Chapter 19: Construction

A. INTRODUCTION

As described in Chapter 1, "Project Description," the Applicant (a joint venture between Kaufman Astoria Studios, BedRock Real Estate Partners, and Silverstein Properties) is seeking a series of land use actions including zoning map amendments, zoning text amendments, and special permits (the Proposed Actions) from the City Planning Commission (CPC) pursuant to the City's Uniform Land Use Review Procedure (ULURP) to facilitate the Applicant's intended development and programming. The area subject to the Proposed Actions is the five city blocks bounded by 35th Avenue to the north, 43rd Street/Northern Boulevard to the east, 36th Avenue to the south and 37th Street to the west in the Astoria neighborhood of Queens in Community District 1. The Project Area (Blocks 641, 668, 669, 670, and 671) contains 43 lots, of which 21 are controlled by the Applicant while the remaining lots are controlled by others. With the Proposed Actions, the Applicant-controlled lots would be controlled by a Large Scale General Development (LSGD) Special Permit and would contain the Proposed Development (Projected Development Sites A, B, C, D, and E): these lots are referred to as the "Development Site." The lots outside of the Development Site are not included in the Proposed Development but would be rezoned with the Proposed Actions: these lots are referred to as the "Additional Affected Area." For purposes of analysis, it is assumed that development within the Project Area, including new development in the Additional Affected Area (Projected Development Sites F, G, H, I, J, and K), would occur over an approximately 10-year period through the year 2032, which is typically the length of time over which developers would act on the area-wide zoning map changes such as those proposed.

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

PRINCIPAL CONCLUSIONS

Construction associated with the Proposed Actions would result in temporary disruptions in the surrounding area. As described below, the Proposed Actions' construction activities would result in significant adverse transportation and noise impacts. For all other technical areas, construction activities associated with the Proposed Actions would not result in significant adverse impacts. Findings specific to each of the key technical areas are summarized below.

TRANSPORTATION

Construction travel demand is expected to peak in the fourth quarter of Year 2 construction, and this period is therefore analyzed for potential transportation impacts during construction.

Traffic

During construction, traffic would be generated by construction workers commuting via autos and by trucks making deliveries to projected development sites. Based on the anticipated numbers of vehicle trips from construction trucks and construction worker autos, and operational trips from completed portions of the Proposed Actions' Reasonable Worst Case Development Scenario (RWCDS), incremental vehicle trips during the Year 2 construction (fourth quarter) peak construction period are expected to be less than the incremental peak hour trips that would be generated during the weekday AM and PM peak hours with full build-out of the Proposed Actions. In addition, there is typically less overall traffic on the study area street network during the 6:00–7:00 a.m. and 3:00–4:00 p.m. construction peak hours than during the analyzed 7:45–8:45 a.m. and 4:00–5:00 p.m. operational peak hours.

Construction traffic conditions were evaluated during the Year 2 construction (fourth quarter) construction AM and PM peak hours at 24 intersections (19 signalized and five unsignalized) in the traffic study area where construction vehicle trips would exceed the 50-trips/hour *CEQR Technical Manual* analysis threshold in one or both construction peak hours. As summarized in **Tables 19-1 and 19-2**, the construction traffic impact analysis indicates the potential for significant adverse impacts at 11 lane groups at 8 intersections in the weekday AM construction peak hour, and 19 lane groups at 11 intersections in the weekday PM construction peak hour. Chapter 20, "Mitigation," discusses potential measures to mitigate these significant adverse traffic impacts.

Table 19-1
Number of Impacted Intersections and Lane Groups by Peak Hour
Year 2 Construction (Fourth Quarter) Peak Construction Period

	Construction Peak Hour	
	AM	PM
Impacted Lane Groups	11	19
Impacted Intersections	8	11

Transit

The Project Area is located in a neighborhood that is well served by public transportation, with a total of three subway stations and four bus routes located in the vicinity of the Project Area. In the Year 2 construction period, transit conditions during the 6:00–7:00 a.m. and 3:00–4:00 p.m. construction peak hours are expected to be generally better than during the analyzed operational peak hours with full build-out of the Proposed Actions' RWCDS in 2032, as incremental demand would be lower during construction, and most construction trips would not occur during the peak hours of commuter demand. Consequently, there would be less likelihood of significant adverse subway and bus transit impacts during the peak construction period than with full build-out of the RWCDS in 2032. It is anticipated that proposed mitigation measures for the line haul impacts from the operational demand in 2032 under the Proposed Actions would also be effective at mitigating any potential impacts from construction subway trips during the peak construction period. Should any significant adverse line haul impacts occur in either of these periods, they would potentially remain unmitigated pending the implementation of practicable mitigation measures.

Table 19-2
Summary of Significantly Impacted Intersections
Year 2 Construction (Fourth Quarter)
Peak Construction Period

Signalized Intersections	Construction Peak Hour	
	Weekday AM	Weekday PM
35th Ave & Steinway Street		X
35th Ave & 41st Street		X
36th Ave & Steinway Street		X
Northern Blvd & 39th St / Steinway St	X	X
Northern Blvd & 41st St	X	
Northern Blvd & 42nd St / Driveway		X
Northern Blvd & 42nd Pl / 43rd Street		X
Northern Blvd & 44th St / 35th Ave	X	X
Northern Blvd & 46th St	X	
Northern Blvd & 48th St / 34th Ave	X	X
Northern Blvd & 51st St / Woodside Ave	X	X
43rd Ave & 39th Street		X
Greenpoint Ave & Hunters Point Ave	X	
Greenpoint Ave & Borden Ave	X	X
Total Impacted Intersections	**8**	**11**

X - denotes intersection significantly impacted in peak hour.

Pedestrians

In the Year 2 peak construction period, pedestrian trips by construction workers would be dispersed among the four Projected Development Sites that would be under construction in this period (Sites C, D, G, and H), and would be substantially fewer in number than with full build-out of the Proposed Actions' RWCDS. They would also primarily occur during the weekday 6:00–7:00 a.m. and 3:00–4:00 p.m. construction peak hours, outside of the weekday AM and PM commuter peak periods and the weekday midday and Saturday peak periods when area pedestrian facilities typically experience the greatest demand. Pedestrian conditions during the construction peak hours in the peak construction period are expected to be generally better than during the analyzed operational peak hours with full build-out of the Proposed Actions' RWCDS in 2032, and significant adverse sidewalk, corner area and crosswalk impacts are not expected to occur.

Parking

Construction worker parking demand would total approximately 337 spaces in the Year 2 peak construction period. This demand would need to be accommodated in nearby off-street public parking facilities, or by on-street parking. Consequently, construction worker parking demand may potentially contribute to, or result in, off-street and on-street parking shortfalls in the peak construction period. Any such shortfalls would not be considered significant under *CEQR Technical Manual* criteria given the availability of alternative modes of transportation near the Project Area.

AIR QUALITY

Measures would be taken to reduce pollutant emissions during construction under the Proposed Actions in accordance with all applicable laws, regulations, and building codes. These include the

use of ultra-low sulfur diesel (ULSD) fuel, dust suppression measures, idling restrictions, and diesel equipment reduction. In addition, construction of the Proposed Development would utilize newer equipment (i.e., equipment meeting the U.S. Environmental Protection Agency's [EPA] Tier 3 emission standard) and best available tailpipe reduction technologies to further reduce air pollutant emissions. With the implementation of these emission reduction measures, the dispersion modeling analysis of construction-related air emissions for both non-road and on-road sources determined that particulate matter ($PM_{2.5}$ and PM_{10}), annual average nitrogen dioxide (NO_2), and carbon monoxide (CO) concentrations would be below the National Air Quality Ambient Standards (NAAQS). Therefore, construction under the Proposed Actions would not result in significant adverse air quality impacts due to construction sources.

NOISE

Based on the projected construction activities predicted at each Projected Development Site, construction-generated noise is expected to exceed the *CEQR Technical Manual* noise impact thresholds as well as result in "objectionable" and "very objectionable" noise level increases at receptors adjacent to the construction area. Receptors where noise level increases were predicted to exceed the construction noise evaluation thresholds for extended durations were identified.

Fourteen construction time periods were analyzed and the results from each of these analysis time periods were utilized to represent the entire duration of construction from 2022 through 2032. The construction noise analysis predicted noise levels due to construction could exceed the *CEQR Technical Manual* impact criteria throughout the Project Area, including at Projected Development Sites that are completed and occupied while other nearby or adjacent Projected Development Sites are under construction. Construction could produce noise levels that would be noticeable and potentially intrusive during the most noise-intensive construction activities at some receptors. While the highest levels of predicted construction noise would not persist throughout construction, and noise levels would fluctuate resulting in noise increases that would be intermittent, these locations would experience construction noise levels whose magnitude and duration could constitute significant adverse impacts.

At most locations predicted to experience an exceedance of the noise impact threshold criteria, the exceedances would be due primarily to noise generated by on-site construction activities (rather than construction-related traffic). The construction noise analysis examined the reasonable worst-case peak hourly noise levels resulting from construction in each analyzed time period, and is therefore conservative in predicting increases in noise levels. Typically, the loudest hourly noise level during each analysis period would not persist throughout the entire time that the analysis period represents. Additionally, this analysis is based on RWCDS conceptual site plans and construction schedules. It is possible that the actual construction may be of less magnitude, or that construction on multiple Projected Development Sites may not overlap, in which case construction noise would be less than the analysis predicts. Finally, the construction noise analysis accounts for the cumulative effects of construction of all Projected Development Sites, including both the Proposed Development and the Additional Affected Area. Construction of the Sites included in the Additional Affected Area may not occur simultaneously with that of the Proposed Development or not occur at all, in which case construction noise would also be less than the analysis predicts.

VIBRATION

The buildings of most concern with regard to the potential for structural or architectural damage due to vibration are the existing buildings and structures immediately adjacent to the Projected Development Sites. However, given their distances from anticipated locations of rock excavation, vibration levels at these buildings and structures would not be expected to exceed 0.50 in/sec Peak Particle Velocity (PPV), including during pile driving, which would be the most vibration intensive activity. Additional receptors farther away from the Project Area would experience less vibration than those listed above, and similarly would not be expected to cause structural or architectural damage.

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

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

B. GOVERNMENTAL COORDINATION AND OVERSIGHT

Construction oversight involves several city, state, and federal agencies. **Table 19-3** lists the primary involved agencies and their areas of responsibility. For projects in New York City, primary construction oversight lies with the New York City Department of Buildings (DOB), which ensures that construction projects meet the requirements of the New York City Building Code and that buildings are structurally, electrically, and mechanically safe. In addition, DOB enforces safety regulations to protect workers and the general public during construction: the areas of oversight include installation and operation of equipment such as cranes, sidewalk sheds, and safety netting and scaffolding. The New York City Department of Environmental Protection (DEP) enforces the New York City Noise Code, reviews and approves any needed Remedial Action Work Plans (RAWPs) and Construction Health and Safety Plans (CHASP), and regulates water disposal into the sewer system as well as abatement of hazardous materials. The City of New York Department of Sanitation (DSNY) has regulatory and enforcement oversight of the storage, transport, and disposal of asbestos waste. The New York City Fire Department (FDNY) has primary oversight of compliance with the New York City Fire Code and the installation of tanks containing flammable materials. The New York City Department of Transportation (DOT)'s Office of Construction Mitigation and Coordination (OCMC) reviews and approves any traffic lane and sidewalk closures. The New York City Landmarks Preservation Commission (LPC) reviews any archaeological testing or monitoring that may be required. LPC also reviews and approves construction protection plans (CPPs) and any monitoring measures necessary to prevent damage to historic structures.

At the state level, the New York State Department of Labor (DOL) licenses asbestos workers. The New York State Department of Environmental Conservation (DEC) regulates disposal of hazardous materials, and construction and operation of bulk petroleum and chemical storage tanks. At the federal level, the U.S. Environmental Protection Agency (EPA) has wide-ranging authority over environmental matters, including air emissions, noise, hazardous materials, and the use of poisons, although much of the responsibility is delegated to the state level. The Occupational

Safety and Health Administration (OSHA) sets standards for work site safety and construction equipment.

Table 19-3
Construction Oversight in New York City

Agency	Areas of Responsibility
New York City	
Department of Buildings	Primary oversight for Building Code and site safety
Department of Environmental Protection	Noise, RAPs/CHASPs, dewatering, hazardous materials abatement
City of New York Department of Sanitation	Storage, transport, and disposal of asbestos waste
Fire Department	Compliance with Fire Code, fuel tank installation
Department of Transportation	Lane and sidewalk closures
Landmarks Preservation Commission	Historic and archaeological resources
New York State	
Department of Labor	Asbestos Workers
Department of Environmental Conservation	Hazardous materials and fuel/chemical storage tanks
United States	
Environmental Protection Agency	Air emissions, noise, hazardous materials, poisons
Occupational Safety and Health Administration	Worker safety

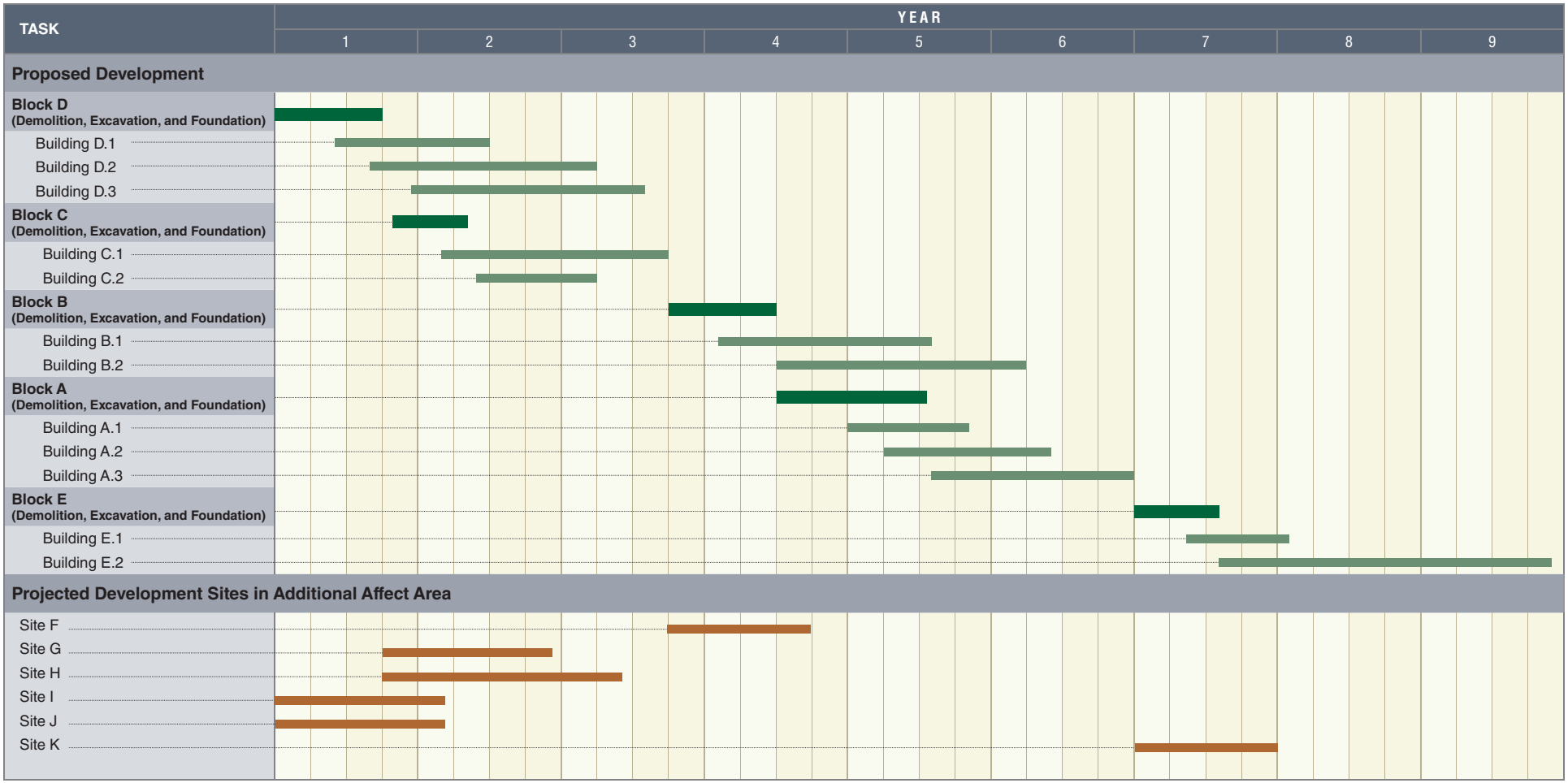
C. CONCEPTUAL CONSTRUCTION PHASING AND SCHEDULE

The Development Site (Projected Development Sites A, B, C, D, and E) would be developed by the Applicant with the Proposed Development, which would include 12 buildings. In addition, the Proposed Actions includes new developments that would be facilitated on the Projected Development Sites not controlled by the Applicant (Projected Development Sites F, G, H, I, J, and K).

At this time, there are no finalized construction programs or designs for the Proposed Development and the projected developments sites in the Additional Affected Area. Actual construction methods and materials may vary, depending on how the construction contractors choose to implement work to be most cost effective, within the requirements set forth in bid, contract, and construction documents. Construction specifications would require that construction contractors comply with applicable environmental regulations and obtain necessary permits for the duration of construction. In addition, construction under the Proposed Actions would be required to follow applicable federal, state, and local laws for building and safety, as well as local noise ordinance, as appropriate. Therefore, for analysis purposes, a reasonable worst-case conceptual construction phasing and schedule for the development anticipated to occur under the Proposed Actions was established to illustrate how construction could occur over approximately the next 10 years. The conceptual construction schedule conservatively accounts for overlapping construction activities and simultaneously operating construction equipment, thus capturing the cumulative nature of potential construction impacts which would result at nearby receptors.

Table 19-4 and **Figure 19-1** presents the anticipated construction schedule for the Proposed Development and the projected development sites in the Additional Affected Area, which is anticipated to occur over an approximately 10-year period through 2032.

Construction under the Proposed Actions would proceed in several stages, some of which would overlap: demolition, excavation, foundation, superstructure, exteriors, and interiors. These stages are described in greater detail below.



INNOVATION QNS
ASTORIA, QUEENS
COMMUNITY DISTRICT 1

Conceptual Construction Schedule
Figure 19-1

Table 19-4
Conceptual Construction Schedule

Construction Task	Start Month	Finish Month	Approximate Duration (months)[1]
Proposed Development			
Block D (Demolition, Excavation, and Foundation)	Year 1, Month 1	Year 1, Month 9	9
--Building D.1 (Superstructure)	Year 1, Month 6	Year 1, Month 11	6
--Building D.1 (Exteriors)	Year 1, Month 11	Year 2, Month 3	5
--Building D.1 (Interiors)	Year 1, Month 12	Year 2, Month 6	7
--Building D.2 (Superstructure)	Year 1, Month 9	Year 2, Month 2	6
--Building D.2 (Exteriors)	Year 1, Month 12	Year 3, Month 2	15
--Building D.2 (Interiors)	Year 2, Month 1	Year 3, Month 3	15
--Building D.3 (Superstructure)	Year 1, Month 12	Year 2, Month 8	9
--Building D.3 (Exteriors)	Year 2, Month 6	Year 2, Month 11	6
--Building D.3 (Interiors)	Year 2, Month 7	Year 3, Month 7	13
Block C (Demolition, Excavation, and Foundation)	Year 1, Month 10	Year 2, Month 5	8
--Building C.1 (Superstructure)	Year 2, Month 3	Year 2, Month 8	6
--Building C.1 (Exteriors)	Year 2, Month 6	Year 3, Month 3	10
--Building C.1 (Interiors)	Year 2, Month 7	Year 3, Month 9	15
--Building C.2 (Superstructure)	Year 2, Month 6	Year 2, Month 9	4
--Building C.2 (Exteriors)	Year 2, Month 9	Year 3, Month 1	5
--Building C.2 (Interiors)	Year 2, Month 10	Year 3, Month 3	6
Block B (Demolition, Excavation, and Foundation)	Year 3, Month 10	Year 4, Month 6	9
--Building B.1 (Superstructure)	Year 4, Month 2	Year 4, Month 7	6
--Building B.1 (Exteriors)	Year 4, Month 5	Year 4, Month 12	8
--Building B.1 (Interiors)	Year 4, Month 6	Year 5, Month 7	14
--Building B.2 (Superstructure)	Year 4, Month 7	Year 4, Month 12	6
--Building B.2 (Exteriors)	Year 4, Month 9	Year 5, Month 8	12
--Building B.2 (Interiors)	Year 4, Month 10	Year 6, Month 3	18
Block A (Demolition, Excavation, and Foundation)	Year 4, Month 7	Year 5, Month 7	13
--Building A.1 (Superstructure)	Year 5, Month 1	Year 5, Month 3	3
--Building A.1 (Exteriors)	Year 5, Month 3	Year 5, Month 8	6
--Building A.1 (Interiors)	Year 5, Month 4	Year 5, Month 10	7
--Building A.2 (Superstructure)	Year 5, Month 4	Year 5, Month 7	4
--Building A.2 (Exteriors)	Year 5, Month 6	Year 6, Month 3	10
--Building A.2 (Interiors)	Year 5, Month 7	Year 6, Month 5	11
--Building A.3 (Superstructure)	Year 5, Month 8	Year 5, Month 11	4
--Building A.3 (Exteriors)	Year 5, Month 10	Year 6, Month 5	8
--Building A.3 (Interiors)	Year 5, Month 11	Year 6, Month 12	14
Block E (Demolition, Excavation, and Foundation)	Year 7, Month 1	Year 7, Month 7	7
--Building E.1 (Superstructure)	Year 7, Month 5	Year 7, Month 5	4
--Building E.1 (Exteriors)	Year 7, Month 8	Year 7, Month 12	5
--Building E.1 (Interiors)	Year 7, Month 9	Year 8, Month 1	5
--Building E.2 (Superstructure)	Year 7, Month 8	Year 8, Month 5	10
--Building E.2 (Exteriors)	Year 7, Month 12	Year 8, Month 12	13
--Building E.2 (Interiors)	Year 8, Month 1	Year 9, Month 11	23

Table 19-4 (cont'd)
Conceptual Construction Schedule

Construction Task	Start Month	Finish Month	Approximate Duration (months)[1]
Projected Development Sites in Additional Affect Area			
Site F	Year 3, Month 10	Year 4, Month 9	12
--Demolition/Excavations/Foundation	Year 3, Month 10	Year 3, Month 12	3
--Superstructure	Year 4, Month 1	Year 4, Month 4	4
--Exteriors	Year 4, Month 2	Year 4, Month 8	7
--Interiors	Year 4, Month 5	Year 4, Month 9	5
Site G	Year 1, Month 10	Year 2, Month 11	14
--Demolition/Excavations/Foundation	Year 1, Month 10	Year 2, Month 1	4
--Superstructure	Year 2, Month 2	Year 2, Month 5	4
--Exteriors	Year 2, Month 5	Year 2, Month 9	5
--Interiors	Year 2, Month 6	Year 2, Month 11	6
Site H	Year 1, Month 10	Year 3, Month 5	20
--Demolition/Excavations/Foundation	Year 1, Month 10	Year 2, Month 2	5
--Superstructure	Year 2, Month 3	Year 2, Month 7	5
--Exteriors	Year 2, Month 5	multiple	
--Interiors	Year 2, Month 6	Year 3, Month 5	12
Site I	Year 1, Month 1	Year 2, Month 2	14
--Demolition/Excavations/Foundation	Year 1, Month 1	Year 1, Month 4	4
--Superstructure	Year 1, Month 5	Year 1, Month 8	4
--Exteriors	Year 1, Month 8	Year 1, Month 12	5
--Interiors	Year 1, Month 9	Year 2, Month 2	6
Site J	Year 1, Month 1	Year 2, Month 2	14
--Demolition/Excavations/Foundation	Year 1, Month 1	Year 1, Month 4	
--Superstructure	Year 1, Month 5	Year 1, Month 8	4
--Exteriors	Year 1, Month 8	Year 1, Month 12	5
--Interiors	Year 1, Month 9	Year 2, Month 2	6
Site K	Year 7, Month 1	Year 7, Month 12	12
--Demolition/Excavations/Foundation	Year 7, Month 1	Year 7, Month 3	3
--Superstructure	Year 7, Month 4	Year 7, Month 7	4
--Exteriors	Year 7, Month 7	Year 7, Month 12	8
--Interiors	Year 7, Month 8	Year 7, Month 12	5

Notes:
[1] Construction would proceed in several stages, some of which would overlap.
[2] Exteriors include Window Wall, Roofing, and Landscaping.
Source: Turner Construction, July 2021

D. CONSTRUCTION DESCRIPTION

The following provides a description of the general construction practices and activities under the Proposed Actions.

