on roadways prior to the start of the construction workday would have the potential to generate noise at receptors along the routes used to access the construction sites. Construction worker vehicles and trucks traveling on roadways prior to the start of the construction workday would not have the potential to generate an "objectionable" or "very objectionable" noise level increase (i.e., 15 dBA or 20 dBA, respectively). Consequently, noise due to construction traffic would not rise to the level of a significant impact.

Construction vehicles traveling to and from construction sites during the construction workday are included in the detailed construction noise analysis described above.

Vibration

Construction activities have the potential to result in vibration levels that may cause structural or architectural damage, and/or annoyance or interference with vibration-sensitive activities. Vibratory levels at a given "receiver," are a function of the source strength (which is dependent upon the construction equipment and methods utilized), the distance between the equipment and the receiver, the characteristics of the transmitting medium, and the building construction of the receiver. Construction equipment operation causes ground vibrations which spread through the ground and decrease in strength with distance. Vehicular traffic, even in locations close to major roadways, typically does not result in perceptible vibration levels unless there are discontinuities in the roadway surface. Except in the case of fragile and possibly historically significant structures or buildings, construction activities generally do not reach the levels that can cause architectural or structural damage but can achieve levels that may be perceptible and annoying in buildings very close to a construction site. An assessment has been prepared to quantify potential vibration impacts of construction activities on structures and residences near the Project Area.

Construction Vibration Criteria

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

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

ANALYSIS METHODOLOGY

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

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

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

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

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

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

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

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

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

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

Table 19-11 shows vibration source levels for typical construction equipment.

TABLE 19-11
Vibration Source Levels for Construction Equipment (dBA)

Equipment	PPV_{ref} (in/sec)	Approximate L_{vf} (ref) (VdB)
Pile Driver	0.64	104
Loaded Trucks	0.076	86
Source: FTA Transit Noise and Vibration Impact Assessment (2018)		

Construction Vibration Analysis Results

The buildings of most concern with regards to the potential for structural or architectural damage due to vibration are the existing buildings and structures immediately adjacent to the construction work area. Pile installation would be the most vibration-intensive activity associated with either the Proposed Development or the Alternate Community Facility Scenario. Vibration levels at least 12 feet from pile installation locations may result in PPV levels no greater than 2.0 in/sec, which would be considered acceptable for non-historic buildings. Vibration levels at least 30 feet from pile installation locations may result in PPV levels no greater than 2.0 in/sec, which is generally considered acceptable for a non-historic building or structure. There are no structures within 12 feet of pile installation locations and no historic structures within 30 feet of pile installation locations. Additional receptors farther away from the Project Area would experience less vibration than those listed above, which would not be expected to cause structural or architectural damage.

The equipment that would have the most potential for producing potential vibration levels that would be perceptible and annoying, i.e., at levels that exceed the 65 VdB limit, is the impact pile driver. It would have the potential to produce perceptible vibration levels exceeding 65 VdB at receptor locations within approximately 500 feet, depending on soil conditions. There are multiple residential receptors within this distance from the Project Site. However, impact pile driver operation would only occur for limited periods of time at a particular location and therefore would not result in any significant adverse impacts.

Consequently, significant adverse vibration impacts would not result from construction of either the Proposed Development or the Alternate Community Facility Scenario.

Other Technical Areas

Land Use and Neighborhood Character

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

Socioeconomic Conditions

Construction activities could temporarily affect pedestrian and vehicular access. However, lane and/or sidewalk closures would not obstruct entrances to any existing businesses, and businesses are not expected to be significantly affected by any temporary reductions in the amount of pedestrian foot traffic or vehicular delays that could occur because of construction activities. Overall, construction activities associated with the Proposed Actions would not result in any significant adverse impacts on surrounding businesses.

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

Community Facilities and Services

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

Open Space

There are currently no publicly accessible open spaces in the projected development sites in the Project Area, and no open space resources would be used for staging or other construction activities. As discussed above, there would be no significant adverse air quality impacts on open spaces in the surrounding area considering dust control measures and other emission reduction measures incorporated into construction activities associates with the Proposed Actions. The construction noise analysis (discussed above) showed that, while construction noise could be perceptible at some of the nearby open spaces, the predicted construction noise levels would not rise to the level of a significant adverse impact and would therefore not result in a major change in the usability of these open space resources.

Historic and Cultural Resources

The Project Area does not possess archaeological significance, and therefore, the Proposed Actions do not have the potential to result in construction period archaeological impacts. The Proposed Actions would not result in any significant adverse direct impacts to architectural resources as no historic architectural resources are located within the Project Area. Moreover, no architectural resources are located within 90 feet of the Project Area. Therefore, the Proposed Actions would not result in any significant adverse construction-related impacts to historic architectural resources.

Hazardous Materials

An assessment of potential impacts on hazardous materials is described in **Chapter 9, "Hazardous Materials."** The hazardous materials assessment identified limited potential sources of subsurface contamination on, or in close proximity to, the projected development sites in the Project Area, including past or present industrial and automotive uses. To reduce the potential for significant adverse impacts associated with new construction resulting from the Proposed Actions, a hazardous materials (E)

designation would be assigned to the lots comprising the projected development sites in the Project Area. The (E) designation requires approval by the New York City Office of Environmental Remediation (OER) prior to obtaining permits from the New York City Department of Buildings (DOB) for any new development entailing soil disturbance. The environmental requirements for the (E) designation also include a mandatory Construction Health and Safety Plan (CHASP), which must be approved by OER. Adherence to these existing regulations would prevent impacts from construction activities at the projected development sites in the Project Area.