A. INTRODUCTION

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

The Proposed Actions would facilitate a proposal by the Applicant to develop a new approximately 1,154,987 gross square foot (gsf) mixed-use development ("Proposed Project") on approximately 164,392 sf of lot area ("Projected Development Site 1"). The Proposed Project would be comprised of approximately 1,400 dwelling units (DUs) (approximately 1,130,462 gsf of residential area), of which 350 DUs would be affordable; approximately 1,887 gsf of local retail space; approximately 22,638 gsf of community facility space; 525 accessory parking spaces; and 41,363 sf of publicly accessible open space. The anticipated Build Year is 2031.

It is also expected that Lot 49 in the proposed rezoning area would be redeveloped in the future with the Proposed Actions, in accordance with the proposed R7-3/C2-4 zoning district. This site is anticipated to be redeveloped with a 219,296 gsf building containing 265 DUs (of which 66 would be affordable), approximately 15,000 gsf of commercial retail uses, and 115 accessory parking spaces.

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

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

B. PRINCIPAL CONCLUSIONS

Transportation

Peak construction conditions during the third quarter (Q3) and fourth quarter (Q4) of 2027 were considered for the analysis of potential transportation (traffic, transit, pedestrian, and parking) impacts during construction. Based on the anticipated numbers of vehicle trips from construction trucks and construction workers and incremental operational trips from the Project Area, incremental vehicle trips during the 2027 Q3 and Q4 peak construction period are expected to be less than the incremental peak hour trips that would be generated with full build-out of the proposed development. In addition, there is less overall traffic on the study area street network during the 6:00 AM to 7:00 AM and 3:00 PM to 4:00 PM construction peak hours than during the analyzed 8:00 AM to 9:00 AM and 4:45 PM to 5:45 PM operational peak hours.

Construction traffic conditions during the 2027 Q3 and Q4 peak construction period were evaluated at 21 intersections (10 signalized and 11 unsignalized) in the traffic study area where combined construction and incremental operational vehicle trips would potentially exceed the 50-trips/hour *CEQR Technical Manual* analysis threshold in the AM and/or PM construction peak hours. As summarized in **Tables 17-1 and 17-2**, the construction traffic impact analysis identified the potential for significant adverse impacts to two lane groups at one intersection in the weekday AM construction peak hour, and ten lane groups at five intersections in the weekday PM construction peak hour. **Chapter 18, "Mitigation,"** discusses potential measures to mitigate these significant adverse traffic impacts.

TABLE 17-1
Number of Impacted Intersections and Lane Groups by Peak Hour

	Construction Peak Hour	
	Weekday AM	**Weekday PM**
Impacted Lane Groups	2	10
Impacted Intersections	1	5

TABLE 17-2
Summary of Significantly Impacted Intersections

Intersection		Construction Peak Hour	
Location	**Control**	**Weekday AM**	**Weekday PM**
27th Avenue (EB/WB) & 3rd Street (SB)	Stop-Control	---	X
27th Avenue (EB/WB) & 18th Street (NB/SB)	Stop-Control	---	X
Astoria Boulevard (EB/WB) & 21st Street (NB/SB)	Signal	X	X
30th Avenue (EB/WB) & 8th Street (NB/SB)	Stop-Control	---	X
Astoria Park South (EB/WB)/Hoyt Avenue South (EB) & 21st Street (NB/SB)	Signal	--	X
Total		1	5

Overall, combined construction and operational subway demand at the analyzed 30th Avenue (N/W) station in the 2027 Q3 and Q4 peak construction period would total approximately 138 trips in the 6:00 AM to 7:00 AM construction peak hour, and 223 subway trips in the 3:00 PM to 4:00 PM construction peak hour. This demand would be substantially less than the numbers of trips generated by full build-out of the Proposed Actions in the operational AM and PM peak hours (796 and 886 trips, respectively). It would also occur outside of the analyzed peak commuter periods when overall demand on the subway system is typically greatest. As discussed in **Chapter 11, "Transportation,"** the Proposed Project has the potential for significant impacts at a number of stairs accessing the 30th Avenue (N/W) station. Potential mitigation measures are discussed in **Chapter 18, "Mitigation."** The Proposed Actions are not expected to result in significant adverse impacts to the analyzed 30th Avenue (N/W) subway station or to subway line haul conditions during the construction peak hours in the 2027 Q3 and Q4 peak construction period**.**

Combined operational and construction bus demand in the 2027 Q3 and Q4 peak construction period would total approximately 155 trips in the 6:00 AM to 7:00 AM construction peak hour, and 208 trips in the 3:00 PM to 4:00 PM construction peak hour. As these trips would be distributed among the four MTA Bus routes serving the Project Area, and would occur outside of the analyzed peak commuter periods when overall transit bus demand is typically greatest, the Proposed Actions are not expected to result in significant adverse impacts to local bus service during the 2027 Q3 and Q4 peak construction period.