GENERAL CONSTRUCTION PRACTICES

HOURS OF WORK

Construction would generally be carried out in accordance with New York City laws and regulations, which allow construction activities between 7 AM and 6 PM on weekdays. Construction work would typically begin at 7 AM on weekdays, with most workers arriving

between 6 AM and 7 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 PM and would not include all construction workers on-site, but only those involved in the specific task requiring additional work time.

While not expected to be frequent, weekend or night work may also be occasionally required for certain construction activities. Appropriate work permits from DOB would be obtained for any necessary work outside of normal construction hours 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 AND ACCESS

During construction, access to the construction areas would typically be fully controlled. Work areas would be fenced off, and limited access points for workers and trucks would be provided. Material deliveries to the construction site would be controlled and scheduled. After work hours, the gates are closed and locked. Pedestrian circulation along the perimeter of the Development Sites as well as the number of moving lanes on streets adjacent to the Development Sites are expected to be maintained at all times during construction. Maintenance and Protection of Traffic (MPT) plans would be developed as required by DOT. Approval and implementation of these plans would be coordinated with DOT's OCMC. Measures specified in the MPT plans that are typically implemented would include parking lane closures, safety signs, safety barriers, and construction fencing.

PUBLIC SAFETY

A variety of measures would typically be employed to ensure public safety during the construction, including sidewalk bridges to provide overhead protection; safety signs to alert the public about active construction work; safety barriers to ensure the safety of the public passing by construction areas; flag persons to control trucks entering and exiting the construction areas and/or to provide guidance for pedestrians and bicyclists safety; and safety nettings as the superstructure work advances upward to prevent debris from falling to the ground. All DOB safety requirements would be followed to ensure the safety of the community and the construction workers themselves.

RODENT CONTROL

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

DESCRIPTION OF CONSTRUCTION ACTIVITIES

Prior to the commencement of construction, the work area would typically be prepared for construction, including the installation of public safety measures such as barriers, netting, and signs. The construction areas would be fenced off. Worker and truck access points would be established, and existing street trees would be protected.

Construction would then proceed with the demolition, excavation, foundation, superstructure, exteriors, and interiors stages, which are discussed below.

DEMOLITION

Before the commencement of demolition activities on the existing buildings on the Development Site and the Additional Affected Area, the buildings would typically be surveyed for asbestos by a New York City-certified asbestos investigator and all asbestos-containing materials (ACM) would be removed and disposed of in accordance with local, state, and federal requirements. Any activities with the potential to disturb lead-based paint (LBP) would be performed in accordance with the applicable OSHA regulations (including federal OSHA regulation 29 CFR 1926.62—*Lead Exposure in Construction*). In addition, any suspected polychlorinated biphenyls (PCB)-containing equipment that would be disturbed (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 buildings would be demolished using excavators with hoe ram attachments. Demolition activities would typically involve the use of jackhammers, compressors, and bobcats. Demolition debris would typically be sorted prior to being disposed at landfills to maximize recycling opportunities.

EXCAVATION

Excavation work would typically begin with the installation of walls and berms to contain soil around the excavation area, and excavators would then be used to excavate soil. The soil would be loaded onto dump trucks for transport to a licensed disposal facility or stored for reuse on any portion of the Project Area that needs fill. Excavation activities would also typically involve the use of bobcats, generators, compressors, and loaders.

Dewatering

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

FOUNDATION

This stage would include the construction of the foundation and below-grade elements of the proposed buildings. The foundation stage may include pile installation activities with the use of drill rigs. Concrete trucks would be used to pour the foundation and the below-grade structures. Foundation activities would also typically involve the use of bar bending machines and concrete vibrators.

SUPERSTRUCTURE

The superstructure work would include the framework for the proposed buildings, such as beams, slabs, and columns. Construction of the interior structure—or core—of the buildings would include elevator shafts; vertical risers for mechanical, electrical, and plumbing systems; electrical and mechanical equipment rooms; core stairs; and restroom areas. A crane would be used to lift structural components and other large material during the superstructure task. Superstructure activities would

also typically include the use of bar bending machines, concrete vibrators, concrete finishers, forklift, and a variety of trucks. In addition, temporary construction elevators (hoists) would be used for the vertical movement of workers and materials during superstructure activities.

EXTERIORS

During this stage of construction, the exterior envelope systems of the proposed buildings would be installed. The exterior units would typically be transported via a hoist to the appropriate floors for installation or lift into place by a crane. This stage of construction would typically overlap with a portion of the superstructure work.

INTERIORS

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

Interiors and finishing 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 buildings with the façades substantially complete and the proposed buildings enclosed.

E. NUMBER OF CONSTRUCTION WORKERS AND MATERIAL DELIVERIES

Tables 19-5 through 19-7 shows the estimated averaged daily numbers of workers and deliveries for the Proposed Development, the Projected Development Sites in the Additional Affected Area, and combination of all developments under the Proposed Actions, by calendar quarter for all construction activities. For the Proposed Actions, the combined peak construction worker vehicle and truck trip generation would occur during the fourth quarter of Year 2 construction. The average number of workers throughout the construction period would be 484 per day. The peak number of workers would be 1,051 per day in the fourth quarter of Year 2 construction. For truck trips, the average number of trucks would be 66 per day, and the peak would occur in the fourth quarter of Year 2 construction, with 161 trucks per day.

Table 19-5
Average Number of Daily Workers and Trucks by Quarter
Proposed Development

Year	Year 1				Year 2				Year 3			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	147	183	226	407	499	612	714	**792**	782	625	289	169
Trucks	15	22	29	41	87	85	99	116	98	54	25	16
Year	Year 4				Year 5				Year 6			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	210	260	443	538	646	732	783	767	630	370	319	195
Trucks	27	38	60	86	94	**118**	110	99	80	46	33	19
Year	Year 7				Year 8				Year 9			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	135	164	199	239	284	331	375	409	418	384	291	194
Trucks	17	26	30	34	37	31	30	30	30	30	26	19
Year												
Quarter					Average				Peak			
Workers					410				792			
Trucks					51				118			

Table 19-6
Average Number of Daily Workers and Trucks by Quarter
Projected Development Sites in Additional Affected Area

Year	Year 1				Year 2				Year 3			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	132	163	207	**371**	342	231	278	259	186	123	0	34
Trucks	32	24	31	**84**	55	36	58	45	28	13	0	15
Year	Year 4				Year 5				Year 6			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	44	53	64	0	0	0	0	0	0	0	0	0
Trucks	9	23	19	0	0	0	0	0	0	0	0	0
Year	Year 7				Year 8				Year 9			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	34	44	53	64	0	0	0	0	0	0	0	0
Trucks	15	9	23	19	0	0	0	0	0	0	0	0
Year												
Quarter					Average				Peak			
Workers					75				371			
Trucks					15				84			

Table 19-7
Average Number of Daily Workers and Trucks by Quarter
Proposed Actions
(Proposed Development + Projected Development Sites in Additional Affected Area)

Year	Year 1				Year 2				Year 3			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	279	345	432	778	841	843	992	**1051**	968	748	289	203
Trucks	47	46	60	125	142	121	157	**161**	126	66	25	31
Year	Year 4				Year 5				Year 6			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	254	313	507	538	646	732	783	767	630	370	319	195
Trucks	36	61	79	86	94	118	110	99	80	46	33	19
Year	Year 7				Year 8				Year 9			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	169	208	252	303	284	331	375	409	418	384	291	194
Trucks	33	35	53	53	37	31	30	30	30	30	26	19
Year												
Quarter					Average				Peak			
Workers					484				1,051			
Trucks					66				161			

F. ENVIRONMENTAL EFFECTS OF THE PROPOSED DEVELOPMENT'S CONSTRUCTION ACTIVITIES

Similar to other construction projects in New York City, construction under the Proposed Actions would result in some temporary disruptions to the surrounding area. The following analysis describes the temporary effects on transportation, air quality, noise, and vibration. It also considers potential effects in other technical areas including land use and neighborhood character, socioeconomic conditions, community facilities, open space, historic and cultural resources, hazardous materials, and water and sewer infrastructure.

TRANSPORTATION

The Proposed Development would redevelop the Development Site with a series of mixed-use buildings and publicly accessible open space. In addition, the Proposed Actions would facilitate the redevelopment of several projected development sites in the Additional Affected Area that are not controlled by the Applicant. These developments would replace existing and anticipated as-of-right development. During the peak construction period (the fourth quarter of Year 2 construction), the Project Area would generate trips from construction workers traveling to/from the area and from the movement of materials and equipment. There would also be operational trips generated by completed portions of the Proposed Actions' RWCDS (Projected Development Sites I and J and Building D.1 on Projected Development Site D). Given typical construction hours, worker trips would be more concentrated in the early morning and mid-afternoon periods on weekdays than during the peak travel periods for operational travel demand.

TRAFFIC

As discussed above, average daily on-site construction workers and trucks were forecast for new construction anticipated on each of the sites in the Project Area under With Action conditions. (Although some construction workers and trucks would be present in the No Action condition, for

conservative analysis purposes, no credit was taken for these trips.) As shown in **Table 19-7**, the average number of workers would peak at an estimated 1,051 per day in the fourth quarter of Year 2 construction, and the average number of trucks per day would peak at an estimated 161 during this same period. These represent peak days of work, and most other days during the construction period would have substantially fewer construction workers and trucks on-site. Overall, the fourth quarter of Year 2 construction is expected to be the peak period for total construction travel demand (worker trips and truck trips combined). An assessment of traffic generated during this peak construction period is presented below.

Modal split and vehicle occupancy rates for construction workers were based on data from a 2017 survey of construction workers at a project site in Astoria and guidance from NYCDOT. Based on these data, it is anticipated that approximately 44 percent of construction workers would use public transportation in their commute to and from the Project Area, which is well served by subway and bus transit. Approximately 48 percent of workers are expected to travel by personal automobile and three percent by taxi, with an average occupancy of approximately 1.50 persons per vehicle. Approximately five percent are expected to walk or bicycle. **Table 19-8** shows a forecast of incremental hourly construction worker auto and construction truck trips during the peak construction period. The temporal distribution for these vehicle trips was based on typical work shift allocations and conventional arrival/departure patterns for construction workers. Each worker vehicle was assumed to arrive in the morning and depart in the afternoon or early evening, whereas truck deliveries would occur throughout the construction day. To avoid congestion and ensure that materials are on-site for the start of each shift, construction truck deliveries would often peak during the hour before the regular day shift, overlapping with construction worker arrival traffic. Each truck delivery was assumed to result in two truck trips during the same hour (one inbound and one outbound). For analysis purposes, truck trips were converted into Passenger Car Equivalents (PCEs) based on one truck being equivalent to an average of two PCEs.

Table 19-8
Year 2 Construction (Fourth Quarter) Peak Incremental Construction Vehicle Trip Projections (in PCEs)

	Auto Trips					Taxi Trips					Truck Trips					Total Vehicle Trips		
	In		Out			In		Out			In		Out					
Hour	%	#	%	#	Total	%	#	%	#	Total	%	#	%	#	Total	In	Out	Total
6–7 AM	80%	270	0%	0	270	80%	18	0%	18	36	25%	82	25%	82	164	370	100	470
7–8 AM	20%	67	0%	0	67	20%	4	0%	4	8	10%	32	10%	32	64	103	36	139
8–9 AM	0%	0	0%	0	0	0%	0	0%	0	0	10%	32	10%	32	64	32	32	64
9–10 AM	0%	0	0%	0	0	0%	0	0%	0	0	10%	32	10%	32	64	32	32	64
10–11 AM	0%	0	0%	0	0	0%	0	0%	0	0	10%	32	10%	32	64	32	32	64
11 AM–12 PM	0%	0	0%	0	0	0%	0	0%	0	0	10%	32	10%	32	64	32	32	64
12–1 PM	0%	0	0%	0	0	0%	0	0%	0	0	10%	32	10%	32	64	32	32	64
1–2 PM	0%	0	0%	0	0	0%	0	0%	0	0	5%	16	5%	16	32	16	16	32
2–3 PM	0%	0	5%	17	17	0%	1	5%	1	2	5%	16	5%	16	32	17	34	51
3–4 PM	0%	0	80%	270	270	0%	18	80%	18	36	2.5%	8	2.5%	8	16	26	296	322
4–5 PM	0%	0	15%	50	50	0%	3	15%	3	6	2.5%	8	2.5%	8	16	11	61	72
5–6 PM	0%	0	0%	0	0	0%	0	0%	0	0	0%	0	0%	0	0	0	0	0

As shown in **Table 19-8**, in the peak construction period, construction-related traffic is expected to peak during the 6:00–7:00 a.m. and 3:00–4:00 p.m. periods. During the 6:00–7:00 a.m. peak hour there would be a total of 470 PCE vehicle trips, including 370 inbound trips and 100 outbound trips. During the 3:00–4:00 p.m. peak hour there would be a total of 322 PCE trips, including 26 inbound trips and 296 outbound trips. During these same peak hours there would also be a net

increase in operational vehicle trips from completed development on projected development sites (Sites I and J and Building D.1 on Site D). Operational traffic would total approximately 10 PCE trips (all outbound) during the 6:00–7:00 a.m. peak hour, and 48 PCE trips (28 inbound and 20 outbound) in the 3:00–4:00 p.m. peak hour. Therefore, as shown in **Table 19-9**, peak construction period, the increase in traffic (construction plus operational) during the 6:00–7:00 a.m. and 3:00–4:00 p.m. construction peak hours would total approximately 480 and 370 PCE trips, respectively.

Table 19-9
Year 2 Construction (Fourth Quarter)
Peak Incremental Construction and
Operational Vehicle Trip Projections (in PCEs)

	Construction Trips				Operational Trips				Total Construction + Operational Trips
	Auto	Taxi	Truck	Total	Auto	Taxi	Truck	Total	
6 AM–7 AM	270	36	164	470	6	4	0	10	480
3 PM–4 PM	270	36	16	322	36	12	0	48	370

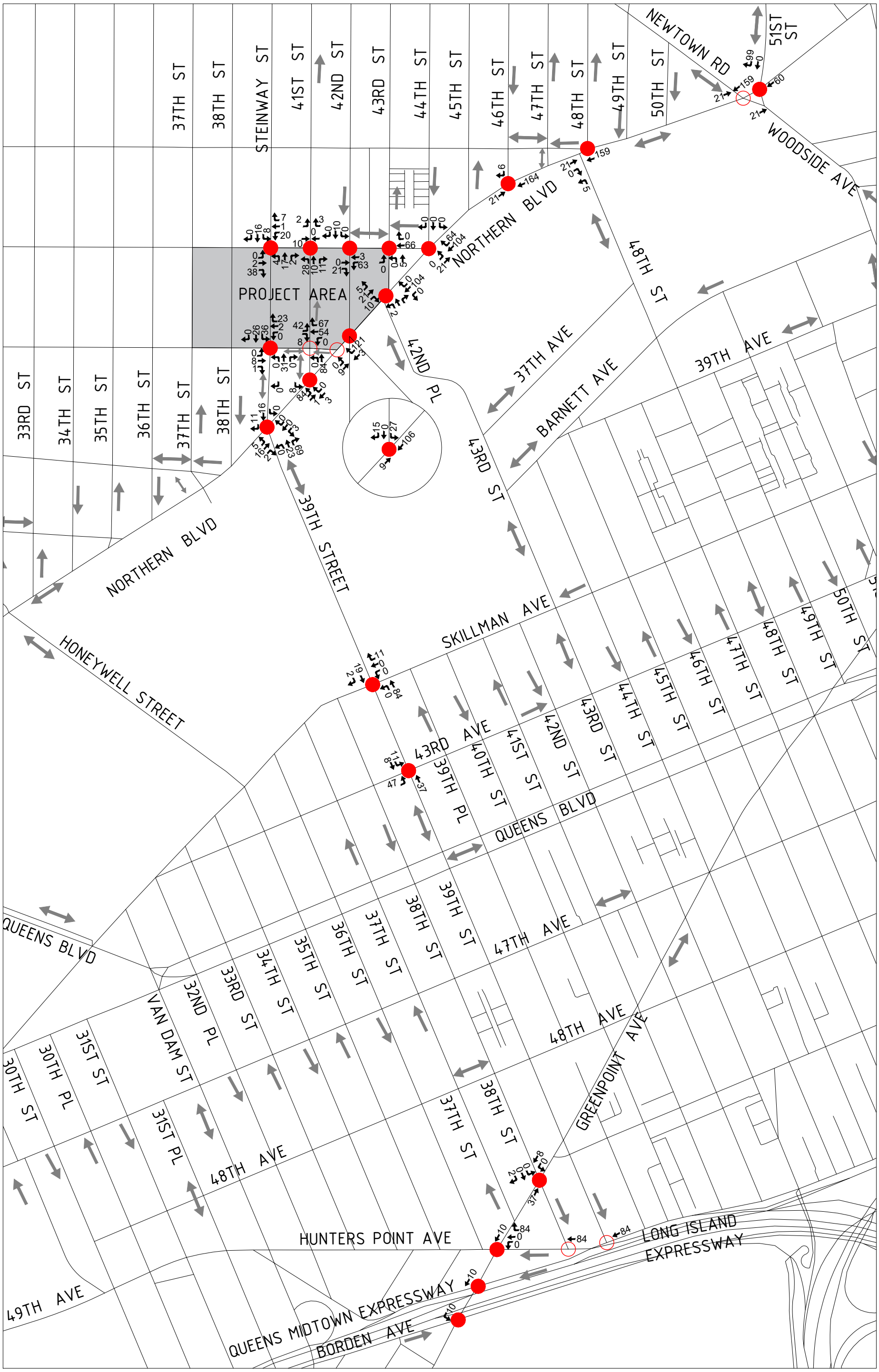
Figures 19-2 and 19-3 show the assignment of the Year 2 (fourth quarter) operational and construction vehicle trips to the study area street network in the AM and PM construction peak hours, respectively. Operational auto, taxi, and truck trips were assigned to the study area street network based on the assignment methodology described in detail in Chapter 13, "Transportation," and in the *Transportation Planning Factors and Travel Demand Forecast (TPF/TDF) Technical Memorandum* included in Appendix D. The origins/destinations (O-D) for construction worker trips were based on the 2012–2016 American Community Survey (ACS) 5-year reverse journey-to-work data presented in Table 5 in the *TPF/TDF Technical Memorandum* in Appendix D. Based on the O-D data, construction worker auto and taxi trips were first assigned to various portals on the periphery of Astoria, and from there via the most direct route to the Project Area. Construction truck trips were assigned to Northern Boulevard and Astoria Boulevard, which are the primary DOT-designated Through Truck Routes in proximity to the Project Area, and to Broadway, which is a DOT-designated Local Truck Route.

Although construction workers would likely park on-street in the surrounding area or at nearby off-street public parking facilities, to be conservative, all construction worker autos were assigned directly to and from the site, thereby concentrating these trips at analyzed intersections. As shown in **Figures 19-2 and 19-3**, a total of 24 intersections in the traffic study area would experience a net incremental increase of 50 or more PCEs during the 6:00–7:00 a.m. and/or 3:00–4:00 p.m. construction peak hours. These intersections and the periods during which they would experience 50 or more PCE trips are listed below:

<u>Signalized Intersections</u>

1. 35th Avenue @ Steinway Street* – AM/PM
2. 35th Avenue @ 41st Street* – AM/PM
3. 35th Avenue @ 42nd Street – AM/PM
4. 35th Avenue @ 43rd Street – AM/PM
5. 36th Avenue @ Steinway Street* – AM/PM
6. Northern Boulevard @ 39th Street/Steinway Street* – AM/PM
7. Northern Boulevard @ 41st Street* – AM/PM

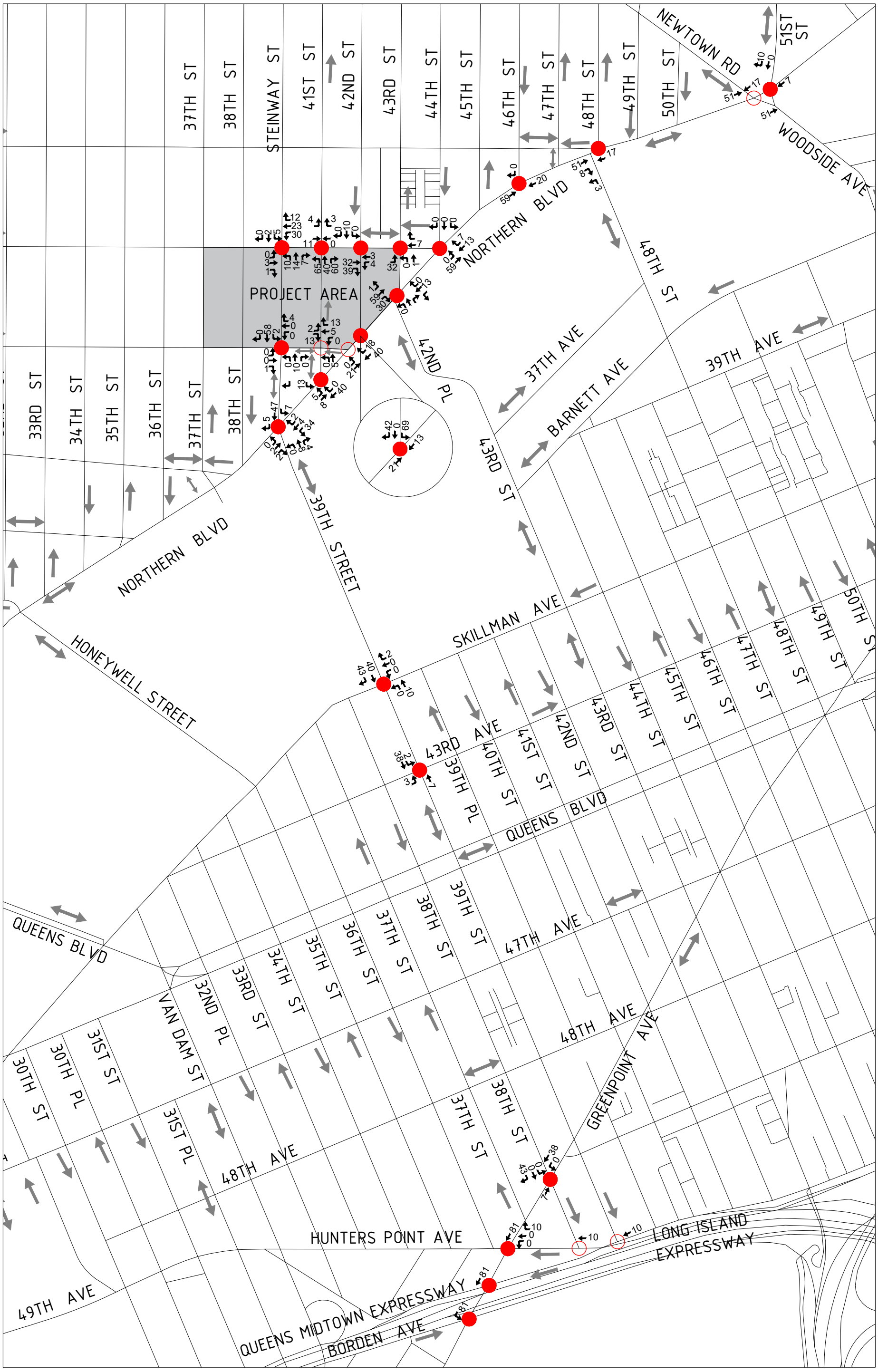
Incremental AM Construction Peak Hour Traffic Volumes



Legend

● Signalized Analysis Location ○ Unsignalized Analysis Location 2 = Weekday AM Peak Hour Volume

Incremental PM Construction Peak Hour Traffic Volumes



Legend

● Signalized Analysis Location ○ Unsignalized Analysis Location 2 = Weekday PM Peak Hour Volume

8. Northern Boulevard @ 42nd Street* – AM/PM
9. Northern Boulevard @ 42nd Place/43rd Street* – AM/PM
10. Northern Boulevard @ 44th Street/35th Avenue* – AM/PM
11. Northern Boulevard @ 46th Street* – AM/PM
12. Northern Boulevard @ 48th Street/34th Avenue* – AM/PM
13. Northern Boulevard @ 51st Street/Woodside Avenue* – AM/PM
14. Skillman Avenue @ 39th Street* – AM/PM
15. 43rd Avenue @ 39th Street* – AM/PM
16. Greenpoint Avenue @ Borden Avenue (EB)* – PM
17. Greenpoint Avenue @ Queens Midtown Expressway (WB) – PM
18. Greenpoint Avenue @ Hunters Point Avenue* – AM/PM
19. Greenpoint Avenue @38th Street – PM

Unsignalized Intersections

20. 36th Avenue @ 41st Street – AM
21. Northern Boulevard @ 36th Avenue – AM/PM
22. Northern Boulevard @ Newtown Road – AM/PM
23. Hunters Point Avenue @ 38th Street – AM
24. Hunters Point Avenue @ 39th Street – AM

(* – denotes intersection significantly adversely impacted by operational traffic in the AM and/or PM operational peak hours.)

In order to assess construction traffic conditions, a 2021 existing traffic network was established based on traffic count data collected for the 6:00–7:00 a.m. and 3:00–4:00 p.m. peak hours (refer to **Figures 19-4 and 19-5**, respectively). The volume-to-capacity (v/c) ratios, delays and levels of service for the individual lane groups experiencing congestion in one or both construction peak periods under existing conditions are provided in **Tables 19-10 and 19-11**. A lane group is considered congested if it operates at LOS E or F and/or with a v/c ratio of 0.90 or above. A v/c ratio of 1.00 or above reflects capacity conditions. As shown in **Tables 19-10 and 19-11**, a total of 13 analyzed intersections (all signalized) currently have at least one congested lane group in one or both of the construction peak hours. Eight of the 13 congested intersections are located along Northern Boulevard and two along Greenpoint Avenue. Intersections with one or more lane groups operating at or over capacity (v/c ratio $\geq$ 1.0) total 6 and 8 in the 6:00–7:00 a.m. and 3:00–4:00 p.m. construction peak hours, respectively. V/c ratios, delays, and levels of service for all lane groups at all analyzed intersections in all peak periods under existing conditions are provided in Table F-1 in Appendix F.

A Year 2 No Action construction traffic network was established by applying an annual background growth rate of 0.5 percent per year for the 2021 through the Year 2 construction period as recommended in the *CEQR Technical Manual* for projects in Queens outside of Long Island City (refer to **Figures 19-6 and 19-7**). The volume-to-capacity (v/c) ratios, delays, and levels of service for the individual lane groups experiencing congestion in one or both construction peak periods under No Action conditions are shown in **Tables 19-10 and 19-11**. As shown in **Tables 19-10 and 19-11**, a total of 13 analyzed intersections (all signalized) are expected to have at least one congested lane group in one or both of the construction peak hours in the No Action condition,

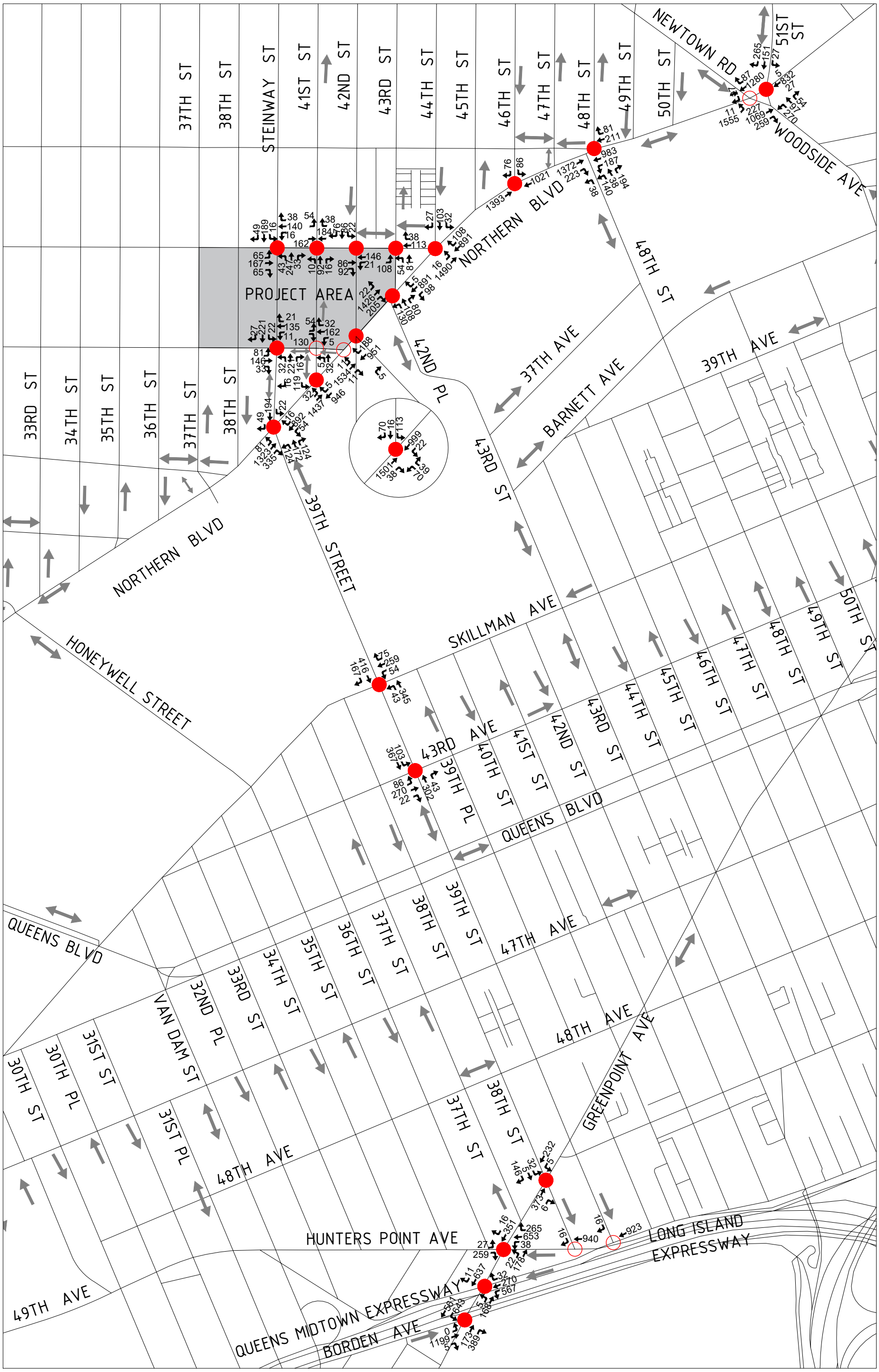
Existing AM Construction Peak Hour Traffic Volumes



Legend

● Signalized Analysis Location ○ Unsignalized Analysis Location 2 = Weekday AM Peak Hour Volume

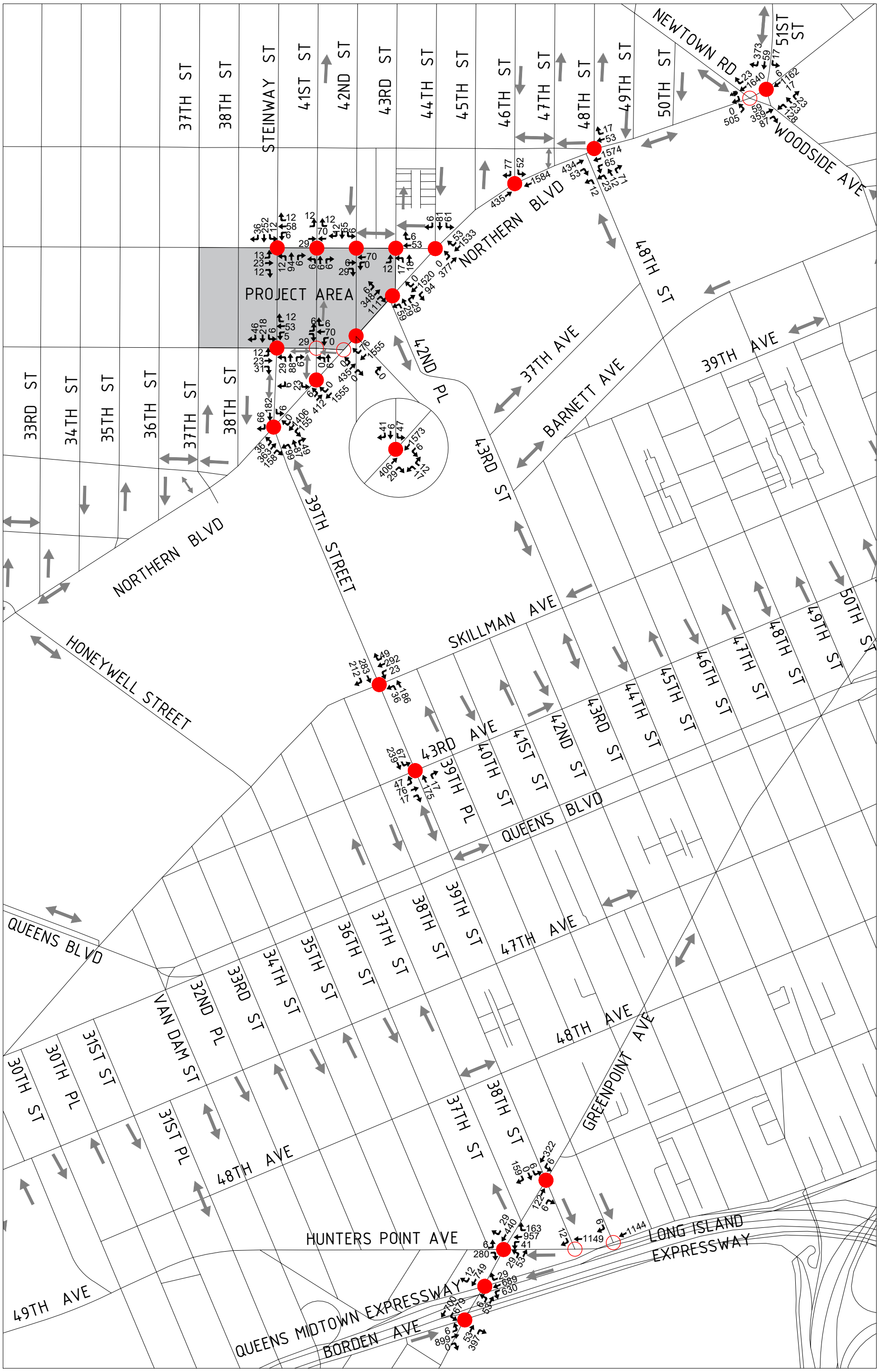
Existing PM Construction Peak Hour Traffic Volumes



Legend

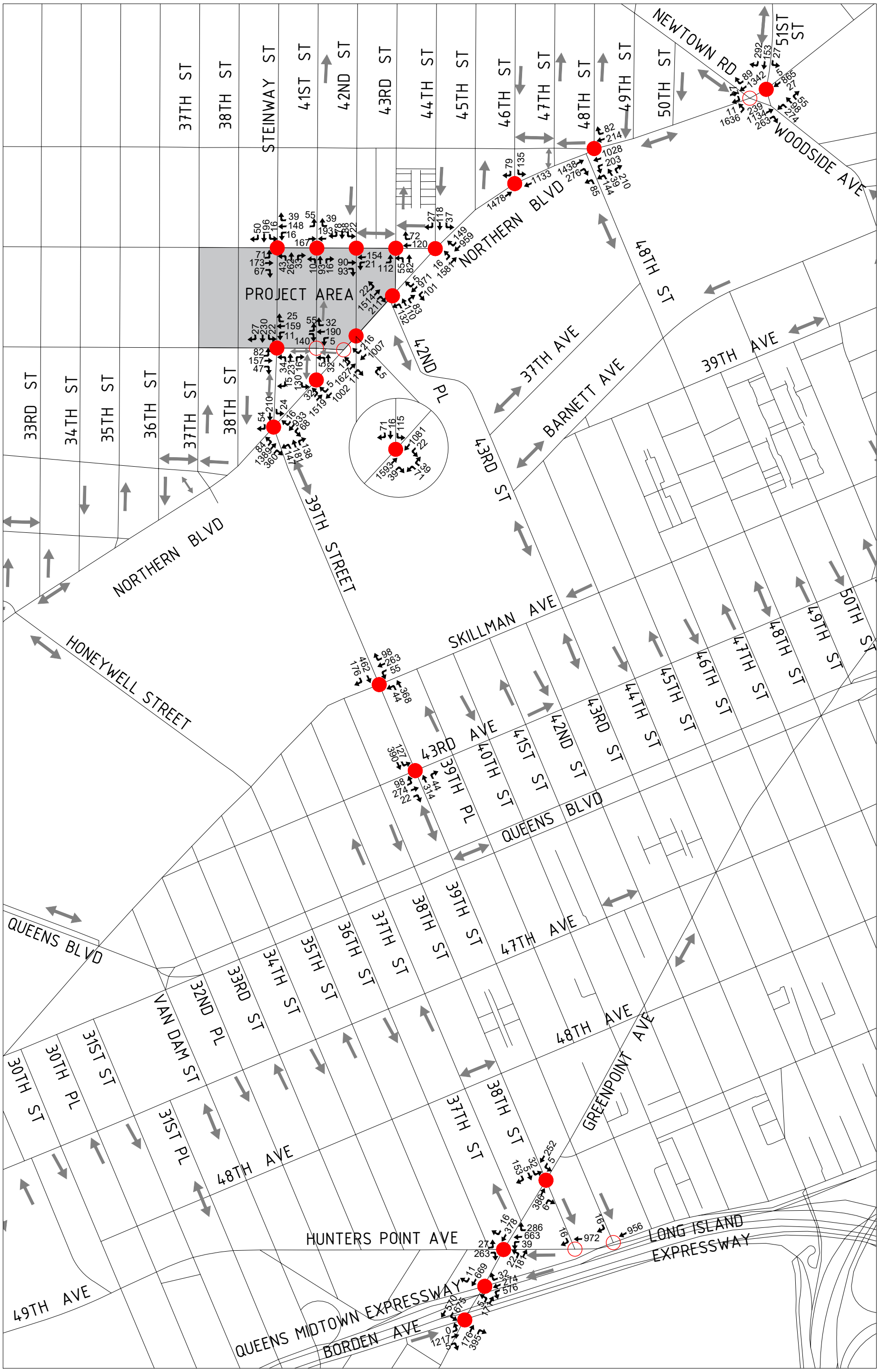
● Signalized Analysis Location ○ Unsignalized Analysis Location 2 = Weekday PM Peak Hour Volume

No Action AM Construction Peak Hour Traffic Volumes



Legend

● Signalized Analysis Location ○ Unsignalized Analysis Location 2 = Weekday AM Peak Hour Volume



Legend

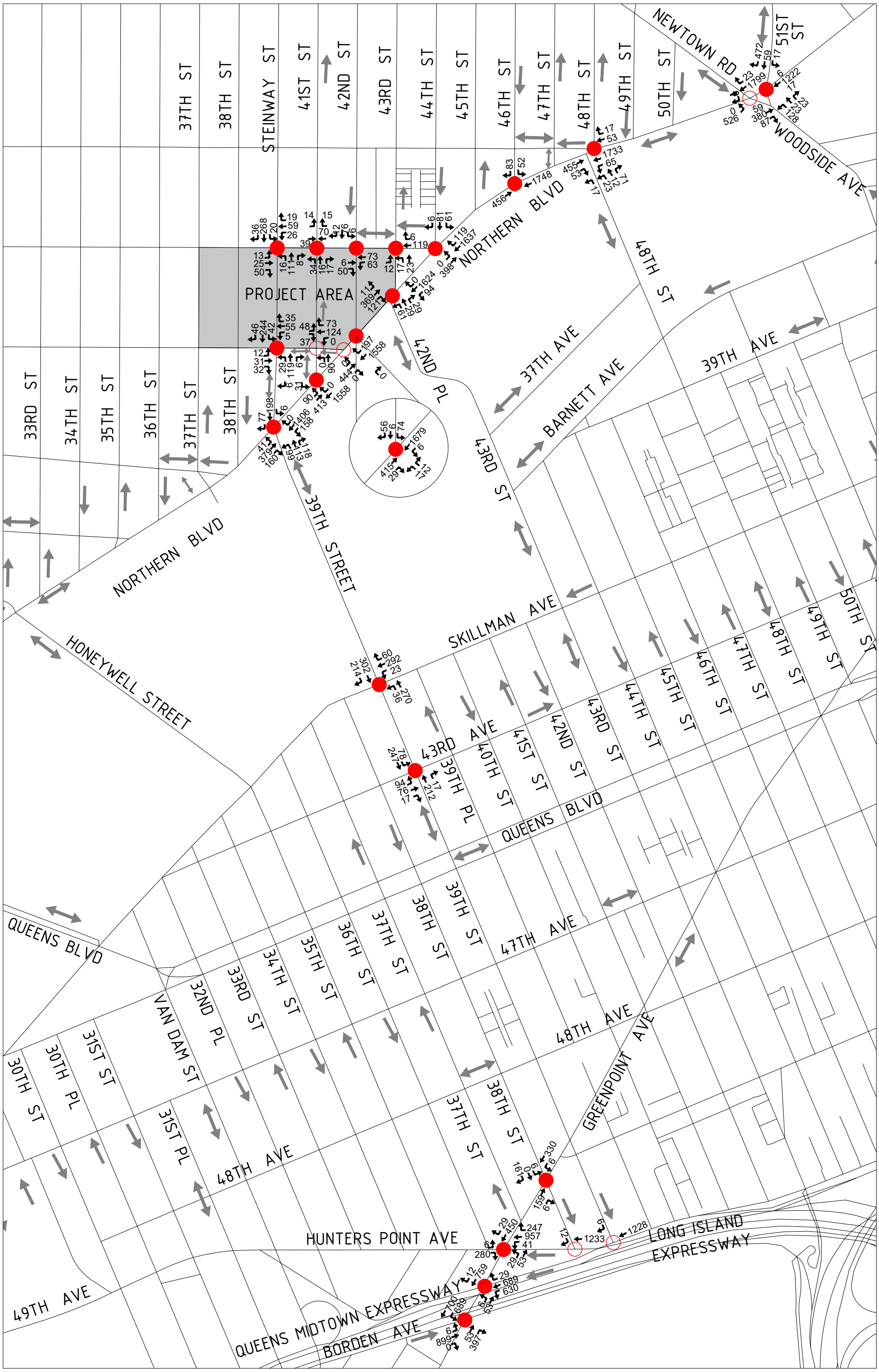
● Signalized Analysis Location ○ Unsignalized Analysis Location 2 = Weekday PM Peak Hour Volume

unchanged from existing conditions. Intersections with one or more lane groups operating at or over capacity (v/c > 1.0) in the No Action condition would total 9 and 11 in the 6:00–7:00 a.m. and 3:00–4:00 p.m. construction peak hours, respectively, compared to 6 and 8, respectively, under existing conditions. V/c ratios, delays, and levels of service for all lane groups at all analyzed intersections in all peak periods under No Action conditions are provided in Table F-2 in Appendix F.

The vehicle trips by construction workers and trucks along with operational vehicle trips from completed portions of the Proposed Actions' RWCDS in the fourth quarter of Year 2 construction (shown in **Figures 19-2 and 19-3**) were added to the Year 2 construction No Action traffic network (shown in **Figures 19-6 and 19-7**) to establish the Year 2 construction With Action (construction) traffic network shown in **Figures 19-8 and 19-9**. The volume-to-capacity (v/c) ratios, delays, and levels of service for the individual lane groups experiencing congestion in one or both construction peak periods under With Action conditions are provided in **Tables 19-12 and 19-13**. As shown in **Tables 19-12 and 19-13**, a total of 15 analyzed intersections (all signalized) are expected to have at least one congested lane group in one or both of the construction peak hours in the With Action condition compared to 13 under No Action conditions. Intersections with one or more lane groups operating at or over capacity (v/c > 1.0) in the With Action condition would total 10 and 12 in the 6:00–7:00 a.m. and 3:00–4:00 p.m. construction peak hours, respectively, compared to 9 and 11, respectively, under No Action conditions.

The construction traffic impact analysis indicates the potential for significant adverse impacts at 14 intersections (all signalized) during one or both analyzed construction peak hours in the fourth quarter of Year 2 construction. All of these impacted intersections would experience congestion in one or both construction peak hours in the No Action condition. Significant adverse impacts were identified to 11 lane groups at 8 intersections during the 6:00–7:00 a.m. peak hour, and 19 lane groups at 11 intersections during the 3:00–4:00 p.m. peak hour. V/c ratios, delays, and levels of service for all lane groups at all analyzed intersections in both construction peak hours are provided in Table F-3 in Appendix F. Potential measures to mitigate the significant adverse traffic impacts identified in **Tables 19-12 and 19-13** are discussed in Chapter 20, "Mitigation."

With Action AM Construction Peak Hour Traffic Volumes

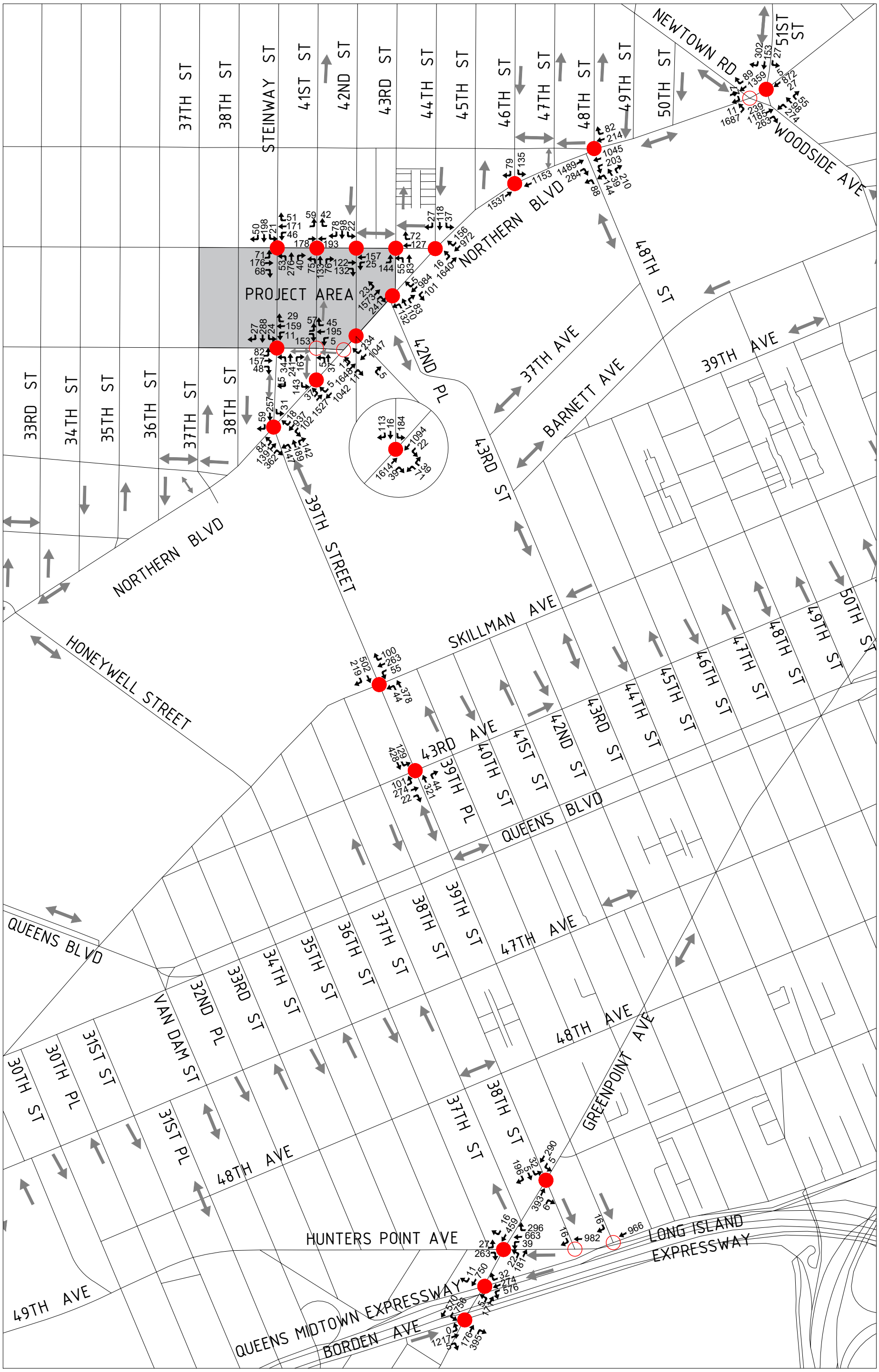


Legend

Signalized Analysis Location

Unsignalized Analysis Location

2 = Weekday AM Peak Hour Volume



Legend

● Signalized Analysis Location ○ Unsignalized Analysis Location 2 = Weekday PM Peak Hour Volume

Table 19-10
Congested Lane Groups at Analyzed Intersections Under Existing and Year 2 Construction No Action Conditions—AM Peak Hour

Intersection	Approach	Lane Group	Existing AM			No Action AM		
			v/c Ratio	Delay (sec/veh)	LOS	v/c Ratio	Delay (sec/veh)	LOS
Northern Blvd (E-W) & 39th St / Steinway St (N-S)	EB	L	0.84	108.3	F	0.98	154.0	F
	WB	TR	0.96	11.2	B	0.99	14.2	B
	SB	LTR	1.05	124.1	F	1.08	132.4	F
Northern Blvd (E-W) & 41st St (S)	WB	TR	0.98	10.1	B	1.00	14.4	B
Northern Blvd (E-W) & 42nd St (S) / Driveway (N)	WB	T	0.99	14.2	B	1.02	20.1	C
Northern Blvd (E-W) & 43rd St (N) / 42nd Pl (N-S)	WB	TR	0.97	7.5	A	0.99	10.7	B
Northern Blvd (E-W) & 44th St (S) / 35th Ave (N)	WB	TR	1.02	21.6	C	1.05	29.7	C
	SB	LTR	0.69	56.5	E	0.73	59.5	E
Northern Blvd (E-W) & 46th St (S)	WB	T	0.98	11.6	B	1.01	15.9	B
Northern Blvd (E-W) & 48th St (N-S) / 34th Ave (N)	WB	TR	1.05	42.4	D	1.08	51.5	D
Northern Blvd (E-W) & 51st St / Woodside Ave (N-S)	SB	R	1.05	102.9	F	1.10	118.1	F
Greenpoint Ave (E-W) & Hunters Point Ave (NW-SE)	NW	LTR	1.05	77.4	E	1.08	87.7	F
Greenpoint Ave (NE-SW) & Borden Ave (E)	NE	R	1.05	101.5	F	1.07	107.1	F
	SW	L	1.05	81.6	F	1.08	90.2	F
	SW	T	0.92	27.5	C	0.93	28.5	C

Shading denotes lane groups which are not congested in the Existing condition but are shown for comparison purposes.

Table 19-11
Congested Lane Groups at Analyzed Intersections Under Existing and Year 2 Construction No Action Conditions—PM Peak Hour

Intersection	Approach	Lane Group	Existing PM			No Action PM		
			v/c Ratio	Delay (sec/veh)	LOS	v/c Ratio	Delay (sec/veh)	LOS
35th Ave (E-W) & Steinway St (N-S)	EB	LTR	1.03	90.0	F	1.17	136.4	F
36th Ave (E-W) & Steinway St (N-S)	EB	LTR	1.05	108.5	F	1.21	165.8	F
Northern Blvd (E-W) & 39th St / Steinway St (N-S)	EB	L	0.69	43.2	D	0.78	56.9	E
	EB	TR	1.05	63.1	E	1.11	85.4	F
	WB	L	1.04	138.5	F	1.31	230.0	F
	WB	TR	1.05	58.9	E	1.10	75.0	E
	NB	L	0.57	50.7	D	0.68	55.4	E
	NB	TR	1.05	102.6	F	1.14	133.4	F
	SB	LTR	1.05	131.2	F	1.14	158.1	F
Northern Blvd (E-W) & 41st St (S)	EB	T	0.86	6.5	A	0.91	7.8	A
Northern Blvd (E-W) & 42nd St (S) / Driveway (N)	EB	TR	0.97	19.9	B	1.03	32.9	C
	SB	LTR	0.89	79.7	E	0.91	82.0	F
Northern Blvd (E-W) & 43rd St (N) / 42nd Pl (N-S)	EB	LTR	1.05	41.1	D	1.11	63.1	E
	WB	L	1.05	109.7	F	1.08	110.1	F
	WB	TR	1.05	56.9	E	1.14	89.4	F
	NB	LTR	0.99	90.1	F	1.02	95.7	F
Northern Blvd (E-W) & 44th St (S)/35th Ave (N)	EB	TR	0.96	9.9	A	1.01	15.8	B
	SB	LTR	0.91	84.7	F	1.12	144.9	F
Northern Blvd (E-W) & 46th St (S)	EB	T	0.93	9.0	A	0.99	14.4	B
Northern Blvd (E-W) & 48th St (N-S) / 34th Ave (N)	EB	TR	1.05	35.6	D	1.16	82.0	F
	WB	L	1.05	125.7	F	1.14	152.8	F
	WB	TR	1.05	43.8	D	1.10	62.4	E
	NB	L	0.93	87.0	F	1.65	364.0	F
	NB	TR	1.05	114.0	F	1.16	150.9	F
Northern Blvd (E-W) & 51st St / Woodside Ave (N-S)	EB	L	1.04	79.3	E	1.15	114.8	F
	EB	TR	1.05	30.2	C	1.14	66.3	E
	NB	LTR	1.05	97.0	F	1.07	102.4	F
43rd Ave (W) & 39th St (N-S)	SB	LT	1.05	77.3	E	1.29	169.2	F
Greenpoint Ave (E-W) & Hunters Point Ave (NW-SE)	SE	LTR	0.87	56.8	E	0.93	67.2	E
	NW	LTR	0.98	59.4	E	1.02	68.9	E
Greenpoint Ave (NE-SW) & Borden Ave (E)	EB	LTR	0.95	48.0	D	0.96	50.5	D
	NE	R	1.05	106.6	F	1.07	111.4	F
	SW	L	0.92	58.4	E	0.97	65.2	E

Shading denotes lane groups which are not congested in the Existing condition but are shown for comparison purposes.

Table 19-12
Congested Lane Groups at Analyzed Intersections Under Year 2 Construction With Action (Construction) Conditions— AM Peak Hour

			No Action AM			With Action AM		
Intersection	Approach	Lane Group	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS
Northern Blvd (E-W) & 39th St / Steinway St (N-S)	EB	L	0.98	154.0	F	1.13	202.9	F
	WB	TR	0.99	14.2	B	0.99	14.8	B
	NB	TR	0.66	52.1	D	1.19	159.0	F
	SB	LTR	1.08	132.4	F	1.21	179.3	F
Northern Blvd (E-W) & 41st St (S)	EB	L	0.17	13.8	B	2.46	722.8	F
	WB	TR	1.00	14.4	B	1.01	10.7	B
Northern Blvd (E-W) & 42nd St (S) / Driveway (N)	WB	T	1.02	20.1	C	1.09	43.6	D
Northern Blvd (E-W) & 43rd St (N) / 42nd Pl (N-S)	WB	TR	0.99	10.7	B	1.06	34.6	C
Northern Blvd (E-W) & 44th St (S)/35th Ave (N)	WB	TR	1.05	29.7	C	1.17	83.0	F
	SB	LTR	0.73	59.5	E	0.74	60.4	E
Northern Blvd (E-W) & 46th St (S)	WB	T	1.01	15.9	B	1.11	53.1	D
Northern Blvd (E-W) & 48th St (N-S) / 34th Ave (N)	WB	TR	1.08	51.5	D	1.18	93.1	F
Northern Blvd (E-W) & 51st St / Woodside Ave (N-S)	WB	TR	0.87	32.9	C	0.92	37.2	D
	SB	R	1.10	118.1	F	1.39	233.8	F
Greenpoint Ave (E-W) & Hunters Point Ave (NW-SE)	SE	LTR	0.73	40.7	D	0.81	48.7	D
	NW	LTR	1.08	87.7	F	1.17	122.1	F
Greenpoint Ave (NE-SW) & Borden Ave (E)	NE	R	1.07	107.1	F	1.07	107.1	F
	SW	L	1.08	90.2	F	1.09	96.0	F
	SW	T	0.93	28.5	C	0.93	28.4	C

Shading denotes significant adverse impact.

Table 19-13
Congested Lane Groups at Analyzed Intersections Under Year 2 Construction With Action (Construction) Conditions—PM Peak Hour

			No Action PM			With Action PM		
Intersection	Approach	Lane Group	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS
35th Ave (E-W) & Steinway St (N-S)	EB	LTR	1.17	136.4	F	1.32	200.4	F
	WB	LTR	0.66	35.0	C	1.02	87.2	F
35th Ave (E-W) & 41st St (N)	NB	LTR	0.32	17.5	B	0.91	49.0	D
36th Ave (E-W) & Steinway St (N-S)	EB	LTR	1.21	165.8	F	1.34	217.0	F
Northern Blvd (E-W) & 39th St / Steinway St (N-S)	EB	L	0.78	56.9	E	0.80	60.4	E
	EB	TR	1.11	85.4	F	1.12	88.5	F
	WB	L	1.31	230.0	F	2.00	513.2	F
	WB	TR	1.10	75.0	E	1.11	78.4	E
	NB	TR	1.14	133.4	F	1.21	156.9	F
	SB	LTR	1.14	158.1	F	1.37	248.3	F
Northern Blvd (E-W) & 41st St (S)	EB	T	0.91	7.8	A	0.91	8.2	A
Northern Blvd (E-W) & 42nd St (S) / Driveway (N)	EB	TR	1.03	32.9	C	1.04	37.6	D
	SB	LTR	0.91	82.0	F	1.42	257.8	F
Northern Blvd (E-W) & 43rd St (N) / 42nd Pl (N-S)	EB	LTR	1.11	63.1	E	1.18	92.7	F
	WB	L	1.08	110.1	F	1.08	108.7	F
	WB	TR	1.14	89.4	F	1.15	95.8	F
	NB	LTR	1.02	95.7	F	1.02	95.7	F
Northern Blvd (E-W) & 44th St (S)/35th Ave (N)	EB	TR	1.01	15.8	B	1.05	30.4	C
	SB	LTR	1.12	144.9	F	1.13	149.0	F
Northern Blvd (E-W) & 46th St (S)	EB	T	0.99	14.4	B	1.03	23.6	C
Northern Blvd (E-W) & 48th St (N-S) / 34th Ave (N)	EB	TR	1.16	82.0	F	1.21	102.8	F
	WB	L	1.14	152.8	F	1.14	152.2	F
	WB	TR	1.10	62.4	E	1.12	71.8	E
	NB	L	1.65	364.0	F	1.68	374.2	F
	NB	TR	1.16	150.9	F	1.16	150.9	F
Northern Blvd (E-W) & 51st St / Woodside Ave (N-S)	EB	L	1.15	114.8	F	1.16	122.4	F
	EB	TR	1.14	66.3	E	1.18	86.3	F
	NB	LTR	1.07	102.4	F	1.07	102.4	F
Skillman Ave (W) & 39th St (N-S)	NB	LT	0.88	28.5	C	0.96	42.7	D
43rd Ave (E) & 39th St (N-S)	SB	LT	1.29	169.2	F	1.40	216.6	F
Greenpoint Ave (E-W) & Hunters Point Ave (NW-SE)	SE	LTR	0.93	67.2	E	0.94	70.2	E
	NW	LTR	1.02	68.9	E	1.03	72.1	E
Greenpoint Ave (NE-SW) & Borden Ave (E)	EB	LTR	0.96	50.5	D	0.96	50.5	D
	NE	R	1.07	111.4	F	1.07	111.4	F
	SW	L	0.97	65.2	E	1.08	96.1	F

Shading denotes significant adverse impact.

Street Lane and Sidewalk Closures

Pedestrian circulation along the perimeter of the Development Sites as well as the number of moving lanes on streets adjacent to the Development Sites are expected to be maintained at all times during construction. The Development Sites would be expected to have dedicated gates, driveways, and/or ramps for access by trucks making deliveries. Truck movements would be spread throughout the day and would generally occur between 6:00 a.m. and 5:00 p.m., depending on the stage of construction. Flaggers are expected to be present during construction to manage the access and movement of trucks. As the Proposed Development is still in the preliminary design/approval phase, detailed construction staging plans for the Applicant-controlled lots have not yet been finalized. Detailed construction staging plans for sites in the Additional Affected Area are also not available as these sites are not controlled by the Applicant. However, detailed MPT plans for each construction site in the Project Area would need to be submitted for approval to DOT's OCMC.

TRANSIT

As previously discussed and shown in **Table 19-7**, in the Year 2 construction peak (fourth) quarter for construction travel demand, there would be a net increase of approximately 1,051 construction workers traveling to and from projected development sites each day under the Proposed Actions. Approximately 44 percent of these construction workers are expected to travel to and from the Project Area by public transit (subway and bus). The Project Area is located in a neighborhood that is well served by public transportation, with a total of three subway stations and four bus routes located in the vicinity.

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 peak construction period, construction worker travel demand is expected to generate a total of approximately 371 transit trips (337 by subway and 34 by bus) in each of the 6:00–7:00 a.m. and 3:00–4:00 p.m. peak hours. During these same construction peak hours there would also be a net increase in operational transit trips from completed development on Projected Development Sites (Sites I and J and Building D.1 on Site D). Operational subway trips would total approximately 54 and 147, respectively, while operational bus trips would total approximately 14 in the PM construction peak hour with none in the AM construction peak hour. Therefore, in the peak construction period, the increase in transit demand (construction + operational) during the 6:00–7:00 a.m. and 3:00–4:00 p.m. construction peak hours would total approximately 391 and 484 subway trips, respectively, and 34 and 48 bus trips respectively.

By comparison, the net increase in operational subway trips with full build-out of the Proposed Actions' RWCDS in 2032 would be substantially greater in number, totaling approximately 2,642 and 2,958 trips during the weekday AM and PM commuter peak hours, when overall demand on area subway facilities and services typically peaks. The net increase in operational bus trips in 2032 would also be substantially greater in number, totaling 142 and 197 trips during the weekday AM and PM commuter peak hours. Therefore, peak construction period transit conditions during the 6:00–7:00 a.m. and 3:00–4:00 p.m. construction peak hours are expected to be generally better than during the analyzed commuter peak hours with full build-out of the Proposed Actions' RWCDS in 2032. Consequently, the Proposed Actions' significant adverse subway station and line haul impacts would be less likely to occur in the peak construction period than with full build-out of the Proposed Actions' RWCDS in 2032, and there would be no new bus impacts. It is anticipated that proposed mitigation measures for the line haul impacts from the Proposed Actions'

operational demand in 2032 would also be effective at mitigating any potential impacts from construction subway trips during the peak construction period. Should any significant adverse line haul impacts occur in the peak construction period, they would potentially remain unmitigated pending the implementation of practicable mitigation measures.

PEDESTRIANS

As shown in **Table 19-7** and discussed above, during the Year 2 (fourth quarter) peak construction travel period it is estimated that there would be approximately 1,051 construction workers on site daily under the Proposed Actions. Most of these workers are expected to arrive and depart the Project Area on foot, walking to/from nearby subway stations or bus stops (approximately 44 percent), or on-street parking or off-street public parking (48 percent). A relatively small number (up to 5 percent) are expected to walk to or from the Project Area as their sole mode of travel. (The remaining 3 percent are expected to travel by taxi and would not appreciably add to pedestrian demand on area sidewalks.)

As approximately 80 percent of construction worker trips are expected to occur during any one peak hour, incremental travel demand on area sidewalks and crosswalks is expected to total approximately 817 trips in each of the 6:00–7:00 a.m. and 3:00–4:00 p.m. construction peak hours. These trips would be distributed among the projected development sites that would be under construction in the fourth quarter of Year 2 construction (sites C, D, G and H). During these same peak hours there would also be a net increase of approximately 62 and 441 operational pedestrian trips (transit plus walk-only) from completed development on projected development sites (sites I and J and building D.1 on Site D). Therefore, in the peak construction period, the increase in pedestrian demand (construction and operational) attributable to the Proposed Actions during the 6:00–7:00 a.m. and 3:00–4:00 p.m. construction peak hours would total approximately 879 and 1,258 pedestrian trips, respectively. By comparison, incremental pedestrian trips with full build-out of the Proposed Actions in 2032 would be substantially greater in number, totaling 3,703, 4,474, 4,939 and 4,201 during the analyzed weekday 7:45–8:45 a.m., 1:00–2:00 p.m. (midday) and 5:00–6:00 p.m. operational peak hours, and the 2:00–3:00 pm. Saturday operational peak hour, respectively. Peak construction period pedestrian conditions during the weekday 6:00–7:00 a.m. and 3:00–4:00 p.m. construction peak hours are therefore expected to be generally better than during the analyzed operational peak hours with full build-out of the Proposed Actions in 2032.

In order to determine the potential for the Proposed Actions to result in significant adverse pedestrian impacts during the peak construction period, project-generated pedestrian demand (both construction and operational) in the weekday 6:00–7:00 a.m. and 3:00–4:00 p.m. construction peak hours was assigned to analyzed pedestrian elements (sidewalks, corner areas and crosswalks). Based on this assignment, all analyzed pedestrian elements would experience substantially less incremental demand than with full build-out of the Proposed Actions in 2032. In addition, only one element that would be significantly adversely impacted by operational demand under the Proposed Actions would experience an incremental increase of 200 or more pedestrian trips in the construction peak hours in the peak construction period—the north sidewalk on 36th Avenue between 38th and Steinway Streets in the construction PM peak hour. This sidewalk would be impacted in all four operational peak periods with full build-out of the Proposed Actions in 2032. However, project-generated demand (both construction and operational) on this sidewalk in the AM and PM construction peak hours in the peak construction period would amount to no more than 22 percent of the operational demand generated in the AM and PM operational peak hours with full build-out of the Proposed Actions. Furthermore, as shown in **Table 19-14**, it would operate at an acceptable LOS C or better in each construction peak hour and would not be

significantly adversely impacted in either period based on the *CEQR Technical Manual* impact criteria. Consequently, significant adverse pedestrian impacts during the construction peak hours are not anticipated to occur during the peak construction period under the Proposed Actions.

Table 19-14
Year 2 Construction Conditions Along the North Sidewalk on 36th Street Between 38th and Steinway Streets in the AM and PM Construction Peak Hours

Scenario	Effective Width (ft.)	Project Increment		Peak Hour Volumes		Average Pedestrian Space (ft^2/ped)		Platoon-Adjusted Level of Service	
		AM	PM	AM	PM	AM	PM	AM	PM
Existing Condition	2.5	---	---	15	123	2,191.2	202.6	A	B
No Action Condition	2.5	---	---	15	125	2,191.2	199.3	A	B
Year 2 Construction With Action Condition	2.5	170	229	185	354	177.4	69.7	B	C

PARKING

As shown in **Table 19-7** and discussed above, during the Year 2 (fourth quarter) peak construction traffic period it is estimated that there would be approximately 1,051 construction workers on site daily, approximately 48 percent of whom would be expected to travel to the Project Area by private auto. Based on an average vehicle occupancy of 1.50 persons per vehicle, the maximum daily parking demand from project site construction workers would total approximately 337 spaces (see **Table 19-15**). These workers are expected to park on-street and in off-street public parking facilities in proximity to the Project Area. In addition, there would also be operational parking demand generated by completed portions of the Proposed Actions' RWCDS (i.e., Projected Development Sites I and J and Building D.1 on Projected Development Site D). It is estimated that these sites would generate a peak parking demand of approximately 157 spaces during the weekday overnight period. As an estimated 77 accessory parking spaces would be provided on sites I and J under the RWCDS (parking on Site D is not expected to be operational in Year 2 construction), it is estimated that up to 80 spaces of operational parking demand would also need to be accommodated in nearby off-street public parking facilities or on-street during the early morning construction worker arrival period in the peak construction period. Therefore, it is estimated that the Proposed Actions would generate a total of up to 417 spaces of parking demand at off-street public parking facilities or on-street in during the peak construction period. This demand could potentially contribute to, or result in, off-street and on-street parking shortfalls in this period.

Table 19-15
Year 2 Construction (Fourth Quarter)
Construction Worker Parking Accumulation

Hour	Year 2 Construction (Q4)		
	In	Out	Total
6–7 AM	270	0	270
7–8 AM	67	0	67
8–9 AM	0	0	0
9–10 AM	0	0	0
10–11 AM	0	0	0
11 AM–12 PM	0	0	0
12–1 PM	0	0	0
1–2 PM	0	0	0
2–3 PM	0	0	0
3–4 PM	0	17	17
4–5 PM	0	270	270
5–6 PM	0	50	50

As discussed in Chapter 13, "Transportation," in this area of Queens, the inability of a proposed project or the surrounding area to accommodate future parking demands would be considered a parking shortfall but would generally not be considered significant under *CEQR Technical Manual* guidance due to the magnitude of available alternative modes of transportation. Therefore, under the Proposed Actions, any shortfalls in off-street and on-street parking spaces in the Project Area and its vicinity during the peak construction period would not be considered significant.

AIR QUALITY

The construction of the Proposed Development as well as new developments in the Additional Affected Area 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 Project Area as well as vehicles operating on-site.

Emissions from non-road construction equipment and on-road vehicles have the potential to affect air quality. Emissions from dust-generating construction activities (i.e., truck loading and unloading operations) also have the potential to affect air quality. A quantitative analysis of the overall combined impact of both non-road and on-road sources of construction-related air emissions, including dust emissions, was performed to determine the potential for significant adverse impacts from these sources of air emissions generated during construction of the Proposed Development and the projected developments sites in the Additional Affected Area. Chapter 14, "Air Quality," contains a review of these air pollutants; applicable regulations, standards, and benchmarks; and general methodology for the air quality analyses. Additional details relevant only to the construction air quality analysis methodology are presented in this section.

EMISSIONS REDUCTION MEASURES

Construction activity in general, and large-scale construction in particular, has the potential to adversely affect air quality as a result of diesel emissions. Measures would be taken to reduce pollutant emissions during construction under the Proposed Actions in accordance with all applicable laws, regulations, and building codes. These include the use of clean fuel, dust suppression measures, idling restrictions, and diesel equipment reduction:

- *Clean Fuel*. Ultra-low sulfur diesel (ULSD) fuel would be used exclusively for all diesel engines throughout the Development Site.
- *Dust Control.* To minimize dust emissions from construction activities, a dust control plan including a robust watering program would be required. For example, all trucks hauling loose material would be equipped with tight-fitting tailgates and their loads securely covered prior to leaving the Development Site; and water sprays would be used for all demolition, excavation, and transfer of soils so that materials would be dampened as necessary to 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.
- *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 to further reduce air pollutant emissions during construction of the Proposed Development:

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

[1] 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.

Overall, this emissions reduction program is expected to substantially reduce diesel emissions. It is expected that similar emissions control measures to those committed to by the Applicant would likely be implemented during construction of the other projected development sites in the Additional Affected Area, to the extent practicable and feasible. In particular, ULSD and construction equipment rated Tier 3 or higher is now readily available and DPFs are commonly found on construction equipment used in New York City.

ON-SITE CONSTRUCTION ACTIVITY ASSESSMENT`

Analysis Periods

To determine which construction periods constitute the worst-case periods for the pollutants of concern (PM, CO, 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, churches, and publicly accessible open spaces) in the area, November 2023 and the 12-month period from June 2023 to May 2024 were identified as the Proposed Development's worst-case short-term and annual construction periods, respectively, since the highest project-wide $PM_{2.5}$ emissions were predicted in these periods (see Appendix F). During these worst-case periods, construction of the Proposed Development would result in maximum short-term $PM_{2.5}$, PM_{10}, and CO emissions of 0.458, 0.587, and 134.9 pounds per day, respectively, and maximum annual $PM_{2.5}$ and NO_x emissions of 0.143 and 19.2 pounds per day, respectively. During these times, demolition, excavation and foundation, and superstructure activities associated with the Proposed Development are anticipated to occur. For the projected sites in the Additional Affected Area, the worst-case short-term and annual construction periods were identified to be November 2023 and the 12-month period from February 2023 to January 2024, respectively (see Appendix F). During these worst-case periods, construction of the projected sites in the Additional Affected Area would result in maximum short-term $PM_{2.5}$, PM_{10}, and CO emissions of 2.928, 3.236, and 22.0 pounds per day, respectively, and maximum annual $PM_{2.5}$ and NO_x emissions of 1.160 and 22.1 pounds per day, respectively.

Dispersion of the relevant air pollutants from the construction sites during these periods was 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 were estimated based on the construction activity schedule developed for the Proposed Development and projected developments in the Additional Affected Area. Emission rates for NO_x, CO, PM_{10}, and $PM_{2.5}$ from truck engines was developed using the EPA Motor Vehicle Emission Simulator (MOVES3) emission model. Emission factors for NO_x, CO, PM_{10}, and $PM_{2.5}$ from on-site construction engines

were developed using the NONROAD emission module included in the MOVES3 emission model. For the Proposed Development, the emission factor calculations took into account any emissions reduction measures that would be required, as described above, under "Emissions Reduction Measures."

On-Site Dust Emissions

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

Dispersion Modeling

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

Source Simulation

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

Meteorological Data

The meteorological data set consists of five consecutive years of meteorological data: surface data collected at the LaGuardia Airport National Weather Service Station (2016 to 2020), 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 DEC ambient air monitoring stations and were consistent with the background concentrations used for the operational stationary source air quality analysis (see Chapter 14, "Air Quality").

Receptor Locations

Receptors were placed at residential and other sensitive uses at both ground level and elevated locations, as well as adjacent sidewalk locations and publicly accessible open spaces.

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, MOVES3. This emissions model is capable of calculating engine emission factors for various vehicle types, based on the fuel type (gasoline, diesel, or natural gas), meteorological conditions, vehicle speeds, vehicle age, roadway type and grade, number of starts per day, engine soak time, inspection and maintenance programs and various other factors that influence emissions. The inputs and use of MOVES incorporate the most current resource available from DEC.[2]

On-Road Dust Emissions

$PM_{2.5}$ emission rates were determined with road dust to account for their impacts. Road dust emission factors were calculated according to the latest procedure delineated by EPA.[3] An average weight of 20 tons and 2.6 tons was assumed for construction trucks and worker vehicles in the analyses, respectively.

CONSTRUCTION AIR QUALITY ANALYSIS RESULTS

Maximum predicted concentrations during the representative worst-case construction periods for the Proposed Development and projected developments in the Additional Affected Area, and the cumulative total of both, are presented in **Tables 19-16 through 19-18**. To estimate the maximum total pollutant concentrations, the modeled concentrations from the Proposed Development and from the projected developments in the Additional Affected Area were added to a background value that accounts for existing pollutant concentrations from other nearby sources. As shown in **Tables 19-16 through 19-18**, the maximum predicted total concentrations of all pollutants are below the applicable NAAQS. 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 **Tables 19-16 through 19-18**. Therefore, construction under the Proposed Actions would not result in significant adverse air quality impacts due to construction sources.

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

[3] 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.

Table 19-16
Maximum Pollutant Concentrations – Proposed Development

Pollutant	Averaging Period	Units	Maximum Modeled Impact	Background Concentration[1]	Total Concentration	NAAQS
NO_2	Annual	µg/m^3	19.9	32.8	52.7	100
CO	1-hour	ppm	6.74	2.52	9.26	35
	8-hour	ppm	3.4	1.4	4.8	9
PM_{10}	24-hour	µg/m^3	10.6	35	45.6	150
$PM_{2.5}$	24-hour	µg/m^3	2.5	18.5	21.0	35
	Annual—Local	µg/m^3	0.5	7.5	8.0	12
	Annual—Neighborhood	µg/m^3	0.007	7.5	7.5	

Notes: N/A—Not Applicable
[1] The background levels are based on the most representative concentrations monitored at DEC ambient air monitoring stations (see Table 14-6 and 14-7 in Chapter 14, "Air Quality").

Table 19-17
Maximum Pollutant Concentrations – Projected Developments in the Additional Affected Area

Pollutant	Averaging Period	Units	Maximum Modeled Impact	Background Concentration[1]	Total Concentration	NAAQS
NO_2	Annual	µg/m^3	30.8	32.8	63.6	100
CO	1-hour	ppm	0.72	2.52	3.24	35
	8-hour	ppm	0.2	1.4	1.6	9
PM_{10}	24-hour	µg/m^3	20.7	35	55.7	150
$PM_{2.5}$	24-hour	µg/m^3	10.4	18.5	28.9	35
	Annual—Local	µg/m^3	1.1	7.5	8.6	12
	Annual—Neighborhood	µg/m^3	0.02	7.5	7.5	

Notes: N/A—Not Applicable
[1] The background levels are based on the most representative concentrations monitored at DEC ambient air monitoring stations (see Table 14-6 and 14-7 in Chapter 14, "Air Quality").

Table 19-18
Maximum Pollutant Concentrations – Cumulative Total (Proposed Development + Projected Developments in the Additional Affected Area)

Pollutant	Averaging Period	Units	Maximum Modeled Impact	Background Concentration[1]	Total Concentration	NAAQS
NO_2	Annual	µg/m^3	34.8	32.8	67.6	100
CO	1-hour	ppm	6.95	2.52	9.47	35
	8-hour	ppm	3.5	1.4	4.9	9
PM_{10}	24-hour	µg/m^3	23.2	35	58.2	150
$PM_{2.5}$	24-hour	µg/m^3	11.1	18.5	29.6	35
	Annual—Local	µg/m^3	1.2	7.5	8.7	12
	Annual—Neighborhood	µg/m^3	0.03	7.5	7.5	

Notes: N/A—Not Applicable
[1] The background levels are based on the most representative concentrations monitored at DEC ambient air monitoring stations (see Table 14-6 and 14-7 in Chapter 14, "Air Quality").

NOISE

Construction under the Proposed Actions has the potential to result in noise impacts generated by the operation of construction equipment on construction sites and construction-related vehicles traveling to and from the Project Area on adjacent roadways. The potential for noise impacts due to the construction under the Proposed Actions 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 *CEQR Technical Manual* for vehicular traffic and construction noise impact evaluation and is used to provide an indication of highest expected sound levels. The 1-hour L_{10} is the noise descriptor used in the *CEQR Technical Manual* noise exposure guidelines. The maximum 1-hour equivalent sound level ($L_{eq(1)}$) and maximum 1-hour L_{10} were selected as the noise descriptors used in the construction noise impact evaluation.

CONSTRUCTION NOISE ANALYSIS FUNDAMENTALS

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

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

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

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

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

CONSTRUCTION NOISE ANALYSIS METHODOLOGY

A detailed modeling analysis was conducted to quantify potential construction noise effects at existing noise receptors (e.g., residences, schools, etc.) near the Project Area as well as at

completed and occupied proposed projected buildings. The construction noise methodology involves the following process:

1. *Select analysis hours for construction mobile source noise analysis.* The 6:00 AM to 7:00 AM hour was selected as the analysis hour because this would be the hour when the highest number of construction worker auto and construction truck trips to and from the construction site would simultaneously occur.
2. *Conduct construction mobile source noise analysis.* At each of the roadway segments analyzed for construction traffic, the construction worker vehicle and construction truck trips during the analysis hour were converted to Noise Passenger Car Equivalents (PCEs) and compared to the existing level of Noise PCEs to determine whether there would be a potential doubling, which would result in an exceedance of CEQR construction noise screening thresholds (i.e., a 3 dBA increase in noise levels).
3. *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 site would overlap with on-site equipment operation.
4. *Select receptor locations for cumulative on-site equipment and construction truck noise analysis.* Selected receptors represent open space, residential, commercial office, or other noise-sensitive uses potentially affected by the construction associated with the Proposed Actions during operation of on-site construction equipment and/or along routes taken to and from the development site by construction trucks. Project elements (e,g., buildings, open spaces) that would be completed and occupied while construction under the Proposed Actions is still ongoing were also included in the analysis as receptors.
5. *Establish existing noise levels at selected receptors.* Measured noise levels from the operational noise analysis were used for the construction noise analysis as well. A CadnaA model representing the existing conditions (including existing building geometry and 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.
6. *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.
7. *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 location of the equipment, which is based on construction logistics diagrams and construction truck and worker vehicle trip assignments, a CadnaA model file 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 site.
8. *Determine total noise levels and noise level increments during construction.* For each analysis period and each noise receptor, the calculated level of construction noise was logarithmically added to the existing noise level to determine the cumulative total noise level. The existing

noise level at each receptor was arithmetically subtracted from the cumulative noise level in each analysis period to determine the noise level increments.

9. *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 additional incremental noise impact criteria as described below.
10. *Establish construction noise duration*. For each receptor, the noise level increments in each analysis period were evaluated to determine the duration during construction that the receptor would experience exceedances of impact criteria.
11. *Identify potential construction noise impacts.* At each existing receptor where exceedances of construction noise impact criteria were predicted, a determination was made as to whether the Proposed Actions would have the potential to result in significant adverse construction noise impacts.

CONSTRUCTION MOBILE SOURCE ANALYSIS

A Noise PCE screening analysis was conducted for noise levels from construction mobile sources. At noise receptor sites adjacent to the construction work areas that represent noise-sensitive uses, the construction worker vehicle and construction truck trips during the analysis hour were converted to Noise PCEs and compared to the existing level of Noise PCEs to determine whether there would be a potential doubling, which would result in an exceedance of *CEQR Technical Manual* construction noise screening thresholds (i.e., a 3 dBA increase in noise levels). The 6:00 AM to 7:00 AM hour was selected as the analysis hour because this would be the hour when the highest number of worker vehicle and construction truck trips to and from the construction site would occur.

Construction truck trips that would occur during the construction workday (i.e., after 7:00 AM) were included in the modeling of construction noise as discussed below.

NOISE RECEPTOR SITES

A noise-sensitive receptor is defined in Chapter 19, "Noise," Section 124 of the 2020 *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 high-rise buildings, 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, 370 receptor locations were selected for the construction noise analysis. **Table 19-19** lists the noise measurement sites (i.e., sites M1 to M12) as well as the noise receptor sites (i.e., sites 1 to 370) and the associated land use at these sites.

Construction Noise Modeling

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

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

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

In addition, 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.

More refined analysis will be conducted between Draft and Final EIS.

Table 19-19
Noise Receptors by Location and Land Use

Receptor	Location	Block / Lot	Associated Land Use
M1	35th Ave and 42nd Street	N/A	Noise Measurement Location
M2	Northern Blvd and 42nd Place	N/A	Noise Measurement Location
M3	41st Street between 35th and 36th Avenues	N/A	Noise Measurement Location
M4	Steinway Street between 35th and 36th Avenues	N/A	Noise Measurement Location
M5	38th Street between 35th and 36th Avenues	N/A	Noise Measurement Location
M6	36th Avenue between 37th and 38th Streets	N/A	Noise Measurement Location
M7	37th Street between 35th and 36th Avenues	N/A	Noise Measurement Location
M8	35th Avenue and 38th Street	N/A	Noise Measurement Location
M9	38th Street near 35th Avenue	N/A	Noise Measurement Location
M10	36th Avenue and Steinway Street	N/A	Noise Measurement Location
M11	Northern Blvd and 42nd Street	N/A	Noise Measurement Location
M12	42nd Street between 35th and 36th Avenues	N/A	Noise Measurement Location
1	35-02 37 Avenue	Block 377 / Lot 13	Commercial & Office Buildings
2, 3	37-14 36 Street	Block 377 / Lot 7501	Mixed Residential & Commercial
4	34-11 34 Avenue	Block 622 / Lot 80	Residential
5-8	34-15 37 Avenue	Block 634 / Lot 1	Residential
9	36-43 34 Street	Block 634 / Lot 17	Residential
10	36-13 34 Street	Block 634 / Lot 30	Residential
11, 12	34-06 36 Avenue	Block 634 / Lot 34	Mixed Residential & Commercial
13-15	34-12 36 Avenue	Block 634 / Lot 36	School
16, 17	36-24 35 Street	Block 634 / Lot 45	Residential
18	36-44 35 Street	Block 634 / Lot 54	Residential
19-21	36-52 35 Street	Block 634 / Lot 57	Residential
22, 23	36-54 35 Street	Block 634 / Lot 60	Residential
24, 25	34-08 36 Avenue	Block 634 / Lot 134	Church
26	36-47 35 Street	Block 635 / Lot 14	Residential
27, 28	36-50 36 Street	Block 635 / Lot 57	Residential
29, 30	36-21 36 Street	Block 636 / Lot 22	Residential
31	36-11 36 Street	Block 636 / Lot 26	Residential
32, 33	36-02 36 Avenue	Block 636 / Lot 27	Mixed Residential & Commercial
34, 35	36-10 36 Avenue	Block 636 / Lot 30	Residential
36, 37	36-14 36 Avenue	Block 636 / Lot 32	Residential
38, 39	36-22 37 Street	Block 636 / Lot 39	Residential
40, 41	36-15 37 Street	Block 637 / Lot 25	Residential
42, 43	36-09 37 Street	Block 637 / Lot 27	Residential
44, 45	37-04 36 Avenue	Block 637 / Lot 32	Residential
46, 47	37-10 36 Avenue	Block 637 / Lot 34	Residential
48, 49	36-12 38 Street	Block 637 / Lot 40	Residential
50, 51	36-52 38 Street	Block 637 / Lot 56	Residential
52	34-07 36 Avenue	Block 638 / Lot 1	Mixed Residential & Commercial
53	35-37 34 Street	Block 638 / Lot 9	Residential
54	35-25 34 Street	Block 638 / Lot 13	Residential
55-59	35-02 35 Street	Block 638 / Lot 25	Mixed Residential & Commercial
60-65	35-20 35 Street	Block 638 / Lot 31	Residential
66, 67	35-38 35 Street	Block 638 / Lot 37	Park
68	35-48 35 Street	Block 638 / Lot 43	Residential
69	34-11 36 Avenue	Block 638 / Lot 46	Mixed Residential & Commercial
70-73	35-02 36 Street	Block 639 / Lot 16	School
74-76	35-19 36 Avenue	Block 639 / Lot 45	Religious
77, 78	35-15 36 Avenue	Block 639 / Lot 46	Multicultural Center
79-80	36-01 36 Avenue	Block 640 / Lot 3	Commercial & Office Buildings
82-84	35-37 36 Street	Block 640 / Lot 4	Commercial & Office Buildings
86-89	35-27 36 Street	Block 640 / Lot 10	Institutional
90-92	35-01 36 Street	Block 640 / Lot 17	Commercial & Office Buildings
93-97	36-12 35 Avenue	Block 640 / Lot 24	School
98-100	35-43 37 Street	Block 641 / Lot 1	Residential

Table 19-19 (cont'd)
Noise Receptors by Location and Land Use

Receptor	Location	Block / Lot	Associated Land Use
101, 102	37-11 36 Avenue	Block 641 / Lot 52	Residential
103, 104	34-11 35 Avenue	Block 642 / Lot 1	Commercial & Office Buildings
105, 106	34-41 34 Street	Block 642 / Lot 12	Residential
107	34-23 34 Street	Block 642 / Lot 20	Residential
108	34-13 34 Street	Block 642 / Lot 24	Residential
109	34-04 34 Avenue	Block 642 / Lot 28	Mixed Residential & Commercial
110, 111	34-22 35 Street	Block 642 / Lot 36	Mixed Residential & Commercial
112, 113	34-42 35 Street	Block 642 / Lot 46	Residential
114, 115	34-32 35 Street	Block 642 / Lot 7501	Residential
116-119	36-01 35 Avenue	Block 644 / Lot 1	Museum
120-122	34-02 37 Street	Block 644 / Lot 34	Mixed Residential & Commercial
123-125	37-11 35 Avenue	Block 645 / Lot 1	Commercial & Office Buildings
126	34-27 37 Street	Block 645 / Lot 17	Residential
127-130	34-21 37 Street	Block 645 / Lot 20	Residential
131-134	34-11 37 Street	Block 645 / Lot 24	Residential
135, 136	37-02 34 Avenue	Block 645 / Lot 28	Residential
137, 138	34-08 38 Street	Block 645 / Lot 35	Residential
139, 140	34-20 38 Street	Block 645 / Lot 38	Residential
141, 142	34-32 38 Street	Block 645 / Lot 46	Residential
143, 144	37-14 34 Avenue	Block 645 / Lot 131	Mixed Residential & Commercial
145	35-07 34 Avenue	Block 646 / Lot 83	Residential
146, 147	32-90 37 Street	Block 647 / Lot 73	Residential
148-150	32-87 37 Street	Block 655 / Lot 2	Residential
151, 152	37-17 34 Avenue	Block 655 / Lot 72	Residential
153	32-77 38 Street	Block 656 / Lot 7	Residential
154	32-78 Steinway Street	Block 656 / Lot 68	Mixed Residential & Commercial
155	38-07 34 Avenue	Block 656 / Lot 79	Residential
156-162	36-20 Steinway Street	Block 665 / Lot 34	Residential
163-166	36-11 Steinway Street	Block 666 / Lot 8	Residential
167-171	40-04 36 Avenue	Block 666 / Lot 12	Mixed Residential & Commercial
172-174	36-21 38 Street	Block 666 / Lot 15	Residential
175-177	35-47 38 Street	Block 668 / Lot 1	Residential
178-181	35-44 Steinway Street	Block 668 / Lot 36	Mixed Residential & Commercial
182-185	35-52 Steinway Street	Block 668 / Lot 40	Residential
186-189	35-57 38 Street	Block 668 / Lot 43	Mixed Residential & Commercial
190, 191	35-53 38 Street	Block 668 / Lot 44	Residential
192	35-01 Steinway Street	Block 669 / Lot 20	Open Space & Outdoor Recreation
193, 194	34-26 Steinway Street	Block 672 / Lot 35	Mixed Residential & Commercial
195-199	34-01 Steinway Street	Block 673 / Lot 16	Mixed Residential & Commercial
200-204	34-26 41 Street	Block 673 / Lot 34	Residential
205-209	34-50 41 Street	Block 673 / Lot 42	Mixed Residential & Commercial
210, 211	34-37 41 Street	Block 674 / Lot 5	Residential
212, 213	34-21 41 Street	Block 674 / Lot 11	Residential
214, 215	41-06 34 Avenue	Block 674 / Lot 17	Mixed Residential & Commercial
216, 217	41-16 34 Avenue	Block 674 / Lot 18	Mixed Residential & Commercial
218, 219	34-14 42 Street	Block 674 / Lot 20	Residential
220, 221	34-30 42 Street	Block 674 / Lot 27	Residential
222, 223	34-48 42 Street	Block 674 / Lot 34	Residential
224-226	34-58 42 Street	Block 674 / Lot 38	Residential
227-229	41-05 35 Avenue	Block 674 / Lot 39	Residential
230, 231	34-05 41 Street	Block 674 / Lot 116	Residential
232, 233	34-39 42 Street	Block 675 / Lot 5	Residential
234, 235	34-23 42 Street	Block 675 / Lot 12	Residential
236, 237	34-03 42 Street	Block 675 / Lot 18	Residential
238, 239	34-14 43 Street	Block 675 / Lot 26	Residential
240, 241	34-30 43 Street	Block 675 / Lot 43	Residential
242, 243	34-46 43 Street	Block 675 / Lot 51	Residential

Table 19-19 (cont'd)
Noise Receptors by Location and Land Use

Receptor	Location	Block / Lot	Associated Land Use
244	42-06 34 Avenue	Block 675 / Lot 119	Mixed Residential & Commercial
245	42-18 34 Avenue	Block 675 / Lot 122	Mixed Residential & Commercial
246	42-21 35 Avenue	Block 675 / Lot 255	Mixed Residential & Commercial
247	42-05 35 Avenue	Block 675 / Lot 156	Mixed Residential & Commercial
248, 249	32-86 41 Street	Block 676 / Lot 7501	Mixed Residential & Commercial
250	41-25 34 Avenue	Block 677 / Lot 74	Commercial & Office Buildings
251-254	42-15 34 Avenue	Block 690 / Lot 1	Residential
255	42-07 34 Avenue	Block 690 / Lot 5	Residential
256, 257	42-01 34 Avenue	Block 690 / Lot 7	Commercial & Office Buildings
258, 259	43-19 34 Avenue	Block 691 / Lot 1	Residential
260, 261	43-07 34 Avenue	Block 691 / Lot 6	Residential
262-264	34-33 43 Street	Block 703 / Lot 17	Residential
265, 266	34-19 43 Street	Block 703 / Lot 23	Residential
267-269	43-02 34 Avenue	Block 703 / Lot 25	Mixed Residential & Commercial
270-272	43-10 34 Avenue	Block 703 / Lot 28	Mixed Residential & Commercial
273-275	43-20 34 Avenue	Block 703 / Lot 32	Mixed Residential & Commercial
276, 277	34-24 44 Street	Block 703 / Lot 36	Residential
278-280	34-34 44 Street	Block 703 / Lot 40	Residential
281, 282	34-14 44 Street	Block 703 / Lot 132	Residential
283-286	34-05 44 Street	Block 704 / Lot 22	Residential
287, 288	34-06 45 Street	Block 704 / Lot 27	Residential
289, 290	34-07 45 Street	Block 705 / Lot 6	Mixed Residential & Commercial
291, 292	44-15 45 Street	Block 707 / Lot 1	Residential
293, 294	44-01 34 Avenue	Block 707 / Lot 3	Residential
295	32-86 47 Street	Block 722 / Lot 1	Mixed Residential & Commercial
296	32-93 46 Street	Block 722 / Lot 106	Residential
297, 298	Development Site I	Block 670 / Lot 36	Mixed Residential & Commercial
299-302	Development Site J	Block 670 / Lot 39	Mixed Residential & Commercial
303-311, 371, 372	Development Sites D, E	Block 670 / Lot 8	Mixed Residential & Commercial, Open Space
312-315	Development Site C	Block 669 / Lot 13	Cultural/Community Facility & Residential, Open Space
316	Development Site G	Block 669 / Lot 8	Mixed Residential & Commercial
317-319	Development Site H	Block 669 / Lot 41	Mixed Residential & Commercial
320-323	Development Site F	Block 668 / Lot 2	Mixed Residential & Commercial
324-344	Development Site B	Block 668 / Lot 5	Cultural/Community Facility, Mixed Residential & Commercial, Open Space
345-367	Development Site A	Block 661 / Lot 4	Cultural/Community Facility, Commercial & Office Buildings, Residential, Open Space
368-370	Development Site K	Block 671 / Lot 18	Mixed Residential & Commercial

Determination of Non-Construction Noise Levels

Noise generated by construction activities (calculated using the CadnaA model as described above) were added to baseline (i.e., non-construction) noise levels, including noise generated by non-construction traffic on adjacent roadways, to determine the total noise levels at each receptor location. Baseline noise levels were calculated using the CadnaA model using existing condition traffic data. 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 the Proposed Actions.

Based on the anticipated construction schedule and preliminary construction estimates developed for the Proposed Actions, specific time periods during construction were selected for detailed analysis. The periods were selected to capture each major construction stage (e.g., excavation/foundation work, superstructure work, interior fit-out work) at the buildings to be constructed under the Proposed Actions, including major overlaps of construction stages between individual sites. These would be the time periods with the potential to result in the maximum incremental construction noise at nearby receptors (i.e., time periods when multiple buildings would be under construction using noisy equipment) as well as resulting in the maximum levels of construction noise at the proposed buildings that would be completed and occupied during subsequent construction associated with the Proposed Actions. Each analysis time period conservatively represented 3 to 17 months of time based on the duration of activities that would be underway during the time period.

The 14 worst-case time periods selected for the detailed construction noise analysis are shown in **Table 19-20**.

CONSTRUCTION NOISE IMPACT CRITERIA

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

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

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

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

objectionable (i.e., equal to or greater than 20 dBA)[4] lasting three months or more would also be considered significant impacts.

Table 19-20
Construction Noise Analysis Time Periods

Months	Projected Development Site(s) under Construction	Construction Activities during Analysis Period
2-4	D	Demolition and Excavation/Foundation
	I, J	Excavation/Foundation
9-11	D	Superstructure and Exteriors
	I	Interiors
	J	Interiors
	C	Excavation/Foundation
	G	Excavation/Foundation
	H	Excavation/Foundation
13-14	D	Superstructure, Exteriors, Interiors and Roofing
	I, J	Interiors
	C, G, H	Excavation/Foundation
17	D	Superstructure, Interiors, and Roofing
	C	Excavation/Foundation and Superstructure
	G, H	Superstructure and Exteriors
35	B	Demolition and Excavation/Foundation
	F	Excavation/Foundation
40-42	B	Excavation/Foundation, Superstructure, Exteriors, and Interiors
	F	Superstructure and Exteriors
44-45	B	Superstructure, Exteriors, Interiors, and Roofing
	F	Interiors and Site Work
	A	Demolition and Excavation/Foundation
51-52	B	Interiors and Roofing
	A	Excavation/Foundation, Superstructure, and Exteriors
56-59	B	Interiors, Roofing, and Site Work
	A	Superstructure, Exteriors, Interiors, and Roofing
63	B	Interiors
	A	Interiors, Roofing, and Site Work
74	E	Demolition and Excavation/Foundation
	K	Excavation/Foundation
79	E	Excavation/Foundation and Superstructure
	K	Superstructure and Exteriors
86	E	Superstructure, Exteriors, and Interiors
97	E	Interiors

EVALUATION OF CONSTRUCTION NOISE LEVELS

The predicted exterior noise level increments during construction under the Proposed Actions at the analyzed receptor sites (including project elements completed and occupied prior to the completion of all construction resulting from the Proposed Actions) were compared to the construction noise impact thresholds described above. At the noise-sensitive receptors that experience exceedances of these thresholds during the analysis periods as determined above, the duration of exceedance of each impact threshold was determined. The significance of the exceedances was determined based on the predicted magnitude and duration of the construction

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

noise at these locations according to the criteria described above. Based on the incremental noise level increase, overall exterior noise levels for each analysis period were also determined.

NOISE REDUCTION MEASURES

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

In terms of source controls (i.e., reducing noise levels at the source or during the most sensitive time periods), the following measures would be mandated in accordance with the *New York City Noise Code* and include additional measures beyond the *New York City Noise Code*:

- Equipment that meets the sound level standards specified in Subchapter 5 of the *New York City Noise Control Code* would be utilized from the start of construction. **Table 19-21** shows the noise levels for typical construction equipment and the mandated noise levels for the equipment that would be used for construction under the Proposed Actions.
- As early in the construction period as logistics would allow, diesel- or gas-powered equipment would be replaced with electrical-powered equipment such as welders, water pumps, bench saws, and table saws (i.e., early electrification) to the extent feasible and practicable. Where 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, construction sites 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 would be implemented:

- Where logistics allow, noisy equipment, such as cranes, concrete pumps, concrete trucks, and delivery trucks, would be located away from and shielded from sensitive receptor locations;
- Noise barriers constructed from plywood or other materials would be utilized to provide shielding (e.g., the construction sites would have a minimum 8-foot tall barrier around the perimeter);
- Concrete trucks would be required to be located inside site-perimeter noise barriers while pouring or being washed out; and
- Path noise control measures (i.e., portable noise barriers, panels, enclosures, and acoustical tents) for certain dominant noise equipment to the extent feasible and practical based on the

results of the construction noise calculations. The details to construct portable noise barriers, enclosures, tents, etc. are shown in DEP's *Rules for Citywide Construction Noise Mitigation*.[5]

Table 19-21
Typical Construction Equipment Noise Emission Levels (dBA)

Equipment List	L_{max} Noise Level at 50 feet[1]
Bar Bender	80
Compressor (air>350cfm)	80
Concrete Mixer Truck	85
Concrete Pump Truck	82
Concrete Trowel	70[1]
Concrete Vibrator	76[2]
Crane	85
Drill Rig Truck	84
Excavator	85
Forklift	64[3]
Front End Loader	80
Generator	82
Hoist	68[4]
Impact Pile Driver	95
Jackhammer	85
Man Lift (Scissor Lift)	75[5]
Pumps	77
Saw	76[2]
Vacuum Excavator (Vac-truck)	85
Welder / Torch	73

Source:
[1] Previous project equipment noise certification
[2] Federal Transit Administration, Report No. 0123 September 2018, Table 7-1 Construction Equipment Noise Emission Levels
[3] Forklift Noise Emission (Model 9000 Dan Truck)
[4] 2005 Construction Noise Defra UK
[5] Federal Highway Administration HEP-05-054-DOT-VNTSC-FHWA-05-01 Roadway Construction Noise Model User's Guide, January 2006, Table 1 CA/T Noise Emission Reference Levels and Usage Factors

CONSTRUCTION NOISE ANALYSIS RESULTS

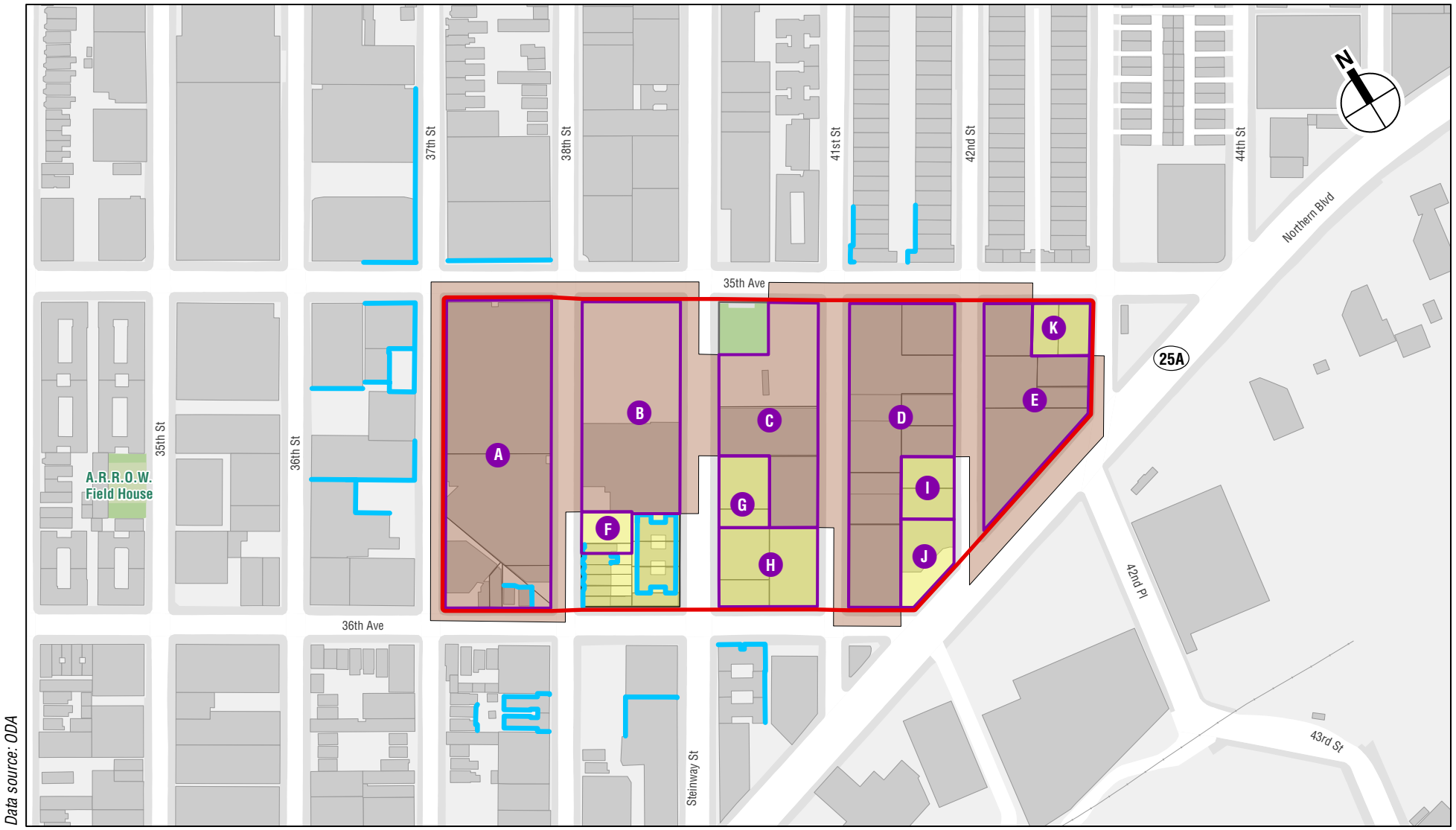
Cumulative On-Site and Mobile Construction Noise Sources

Using the methodology described and considering the noise abatement measures specified above, cumulative noise analyses were performed to determine maximum 1-hour equivalent ($L_{eq(1)}$) noise levels that would be expected at each of the 370 noise receptor locations during each of the 14 selected construction periods.

The full results of the detailed construction noise analysis are shown in Appendix F. The results of the detailed construction noise analysis at locations where "objectionable" or "very objectionable" noise level increases are predicted are summarized in **Table 19-22** and **Figure 19-10**.

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

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COMMUNITY DISTRICT 1

Construction Noise Impacts
Figure 19-10

Table 19-22
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
19-21	36-52 35 Street	67.4	73.9	15.0	5	0
29, 30	36-21 36 Street	64.8	76.8	17.9	5	0
34, 35	36-10 36 Avenue	66.8	81.5	15.5	5	0
36, 37	36-14 36 Avenue	66.7	82.3	16.4	5	0
38, 39	36-22 37 Street	60.4	77.7	17.3	5	0
40, 41	36-15 37 Street	61.2	79.3	20.4	5	5
42, 43	36-09 37 Street	61.5	78.3	19.5	5	0
44, 45	37-04 36 Avenue	67.0	82.3	15.8	5	0
46, 47	37-10 36 Avenue	66.6	82.0	16.2	5	0
48, 49	36-12 38 Street	64.0	74.6	15.7	12	0
53	35-37 34 Street	58.9	74.6	15.7	5	0
60-65	35-20 35 Street	64.8	76.6	16.7	5	0
82-84	35-37 36 Street	64.2	84.2	25.3	21	18
86-89	35-27 36 Street	64.0	84.3	25.4	21	18
90-92	35-01 36 Street	68.2	78.5	17.6	7	0
93-97	36-12 35 Avenue	68.3	87.9	26.8	16	13
101, 102	37-11 36 Avenue	67.7	75.8	16.9	17	0
116-119	36-01 35 Avenue	68.3	83.4	19.5	13	0
123-125	37-11 35 Avenue	68.2	86.0	18.1	13	0
156-162	36-20 Steinway Street	77.4	79.0	20.1	22	5
163-166	36-11 Steinway Street	69.4	78.2	19.1	17	0
167-171	40-04 36 Avenue	69.9	84.6	20.9	25	17
172-174	36-21 38 Street	64.0	76.5	17.6	5	0
178-181	35-44 Steinway Street	69.5	89.1	30.2	17	9
182-185	35-52 Steinway Street	69.7	86.0	23.1	25	17
186-189	35-57 38 Street	67.4	83.2	17.6	5	0
190, 191	35-53 38 Street	64.8	84.5	20.3	6	5
193, 194	34-26 Steinway Street	66.3	75.2	16.3	3	0
205-209	34-50 41 Street	67.2	80.9	18.3	8	0
222, 223	34-48 42 Street	62.7	76.9	18.0	5	0
224-226	34-58 42 Street	67.4	83.6	20.5	16	8
227-229	41-05 35 Avenue	67.4	85.9	18.9	8	0
232, 233	34-39 42 Street	62.5	77.5	18.0	5	0
234, 235	34-23 42 Street	62.3	74.6	15.7	4	0
236, 237	34-03 42 Street	62.6	75.4	16.5	4	0
240, 241	34-30 43 Street	64.8	75.8	16.9	5	0
242, 243	34-46 43 Street	64.9	77.4	18.5	5	0
246	42-21 35 Avenue	67.1	85.0	17.9	8	0
247	42-05 35 Avenue	66.7	84.8	18.1	8	0
262-264	34-33 43 Street	65.5	78.0	17.2	5	0
276, 277	34-24 44 Street	63.5	74.8	15.9	5	0
278-280	34-34 44 Street	64.2	75.2	16.3	5	0
281, 282	34-14 44 Street	63.1	76.3	17.4	4	0
297, 298	Development Site I	66.1	84.8	19.4	18	0
299-302	Development Site J	74.1	83.1	24.2	17	17
303-311, 371, 372	Development Site D	69.6	88.3	23.9	18	18
312-315	Development Site C	70.1	84.2	22.1	27	3
316	Development Site G	69.9	82.8	15.2	5	0
320-323	Development Site F	65.0	83.2	24.3	12	7
324-344	Development Site B	69.8	90.6	31.7	17	17
345-367	Development Site A	68.1	81.6	22.7	12	12

The noise levels shown in **Table 19-22** 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 the construction under the Proposed Actions would be comparable to those from typical construction sites in New York City involving a new building with concrete slab floors and foundation. Similarly, potential disruptions to adjacent residences and other receptors from elevated noise levels generated by construction would be expected to be comparable to those that would occur immediately adjacent to a typical New York City construction site during the portions of the construction period when the loudest activities would occur.

At some receptors, construction of the proposed project would result in increments that would exceed the CEQR construction noise screening thresholds and/or that would be considered objectionable (i.e., 15 dBA or greater), and/or that would be considered very objectionable (i.e., 20 dBA or greater). The potential for significant adverse impacts at these receptors was determined by evaluating the duration of these increments, as described below.

Receptors along 36th Street between 35th and 36th Avenues

Receptors 82 through 84 represent the commercial office building west of Development Site A at 35-37 36th Street. Receptors 86 through 89 represent the educational institution at 35-27 36th Street. Receptors 93 through 97 represent the school and play yard at 36-12 35th Avenue. Existing noise levels at these receptors are in the high-50s dBA to high-60s dBA, which would be considered "marginally acceptable" according to *CEQR Technical Manual* noise exposure criteria.

At Receptor 82 on the west façade of 35-37 36th Street, Receptors 86 and 87 on the west and north façades of 35-27 36th Street, and Receptor 93 on the north façade of 36-12 35th Avenue, which face away from construction, construction is predicted to result in noise levels up to the mid-70s dBA, resulting in noise level increases up to approximately 16 dBA during the most noise-intensive stages of construction (i.e., pile driving at the northern end of Projected Development Site A), which would occur for up to approximately 6 months. Noise level increases greater than 15 dBA at these receptors, which would be considered objectionable, would occur for up to approximately 7 months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this receptor would be in the "marginally unacceptable" category.

At Receptors 83, 84, 88, 89 and 94 through 97, which represent the construction-facing façades of these buildings, construction is predicted to result in noise levels up to the high-80s dBA, resulting in noise level increases up to 27 dBA during the most noise-intensive stages of construction (i.e., pile driving at the southern end of Projected Development Site A), which would occur for up to approximately 7 months. Noise level increases greater than 20 dBA at these receptors, which would be considered very objectionable, would occur for up to approximately 18 months. Noise level increases greater than 15 dBA at these receptors, which would be considered objectionable, would occur for up to approximately 21 months. During this time, total noise levels at these receptors would be in the mid-60s to high-80s dBA. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these receptors would be in the "clearly unacceptable" category.

Based on the prediction of construction noise levels up to the high-80s dBA resulting in construction noise level increments up to approximately 27 dBA, construction noise associated with the Proposed Actions would result in a temporary significant adverse impact at portions of the eastern and northern façades of the commercial office building at 35-37 36th Street, the south

and east construction-facing façades of the educational institution at 35-27 36th Street, and the school and play yard at 36-12 35th Avenue. These receptors are discussed further in Chapter 20, "Mitigation."

Receptors on 35th Avenue between 36th and 38th Streets

Receptors 116 through 119 represent the museum at 36-01 35th Avenue. Receptors 123 through 125 represent the commercial office building at 37-11 35th Avenue. Existing noise levels at these receptors are in the high-50s to high-60s dBA, which would be considered "marginally acceptable" according to *CEQR Technical Manual* noise exposure criteria.

At Receptors 116 through 118 on the south, west, and north façades of 36-01 35th Avenue and at Receptors 123 and 125 on the west and east façades of 37-11 35th Avenue facing away from construction, construction is predicted to result in noise levels up to the low-80s dBA, resulting in noise level increases up to approximately 16 dBA during the most noise-intensive stages of construction (i.e., pile driving at the northern end of Projected Development Site A), which would occur for up to approximately 6 months. Noise level increases greater than 15 dBA at these receptors, which would be considered objectionable, would occur for up to approximately 6 months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at this receptor would be in the "clearly unacceptable" category.

At Receptor 119, which represents the east façade of 36-01 35th Avenue, and 124 which represents the south façade of 37-11 35th Avenue, construction is predicted to result in noise levels up to the mid-80s dBA, resulting in noise level increases up to approximately 19.5 dBA during the most noise-intensive stages of construction (i.e., pile driving at the northern end of Projected Development Site A), which would occur for up to approximately 6 months. Noise level increases greater than 15 dBA at these receptors, which would be considered objectionable, would occur for up to approximately 13 months. During this time, total noise levels at these receptors would be in the high-70s to mid-80s dBA. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these receptors would be in the "clearly unacceptable" category.

Based on the prediction of construction noise levels up to the mid-80s dBA resulting in construction noise level increments up to approximately 19.5 dBA, construction noise associated with the Proposed Actions would result in a temporary significant adverse impact at the east and portions of the south façade of the museum at 36-01 35th Avenue and the south façade of 37-11 35th Avenue. These receptors are discussed further in Chapter 20, "Mitigation."

Receptors at along 42nd Street between 34-16 through 34-58 42nd Street

Receptors 224 through 226 represent the residences along 42nd Street between 34-16 through 34-58 42nd Street. Existing noise levels at these receptors are in the high-50s to high-60s dBA, which would be considered "marginally acceptable" according to *CEQR Technical Manual* noise exposure criteria.

At Receptors 225 and 226 on the south and east façade of 34-16 42nd Street facing 35th Avenue and 42nd Street, construction is predicted to result in noise levels up to the low-80s dBA, resulting in noise level increases up to approximately 18 dBA during the most noise-intensive stages of construction (i.e., pile driving at Projected Development Site E and Projected Development Site K), which would occur for up to approximately 4 months. Noise level increases greater than 15 dBA at these receptors, which would be considered objectionable, would occur for up to approximately 8 months. According to *CEQR Technical Manual* noise exposure criteria,

maximum construction noise levels at these receptors would be in the "clearly unacceptable" category.

At Receptor 224, which represents the west façade of these buildings, construction is predicted to result in noise levels up to the mid-80s dBA, resulting in noise level increases up to 21 dBA during the most noise-intensive stages of construction (i.e., pile driving at the northern end of Projected Development Site D), which would occur for up to approximately 8 months. Noise level increases greater than 20 dBA at these receptors, which would be considered very objectionable, would occur for up to approximately 8 months. Noise level increases greater than 15 dBA at these receptors, which would be considered objectionable, would occur for up to approximately 16 months. During this time, total noise levels at these receptors would be in the mid-70s to mid-80s dBA. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these receptors would be in the "clearly unacceptable" category.

Based on the prediction of construction noise levels up to the mid-80s dBA resulting in construction noise level increments up to approximately 21 dBA, construction noise associated with the Proposed Actions would result in a temporary significant adverse impact at the west façades of the residences along 42nd Street between 34-16 through 34-58 42nd Street. These receptors are discussed further in Chapter 20, "Mitigation."

Receptors at 36-7 and 36-11 Steinway Street and 40-04 36th Avenue

Receptors 163 through 171 represent the residential buildings at 36-07 and 36-11 Steinway Street and 40-04 36th Avenue. Existing noise levels at these receptors are in the high-50s to high-60s dBA, which would be considered "marginally acceptable" according to *CEQR Technical Manual* noise exposure criteria.

At Receptors 163, 166, and 167, which represent the south and west facing façades of these buildings, construction is predicted to result in noise levels up to the low-80s dBA, resulting in noise level increases up to approximately 11 dBA during the most noise-intensive stages of construction (i.e., pile driving at Projected Development Sites H, G, and C), which would occur for up to approximately 3 months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these receptors would be in the "clearly unacceptable" category.

At Receptors 164, 165, 168, 169, 170, and 171, which represent the north, east, and interior courtyard facing façades of these buildings, construction is predicted to result in noise levels up to the mid-80s dBA, resulting in noise level increases less than 21 dBA during the most noise-intensive stages of construction (i.e., concrete operations at Projected Development Site D and C), which would occur for up to approximately 17 months. Noise level increases greater than 20 dBA at these receptors, which would be considered very objectionable, would occur for up to approximately 17 months. Noise level increases greater than 15 dBA at these receptors, which would be considered objectionable, would occur for up to approximately 25 months. During this time, total noise levels at these receptors would be in the low-60s to mid-80s dBA. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these receptors would be in the "clearly unacceptable" category.

Based on the prediction of construction noise levels up to the mid-80s dBA resulting in construction noise level increments up to approximately 21 dBA, construction noise associated with the Proposed Actions would result in a temporary significant adverse impact at the north, east, and interior courtyard facing façades of the residences at 36-07 and 36-11 Steinway Street and 40-04 36th Avenue. These receptors are discussed further in Chapter 20, "Mitigation."

Receptors Immediately South of Site B between 38th Street and Steinway Street

Receptors 178 through 191 represent the residential buildings south of Site B located at 35-44 through 35-52 Steinway Street and 35-49 through 35-57 38th Street. Existing noise levels at these receptors are in the high-50s to high-60s dBA, which would be considered "marginally acceptable" according to *CEQR Technical Manual* noise exposure criteria.

At Receptor 179 representing the residences on the west façade of 35-44 Steinway Street, construction is predicted to result in noise levels up to the high-80s dBA, resulting in noise level increases up to approximately 30 dBA during the most noise-intensive stages of construction (i.e., pile driving and excavation at Projected Development Site F), which would occur for up to approximately 6 months. Noise level increases greater than 20 dBA at these receptors, which would be considered very objectionable, would occur for up to approximately 9 months. Noise level increases greater than 15 dBA at these receptors, which would be considered objectionable, would occur for up to approximately 9 months. During this time, total noise levels at these receptors would be in the low-60s to high-80s dBA. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these receptors would be in the "clearly unacceptable" category.

At the remaining receptors, construction is predicted to result in noise levels up to the mid-80s dBA, resulting in noise level increases up to approximately 26 dBA during the most noise-intensive stages of construction (i.e., pile driving and excavation at the southern end of Site B), which would occur for up to approximately 3 months. Noise level increases greater than 20 dBA at these receptors, which would be considered very objectionable, would occur for up to approximately 8 months. Noise level increases greater than 15 dBA at these receptors, which would be considered objectionable, would occur for up to approximately 25 months. During this time, total noise levels at these receptors would be in the low-60s to mid-80s dBA. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these receptors would be in the "clearly unacceptable" category.

Based on the prediction of construction noise levels up to the high-80s dBA resulting in construction noise level increments up to approximately 26 dBA, construction noise associated with the Proposed Actions would result in a temporary significant adverse impact at the residences at 35-44 through 35-52 Steinway Street and 35-49 through 35-57 38th Street. These receptors are discussed further in Chapter 20, "Mitigation."

Receptors at 36-20 Steinway Street

Receptors 156 through 162 represent the residential building at 36-20 Steinway Street. Existing noise levels at these receptors are in the high-50s to high-70s dBA, which would be considered "marginally unacceptable" according to *CEQR Technical Manual* noise exposure criteria.

At Receptors 156 through 158, facing away from construction, and at Receptors 159 and 162, facing partially facing construction, construction is predicted to result in noise level increases up to approximately 13 dBA, which would not exceed the *CEQR Technical Manual* construction noise screening thresholds.

At Receptors 160 and 161, construction is predicted to result in noise levels up to the high-70s dBA, resulting in noise level increases up to approximately 20 dBA during the most noise-intensive stages of construction (i.e., concrete operations at Projected Development Site A), which would occur for up to approximately 5 months. Noise level increases greater than 20 dBA at these receptors, which would be considered very objectionable, would occur for up to approximately 5

months. Noise level increases greater than 15 dBA at these receptors, which would be considered objectionable, would occur for up to approximately 22 months. During this time, total noise levels at these receptors would be in the low-60s to high-70s dBA. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these receptors would be in the "marginally unacceptable" category.

Based on the prediction of construction noise levels up to the high-70s dBA resulting in construction noise level increments up to approximately 20 dBA, construction noise associated with the Proposed Actions would result in a temporary significant adverse impact at the north and west of the residential building at 36-20 Steinway Street. These receptors are discussed further in Chapter 20, "Mitigation."

Receptors along 37th Street and 38th Street south of 36th Avenue

Receptors 40 through 43 represent the residences between 36-09 and 36-15 37th Street. Receptors 48 and 49 represent the residences at 36-12 and 36-16 38th Street. Existing noise levels at these receptors are in the high-50s to mid-60s dBA, which would be considered "acceptable" according to *CEQR Technical Manual* noise exposure criteria.

At Receptors 40, 42, 43, and 48 which represent the east and west façades of 36-09 37th Street, the west façade of 36-15 37th Street, and the east façade of 36-12 38th Street, construction is predicted to result in noise levels up to the high-70s dBA, resulting in noise level increases up to but not exceeding approximately 20 dBA during the most noise-intensive stages of construction (i.e., concrete operations at Projected Development Site A), which would occur for up to approximately 5 months. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these receptors would be in the "marginally unacceptable" category.

At Receptor 41 and 49 which represents the east façade of 36-15 37th Street and west façade of 36-12 38th Street, construction is predicted to result in noise levels up to the high-70s dBA, resulting in noise level increases up to 20 dBA during the most noise-intensive stages of construction (i.e., concrete operations at Projected Development Site A), which would occur for up to approximately 5 months. Noise level increases greater than 20 dBA at these receptors, which would be considered very objectionable, would occur for up to approximately 5 months. Noise level increases greater than 15 dBA at these receptors, which would be considered objectionable, would occur for up to approximately 12 months. During this time, total noise levels at these receptors would be in the high-50s to high-70s dBA. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these receptors would be in the "marginally unacceptable" category.

Based on the prediction of construction noise levels up to the high-70s dBA resulting in construction noise level increments up to approximately 20 dBA, construction noise associated with the Proposed Actions would result in a temporary significant adverse impact at the east façade of the residences between 36-11 and 36-15 37th Street and the north, south, and west façades of the residences at 36-12 and 36-16 38th Street. These receptors are discussed further in Chapter 20, "Mitigation."

Receptors at 37-09 and 37-11 36th Avenue and 35-43 37th Street

Receptors 98 through 102 represent the residential buildings to the south of Site A located at 37-09 and 37-11 36th Avenue and 35-43 37th Street. These buildings would not be occupied once work on Projected Development Site A commences but would have the potential to experience

construction noise in the first 42 months of the construction period under the conceptual construction schedule presented in Table 19-4. Existing noise levels at these receptors are in the high-50s to high-60s dBA, which would be considered "marginally acceptable" according to *CEQR Technical Manual* noise exposure criteria.

At receptor 102, construction is predicted to result in noise levels up to the mid-70s dBA, resulting in noise level increases up to approximately 17 dBA during the most noise-intensive stages of construction (i.e., concrete operations at Projected Development Site D and maximum truck traffic on adjacent roadways), which would occur for up to approximately 17 months. During this time, total noise levels at these receptors would be in the low-60s to low-70s dBA. According to *CEQR Technical Manual* noise exposure criteria, maximum construction noise levels at these receptors would be in the "marginally unacceptable" category.

Based on the prediction of construction noise levels up to the mid-70s dBA resulting in construction noise level increments up to approximately 17 dBA, construction noise associated with the Proposed Actions would result in a temporary significant adverse impact at the residence located at 37-11 36th Avenue. These receptors are discussed further in Chapter 20, "Mitigation."

Other Nearby Receptors

At other receptors in the area, including receptors 19 through 21, 29, 30, 34 through 39, 42 through 47, 53, 60 through 65, 90 through 92, 98 through 101, 172 through 174, 186 through 189, 193, 194, 205 through 209, 222, 223, 227 through 229, 232 through 237, 240 through 243, 246, 247, 262 through 264, 276 through 280, 281, 282, and 316, construction under the Proposed Actions would, for some portion of the construction period, result in noise level increases that would be perceptible to noticeable and at times, objectionable or very objectionable. However, at these receptors, any objectionable noise level increases would occur for less than 12 months and very objectionable increases would occur for less than 3 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.

At all other receptors in the area, construction of the Proposed Actions 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.

Receptors at Projected Development Site A

The analysis assumes that proposed development at Projected Development Site A would be completed and occupied during approximately three years of construction at Projected Development Sites E and K. At Site A, construction would result in $L_{10(1)}$ noise levels ranging from the high 50s to low 80s dBA with a maximum total noise exposure of approximately 82 dBA and maximum noise level increment of less than 23 dBA during the most noise-intensive stages of construction (i.e., site work at the remaining immediately adjacent sites of Projected Development Site A), which would have a duration of approximately 4 months. Objectionable or very objectionable increments would occur for approximately 12 months. According to *CEQR Technical Manual* noise exposure criteria, maximum noise levels at these receptors the 12 worst-case months of construction would be in the "clearly unacceptable" category and in the "marginally unacceptable" category for the remainder. With Action noise levels at these receptors would be in the "marginally unacceptable" range category in the completed/operational condition of the Proposed Actions.

The design for the façade of this building is expected to provide at least 25 dBA minimum window/wall attenuation for community facility uses and commercial office uses and 35 dBA minimum attenuation for residential uses (see Table 16-12 in Chapter 16, "Noise"). With this level of window/wall attenuation, residential receptors would be expected to experience interior noise levels at this building not in exceedance of 45 dBA, which is the acceptable criterion for residential use according to *CEQR Technical Manual* noise exposure criteria, for all but 12 months of the construction period. Interior noise levels at the community facility receptors, which would have less window/wall attenuation, would be expected to exceed 45 dBA, which is the acceptable criterion for community facility use, by up to approximately 12 dBA. Interior noise levels at the commercial office receptors would be expected to exceed 50 dBA, which is the acceptable criterion for commercial office use, by up to approximately 7 dBA. Therefore, based on the predicted magnitude and duration of noise increases, construction noise associated with the Proposed Actions would result in a temporary significant adverse impact at residential, community facility, commercial office, and open space receptors at the completed and occupied Projected Development Site A. These receptors are discussed further in Chapter 20, "Mitigation."

Receptors at Projected Development Site B

The analysis assumes that proposed development at Projected Development Site B would be completed and occupied during approximately four years of construction at Projected Development Sites A, E, and K. At Site B, construction would result in $L_{10(1)}$ noise levels ranging from the high 50s to low 90s dBA with a maximum total noise exposure of approximately 91 dBA and maximum noise level increment of less than 32 dBA during the most noise-intensive stages of construction (i.e., site work at the remaining immediately adjacent sites of Projected Development Site B), which would have a duration of approximately 3 months. Objectionable increments would occur for up to approximately 17 months and very objectionable increments would occur for approximately 5 months. According to *CEQR Technical Manual* noise exposure criteria, maximum noise levels at these receptors the 17 worst-case months of construction would be in the "clearly unacceptable" category and in the "marginally unacceptable" category for the remainder. With Action noise levels at these receptors would be in the "marginally unacceptable" range category in the completed/operational condition of the Proposed Actions.

The design for the façade of this building is expected to provide 25 dBA minimum window/wall attenuation for community facility uses and 35 dBA minimum attenuation for residential uses (see Table 16-12 in Chapter 16, "Noise"). With this level of window/wall attenuation, residential receptors would be expected to experience interior noise levels at this building not in exceedance of 45 dBA, which is the acceptable criterion for residential use according to *CEQR Technical Manual* noise exposure criteria, for all but 17 months of the construction period. Interior noise levels at the community facility receptors, which would have less window/wall attenuation, would be expected to exceed 45 dBA, which is the acceptable criterion for community facility use, by up to approximately 21 dBA. Therefore, based on the predicted magnitude and duration of noise increases, construction noise associated with the Proposed Actions would result in a temporary significant adverse impact at residential, community facility, and open space receptors at the completed and occupied Projected Development Site B. These receptors are discussed further in Chapter 20, "Mitigation."

Receptors at Projected Development Site C

The analysis assumes that proposed development at Projected Development Site C would be completed and occupied during approximately six years of construction at Projected Development

Sites A, B, E, F, and K. At Site C, construction would result in $L_{10(1)}$ noise levels ranging from the mid-60s to mid-80s dBA with a maximum total noise exposure of approximately 84 dBA and maximum noise level increment of 22 dBA during the most noise-intensive stages of construction (i.e., excavation at Projected Development Site B), which would have a duration of approximately 3 months. Objectionable increments would occur for up to approximately 27 months and very objectionable increments would occur for approximately 3 months. According to *CEQR Technical Manual* noise exposure criteria, maximum noise levels at these receptors the 9 worst-case months of construction would be in the "clearly unacceptable" category and in the "marginally unacceptable" category for the remainder. With Action noise levels at these receptors would be in the "marginally unacceptable" range category in the completed/operational condition of the Proposed Actions.

The design for the façade of this building is expected to provide 25 dBA minimum window/wall attenuation for community facility uses and 35 dBA minimum attenuation for residential uses (see Table 16-12 in Chapter 16, "Noise"). With this level of window/wall attenuation, residential receptors would be expected to experience interior noise levels at this building not in exceedance of 45 dBA, which is the acceptable criterion for residential use according to *CEQR Technical Manual* noise exposure criteria, for all but 9 months of the construction period.

Interior noise levels at the community facility receptors, which would have less window/wall attenuation, would be expected to exceed 45 dBA, which is the acceptable criterion for community facility use, by up to approximately 14 dBA. Therefore, based on the predicted magnitude and duration of noise increases, construction noise associated with the Proposed Actions would result in a temporary significant adverse impact at residential, community facility, and open space receptors at the completed and occupied Projected Development Site C. These receptors are discussed further in Chapter 20, "Mitigation."

Receptors at Projected Development Site D

The analysis assumes that proposed development at Projected Development Site D would be completed and occupied during approximately six years of construction at Projected Development Sites A, B, E, F, and K. At Site D, construction would result in $L_{10(1)}$ noise levels ranging from the low 60s to high 80s dBA with a maximum total noise exposure of approximately 88 dBA and maximum noise level increment of approximately 24 dBA during the most noise-intensive stages of construction (i.e., pile driving at Projected Development Sites E and K), which would have a duration of approximately 4 months. Objectionable and very objectionable increments would occur for up to approximately 18 months. According to *CEQR Technical Manual* noise exposure criteria, maximum noise levels at these receptors the 18 worst-case months of construction would be in the "clearly unacceptable" category and in the "marginally unacceptable" category for the remainder. With Action noise levels at these receptors would be in the "marginally unacceptable" range category in the completed/operational condition of the Proposed Actions.

The design for the façade of this building is expected to provide 25 dBA minimum window/wall attenuation for community facility uses and 35 dBA minimum attenuation for residential uses (see Table 16-12 in Chapter 16, "Noise"). With this level of window/wall attenuation, residential receptors would be expected to experience interior noise levels at this building not in exceedance of 45 dBA, which is the acceptable criterion for residential use according to *CEQR Technical Manual* noise exposure criteria, for all but 18 months of the construction period. Interior noise levels at the community facility receptors, which would have less window/wall attenuation, would be expected to exceed 45 dBA, which is the acceptable criterion for community facility use, by up to approximately 18 dBA. Therefore, based on the predicted magnitude and duration of noise

increases, construction noise associated with the Proposed Actions would result in a temporary significant adverse impact at residential, community facility, and open space receptors at the completed and occupied Projected Development Site D. These receptors are discussed further in Chapter 20, "Mitigation."

Receptors at Projected Development Site E

The analysis assumes that proposed residential development at building E.1 on Projected Development Site E would be completed and occupied during approximately 11 months of superstructure and exterior façade construction at building E.2 as well as approximately 11 months of interiors construction at building E.2. Based on the potential for immediately adjacent construction over the course of 22 months, construction noise associated with the Proposed Actions would result in a temporary significant adverse impact at residential and open space receptors at the completed and occupied building E.1. These receptors are discussed further in Chapter 20, "Mitigation."

Receptors at Projected Development Site F

The analysis assumes that proposed development at Projected Development Site F would be completed and occupied during approximately five years of construction at Projected Development Sites A, E, and K. At Site F, construction would result in $L_{10(1)}$ noise levels ranging from the low 60s to mid-80s dBA with a maximum total noise exposure of approximately 83 dBA and maximum noise level increment of approximately 24 dBA during the most noise-intensive stages of construction (i.e., pile driving at Projected Development Site A overlapping with concrete operations at Projected Development Site B), which would have a duration of approximately 7 months. According to *CEQR Technical Manual* noise exposure criteria, maximum noise levels at these receptors during construction would be in the "clearly unacceptable" category, whereas With Action noise levels would be in the "marginally acceptable" range category in the completed/operational condition of the Proposed Actions. Objectionable increments would occur for approximately 12 months, and very objectionable increments would occur for approximately 7 months.

Based on the 35 dBA minimum window/wall attenuation expected to be included in the design for the façades of this building (see Table 16-12 in Chapter 16, "Noise"), interior noise levels at this building are expected to exceed 45 dBA, which is the acceptable criterion for residential use according to *CEQR Technical Manual* noise exposure criteria, by up to approximately 3 dBA. This exceedance of recommended noise exposure would occur only at times during the approximately 7 months of worst-case construction noise. Therefore, based on the predicted magnitude and duration of noise increases, construction noise associated with the Proposed Actions would result in a temporary significant adverse impact at residential receptors at the completed and occupied Projected Development Site F. These receptors are discussed further in Chapter 20, "Mitigation."

Receptors at Projected Development Sites G and H

The analysis assumes that proposed development at Projected Development Sites G and H would be completed and occupied during approximately seven years of construction at Projected Development Sites A, B, E, F, and K. At Sites G and H, construction would result in $L_{10(1)}$ noise levels ranging from the mid-60s to low 80s dBA with a maximum total noise exposure of approximately 83 dBA and maximum noise level increment of approximately 15 dBA during the most noise-intensive stages of construction (i.e., pile driving and concrete operations at Projected Development Site B), which would have a duration of approximately 5 months. According to

CEQR Technical Manual noise exposure criteria, maximum noise levels at these receptors during construction would be in the "clearly unacceptable" category, whereas With Action noise levels would be in the "marginally unacceptable" range category in the completed/operational condition of the Proposed Actions. Objectionable increments would occur for approximately 5 months.

Based on the 35 dBA minimum window/wall attenuation expected to be included in the design for the façades of this building (see Table 16-12 in Chapter 16, "Noise"), interior noise levels at this building are expected to exceed 45 dBA, which is the acceptable criterion for residential use according to *CEQR Technical Manual* noise exposure criteria, by up to approximately 3 dBA. This exceedance of recommended noise exposure would occur only at times over the course of approximately 9 months of worst-case construction noise. Consequently, based on the limited duration and magnitude of predicted noise increases, construction noise associated with the Proposed Actions at Projected Development Sites G and H would not rise to the level of a significant adverse impact.

Receptors at Projected Development Site I

The analysis assumes that proposed development at Projected Development Site I would be completed and occupied during approximately eight years of construction at Projected Development Sites A, B, C, D, E, F, G, H, and K. At Site I, construction would result in $L_{10(1)}$ noise levels ranging from the mid-60s to mid-80s dBA with a maximum total noise exposure of approximately 85 dBA and maximum noise level increment of less than 20 dBA during the most noise-intensive stages of construction (i.e., pile driving overlapping with concrete operations at Projected Development Site E), which would have a duration of approximately 4 months. Objectionable increments would occur for up to approximately 18 months. According to *CEQR Technical Manual* noise exposure criteria, maximum noise levels at these receptors during construction would be in the "clearly unacceptable" category, whereas With Action noise levels would be in the "marginally unacceptable" range category in the completed/operational condition of the Proposed Actions.

Based on the 35 dBA minimum window/wall attenuation expected to be included in the design for the façades of this building (see Table 16-12 in Chapter 16, "Noise"), interior noise levels at this building are expected to exceed 45 dBA, which is the acceptable criterion for residential use according to *CEQR Technical Manual* noise exposure criteria, by up to approximately 5 dBA. This exceedance of recommended noise exposure would occur only at times over the course of approximately 14 months of worst-case construction noise. Therefore, based on the predicted magnitude and duration of noise increases, construction noise associated with the Proposed Actions would result in a temporary significant adverse impact at residential receptors at the completed and occupied Projected Development Site I. These receptors are discussed further in Chapter 20, "Mitigation."

Receptors at Projected Development Site J

The analysis assumes that proposed development at Projected Development Site J would be completed and occupied during approximately eight years of construction at Projected Development Sites A, B, C, D, E, F, G, H, and K. At Site J, construction would result in $L_{10(1)}$ noise levels ranging from the low 70s to low 80s dBA with a maximum total noise exposure of approximately 83 dBA and maximum noise level increment of approximately 24 dBA during the most noise-intensive stages of construction (i.e., concrete operations at the south end of Projected Development Site D), which would have a duration of approximately 6 months after this receptor is completed and occupied. According to *CEQR Technical Manual* noise exposure criteria,

maximum noise levels at these receptors during construction would be in the "clearly unacceptable" category, whereas With Action noise levels would be in the "marginally unacceptable" range category in the completed/operational condition of the Proposed Actions.

Based on the 35 dBA minimum window/wall attenuation expected to be included in the design for the façades of this building (see Table 16-12 in Chapter 16, "Noise"), interior noise levels at this building are expected to exceed 45 dBA, which is the acceptable criterion for residential use according to *CEQR Technical Manual* noise exposure criteria, by up to approximately 3 dBA. This exceedance of recommended noise exposure would occur only at times over the course of approximately 6 months of worst-case construction noise after the receptor is completed and occupied. Therefore, based on the predicted magnitude and duration of noise increases, construction noise associated with the Proposed Actions would result in a temporary significant adverse impact at these residential receptors at the completed and occupied Projected Development Site J. These receptors are discussed further in Chapter 20, "Mitigation."

Construction Mobile Sources (6:00 AM to 7:00 AM)

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. A screening analysis using the methodology described above found that construction worker vehicles and trucks traveling to and from the construction sites between 6:00 AM and 7:00 AM would not result in a significant increase in noise levels (i.e., would not result in a doubling of Noise PCEs, which would be necessary to produce a 3 dBA noise level increase) on any roadways other than Steinway Street south of 35th Avenue, 35th Avenue east of 38th Street, and 36th Avenue east of 37th Street. Along these segments, vehicular traffic would have the potential to result in noise level increases between approximately 4 and 8 dBA. While there are roadways that would experience doubling of Noise PCEs during the peak construction traffic condition, peak construction traffic during the 6:00 AM to 7:00 AM hour would not result in noise increments that would be considered objectionable (i.e., 15 dBA or greater). Therefore, considering the limited magnitude and duration of predicted noise increases, construction work vehicles and trucks traveling to and from the construction sites between 6:00 AM and 7:00 AM would not likely result in significant adverse construction impacts, and no further analysis of construction mobile source noise for the 6:00 AM to 7:00 AM hour would be warranted.

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

CONCLUSIONS

Construction of the Proposed Action would have the potential to result in significant adverse impacts related to noise. At some receptors, construction of the Proposed Action would result in increments that would be considered objectionable (i.e., 15 dBA or greater) or very objectionable (i.e., 20 dBA or greater). The potential for significant adverse impacts at these receptors was determined by evaluating the duration of these increments. Significant adverse impacts related to construction noise would occur at sensitive locations throughout the Study Area as indicated in **Figure 19-10** and **Table 19-23**.

Table 19-23
Locations with Significant Adverse Impacts Related to Construction Noise

Receptors	Building/Location	Land Use	Façades
83,84	35-37 36th Street	Commercial Office	North and East Construction-Facing
88,90	35-27 36th Street	Educational Institution	South and East Construction-Facing
94-97	36-12 35th Avenue	School and Play Yard	South and East Construction-Facing
119	36-01 35th Avenue, 34-37 36th Street	Museum, TV Production	East, Eastern half of South Façade
124	37-11 35th Avenue	Commercial Office Building	South
224	Buildings along 42nd Street between 34-50 and 34-58 42nd Street	Residential	West
164, 165, 168-171	36-07 and 36-11 Steinway Street and 40-04 36th Avenue	Residential	North, East, and Lightwell-facing
178-185	Buildings along Steinway Street between 35-44 and 35-52 Steinway Street	Residential	All
190	Buildings along 38th Street between 35-49 and 35-55 38th Street	Residential	West, East
160, 161	36-20 Steinway Street	Residential	North, West
41	Buildings along 37th Street between 36-11 and 36-15 37th Street	Residential	East
49	36-12 and 36-16 38th Street	Residential	North, West, South
102	37-09 and 37-11 36th Avenue	Residential	East, North
224	Buildings along 42nd Street between 34-16 through 34-58 42nd Street	Residential	West
345-367	Projected Development Site A	Residential, Community Facility, Commercial Office, Open Space	All
324-344	Projected Development Site B	Residential, Community Facility, Open Space	All
312-315	Projected Development Site C	Residential, Community Facility, Open Space	All
303-311, 371, 372	Projected Development Site D, E	Residential, Community Facility	All
320-323	Projected Development Site F	Residential	All
297, 298	Projected Development Site I	Residential	All
299-302	Projected Development Site J	Residential	All

VIBRATION

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

CONSTRUCTION VIBRATION CRITERIA

For purposes of assessing potential structural or architectural damage, the determination of a significant impact was based on the vibration impact criterion of a Peak Particle Velocity (PPV) of 0.50 inches/second as specified in the DOB Technical Policy and Procedure Notice (*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 19-24 shows vibration source levels for typical construction equipment.

Table 19-24
Vibration Source Levels for Construction Equipment

Equipment		PPV_{ref} (in/sec)	Approximate L_v (ref) (VdB)
Pile Driver (impact)	Upper Range	1.518	112
	Typical	0.644	104
Bulldozer		0.089	87
Loaded trucks		0.076	86
Jackhammer		0.035	79
Source: *Transit Noise and Vibration Impact Assessment*, FTA Report No. 0123, September 2018.			

CONSTRUCTION VIBRATION ANALYSIS RESULTS

The buildings of most concern with regard to the potential for structural or architectural damage due to vibration are the known and potential historic buildings and structures immediately adjacent to the projected development sites (see Table 7-1 in Chapter 7, "Historic and Cultural Resources," for a list of historic structures). These would include residential buildings along the east side of

38th Street between 36th Avenue and Projected Development Site F, as well as residential buildings along the north side of 35th Avenue between 41st Street and 43rd Street. Vibration levels at these buildings and structures within 55 feet of a projected development site may exceed the 0.50 in/sec PPV during pile driving. However, because these potentially historic buildings and structures would be within 90 feet of the projected development sites, as described in Chapter 7, the Applicant would develop and implement a CPP for those architectural resources located within 90 feet of Projected Development Sites A and B, and a CPP should be developed and implemented by the future developer of Projected Development Sites F and K (which are not controlled by the Applicant). Vibration monitoring would be required per the CPPs and DOB *#10/88* regulations, and construction means and methods would need to be altered as necessary to avoid generating vibration exceeding the 0.50 inches/second threshold at any of these buildings.

For non-historic buildings and other structures immediately adjacent to projected development sites, vibration levels within 25 feet of pile driving may result in PPV levels between 0.50 and 2.0 in/sec, which is generally considered acceptable for a non-historic building or structure.

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

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

OTHER TECHNICAL AREAS

LAND USE AND NEIGHBORHOOD CHARACTER

According to the *CEQR Technical Manual*, a construction impact analysis for land use and neighborhood character is typically needed if construction would require continuous use of property for an extended duration, thereby having the potential to affect the nature of the land use and character of the neighborhood.

Land Use

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

Neighborhood Character

Construction activities would adhere to the provisions of the New York City Building Code and other applicable regulations. In addition, throughout the construction period, measures would be

implemented to control noise, vibration, and air emissions including dust. Fencing would be erected to reduce potentially undesirable views of construction areas, to buffer noise emitted from construction activities, and to protect the safety of pedestrians during construction. Access to surrounding residences and businesses would be maintained throughout the duration of the construction period. Overall, construction under the Proposed Actions is not expected to result in significant adverse neighborhood character impacts in the neighborhood surrounding the Project Area.

However, temporary adverse effects relating to increased traffic, noise, and views of construction activity would occur in the immediate vicinity of the Project Area. During construction, the Project Area and the immediately surrounding area would be subject to added traffic from construction trucks and worker vehicles. In addition, staging activities, temporary sidewalks, construction fencing, and construction equipment and building superstructure would be visible to pedestrians in the immediate vicinity of the Project Area. The effects would be localized, confined largely to streets surrounding the Project Area, but no immediate area would experience the effects of the Proposed Actions' construction activities for the full project construction duration. MPT plans would be developed in coordination with DOT. In addition, measures to control noise, vibration, and dust would be implemented on construction sites, including the erection of construction fencing which would reduce views of construction sites and buffer noise emitted from construction activities. Therefore, although there is the potential for adverse effects during construction, these effects would be temporary and localized and would not result in significant impacts to neighborhood character.

SOCIOECONOMIC CONDITIONS

Construction under the Proposed Actions would not block access to any facilities in the area, affect the operations of any nearby businesses, or obstruct major thoroughfares used by customers or 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 construction activity. Construction would also contribute to increased tax revenues for the city and state, including those from personal income taxes. Therefore, construction activities under the Proposed Actions would not result in any significant adverse impacts on socioeconomic conditions.

COMMUNITY FACILITIES

No community facilities (i.e., public or publicly funded schools, libraries, childcare centers, health care facilities, or fire and police stations) would be directly affected by construction activities. The construction area would be surrounded by construction barriers that would limit the effects of construction on nearby facilities. Measures outlined in the MPT plan to be implemented for the Proposed Actions would ensure that adequate pedestrian access is maintained. Construction workers would not place any burden on public schools and would have minimal, if any, demands on libraries, childcare facilities, and health care facilities. New York City Police Department (NYPD) and FDNY emergency services and response times would not be materially affected by construction.

OPEN SPACE

Construction on the projected development sites within the Project Area would not displace any existing publicly accessible open spaces, and no open space resources would be used for staging

or other construction activities. Playground Thirty Five XXXV, located on 35th Avenue between Steinway Street and 41st Street, is adjacent to the projected development sites and would only be affected by construction activities, limited to temporary noise during the construction period. Access to this and all other publicly accessible open spaces near the Project Area would be maintained throughout the duration of the construction period. Measures would be implemented to control air emissions, dust, noise, and vibration on the project site during construction. However, as discussed above in "Noise," based on the prediction of construction noise levels up to the high-70s dBA resulting in construction noise level increments up to approximately 10 dBA and exceedances of the *CEQR Technical Manual* construction noise screening thresholds occurring over the course of up to 48 months, construction noise associated with the Proposed Actions would result in a temporary significant adverse impact at Playground Thirty Five XXXV. The potential construction noise mitigation measures are discussed further in Chapter 20, "Mitigation."

HISTORIC AND CULTURAL RESOURCES

Historic and cultural resources include both archaeological and architectural resources. A detailed assessment of potential impacts on archaeological and architectural resources is described in Chapter 7, "Historic and Cultural Resources." In a comment letter dated March 16, 2021, LPC determined that the lots within the Development Site and the Additional Affected Area have no archaeological significance, and, therefore, no further archaeological analysis is warranted. The Proposed Development on Projected Development Site A would be constructed within 90 feet of Building Number 6 (36-12 35th Avenue) within the State and National Register of Historic Places (S/NR)-listed Paramount Studios Complex. In addition, the new development on Projected Development Sites A, B, D, E, F, and K would be constructed within 90 feet of the potential 38th Street historic district and the potential 42nd and 43rd Street historic district. To avoid any inadvertent construction-related impacts to these resources, the Applicant would develop and implement a CPP for those architectural resources located within 90 feet of Projected Development Sites A, B, D, and E. To avoid any inadvertent impacts to potential architectural resources located within 90 feet of Projected Development Sites F and K—which are not controlled by the Applicant—a CPP should be developed and implemented by the future developer of these sites (unknown at this time).

HAZARDOUS MATERIALS

A detailed assessment of the potential risks related to the construction under the Proposed Actions with respect to any hazardous materials is described in Chapter 9, "Hazardous Materials."

Measures are recommended to avoid or reduce exposure to construction workers and future occupants at all lots included in the Development Site and Additional Affected Area, where potential concerns were identified as it relates to hazardous materials. The recommended measures include:

- Prior to construction, further investigation would be performed on each lot. This would start with preparation of a Phase I Environmental Site Assessment (ESA) (OER may require updated reports for certain lots) in accordance with American Society of Testing Materials (ASTM) Standard E1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Practice*. The findings would be used to prepare a subsurface investigation protocol for agency review. Upon approval of the protocol, the investigation (typically including laboratory analysis of soil, groundwater, and soil vapor samples from one or more lots) would be implemented and a report of the findings submitted to the agency along

with any proposed remediation plan (i.e., measures to be implemented prior to or as part of construction to avoid impacts to the health and safety of workers, the community, and future occupants), which would include a construction health and safety plan to protect workers and the surrounding community during development activities.

- Any renovation or demolition activities with the potential to disturb LBP would be performed in accordance with the applicable Occupational Safety and Health Administration regulation (OSHA 29 CFR 1926.62—*Lead Exposure in Construction*).
- Prior to any renovation or demolition activities with the potential to disturb suspect asbestos containing materials (ACM), an asbestos survey would be conducted to determine whether these materials are ACM. If these materials prove to contain asbestos, they would be properly removed and disposed of in accordance with all state and federal regulations.
- Unless there were to be labeling or test data that indicated that florescent lights, other electrical equipment, and hydraulic fluid are not mercury- and/or PCB-containing, if disposal were to be required, it would be performed in accordance with applicable federal, state, and local regulations and guidelines.
- All excavated soil requiring off-site disposal would be managed in accordance with applicable regulatory requirements. All soil and any other materials intended for off-site disposal would be tested in accordance with the requirements of the intended receiving facility. Transportation of material leaving the site for off-site disposal would be conducted in accordance with federal, state, and local requirements covering licensing of haulers and trucks, placarding, truck routes, manifesting, etc. All on-site petroleum storage tanks (and any unforeseen tanks encountered during redevelopment) would be properly closed and removed in accordance with applicable requirements.
- If dewatering were to be required for construction, testing would be performed to ensure compliance with DEP sewer discharge permit/approval requirements and, if necessary, pre-treatment world be conducted prior to discharge to the sewer.

These recommended measures would be implemented in accordance with an (E) Designation that would be incorporated into to the Proposed Actions for all lots included in the Development Site and Additional Affected Area. This (E) Designation requires, prior to change of use or redevelopment requiring ground disturbance, that the owner of the property conduct a Phase I ESA, subsurface testing and, where appropriate, remediation to the satisfaction of the New York City Mayor's Office of Environmental Remediation (OER). DOB permits associated with such actions cannot be issued without OER approval. The OER review would ensure protection of human health and the environment from known or suspected hazardous materials. With the above measures in place, the Proposed Actions would avoid the potential for significant adverse impacts related to hazardous materials.

WATER AND SEWER INFRASTRUCTURE

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

hours). Therefore, the construction of the Proposed Actions' infrastructure improvements would not cause any significant adverse impacts to nearby users of these services. ✷