Combined operational and construction pedestrian demand in the 2027 Q3 and Q4 peak construction period would total approximately 190 trips in the 6:00 AM to 7:00 AM construction peak hour, and 323 trips in the 3:00 PM to 4:00 PM construction peak hour. As these trips would be distributed among multiple access points along both 3rd Street and 26th Avenue, pedestrian demand during each peak hour is not expected to reach the 200 trips/hour *CEQR Technical Manual* analysis threshold for a detailed pedestrian analysis on any one analyzed sidewalk, corner area or crosswalk, and significant adverse pedestrian impacts are not expected to occur during the 2027 Q3 and Q4 peak construction period.

Site-generated parking demand during the 2027 Q3 and Q4 peak construction period would total approximately 406 spaces during the 7:00 AM – 8:00 AM period, including 115 spaces from construction workers and 291 spaces of operational demand from Towers 1 and 2. It is anticipated that the Proposed Project's 525-space on-site parking garage would be completed prior to the 2027 Q3 and Q4 peak construction period, and that this parking capacity would be available to accommodate both operational demand and construction workers during the peak construction period. Therefore, the 406 spaces of combined construction and operational parking demand during the 2027 Q3 and Q4 peak construction period would be fully accommodated on-site, and the Proposed Actions are not expected to result in significant adverse construction parking impacts.

Air Quality

The approach and procedures for the construction of the proposed developments would be typical of the methods utilized in other building construction projects throughout New York City and therefore would not be considered out of the ordinary in terms of intensity. Measures would be taken to minimize pollutant emissions during construction in accordance with all applicable laws, regulations, and building codes. These measures would include dust suppression measures, idling restrictions, and the use of ultra-low sulfur diesel (ULSD) fuel. In addition, to minimize air pollutant emissions during construction, the use of newer and cleaner equipment during construction would be implemented to the extent practicable. With these measures in place and based on the duration and intensity of construction activities, the

location of nearby sensitive receptors, and an examination of construction on-road sources, the Proposed Actions would not result in any significant adverse construction air quality impacts.

Noise

Detailed quantitative construction noise modeling was completed for the Proposed Actions to determine typical construction noise levels for the major construction elements. Potential noise levels at sensitive receptor locations, such as residential properties and parks, were assessed. Multiple receptors were created along the façade of buildings to capture the noise levels at different floors of the building. The noise impact criteria described in Chapter 19, Section 410 of the *CEQR Technical Manual* served as a screening-level threshold for potential construction noise impacts. If the construction noise of a proposed project would not exceed these criteria at a given receptor, then that receptor would not have the potential to experience a construction noise impact. However, if the construction noise projection exceeds the noise impact criteria, then further consideration of the intensity and duration of construction noise at that receptor is warranted. When looking at identified significant adverse construction noise impacts, **Chapter 18, "Mitigation,"** also looks into interior L_{10} noise levels to the compare with the CEQR interior noise guideline of 45 dBA for residential and community facility uses and interior noise guideline of 50 dBA for commercial office uses in order to determine if potential mitigation at the receptor is needed or not.

As described in detail below, the construction noise impact analysis identified potentially significant temporary adverse impacts at several locations.[1] Mitigation measures considered for these impacts are further discussed in **Chapter 18, "Mitigation."**

Other Technical Areas

Land Use and Neighborhood Character

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

Socioeconomic Conditions

Construction activities could temporarily affect pedestrian and vehicular access. However, entrances to any existing businesses would not be obstructed, and businesses are not expected to be significantly

[1] Based on the preliminary assessment, potential significant adverse impacts would generally be expected within 400 feet of the Project Area. However, a more refined analysis will be conducted between Draft and Final EIS and the geographic extent of the impact is expected to remain within the 400 foot radius of the construction activities.

affected by any temporary reductions in the amount of pedestrian foot traffic or vehicular delays that could occur as a result of construction activities. Overall, construction activities associated with the Proposed Actions would not result in any significant adverse impacts on surrounding businesses.

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

Community Facilities

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

Open Space

There are no publicly accessible open spaces within the Project Area and no open space resources would be used for staging or other construction activities. Although construction of the Projected Development Sites would be expected to have the potential to result in elevated noise levels at nearby receptors, and noise due to construction would at times be noticeable, the site is located approximately 300 feet from the nearest existing open space resource (Whitey Ford Field), and noise from construction would be intermittent and of limited duration. Therefore, no significant construction impacts to open space are expected.

Historic and Cultural Resources

The Project Area does not possess archaeological significance, and therefore, the proposed development does not have the potential to result in construction period archaeological impacts. The Proposed Actions would not result in any significant adverse impacts to architectural resources on the Projected Development Sites as no historic architectural resources are located on the sites. Moreover, no architectural resources are located within 90 feet of the Project Area. Therefore, the Proposed Actions would not result in any significant adverse impacts to historic architectural resources.

Hazardous Materials

A detailed assessment of potential impacts on hazardous materials is described in **Chapter 9, "Hazardous Materials."** The vast majority of the hazardous materials on Projected Development Site 1 have already been addressed by the Applicant through remediation of the Project Development Site Phase I during participation in the New York State Brownfield Cleanup Program ("BCP") as the Astoria Steel Site BCP Site #C241155 ("BCP Site") under the oversight of the New York State Department of Environmental Conservation ("NYSDEC") and the New York State Department of Health ("NYSDOH"). There is some remaining contamination, defined in the Final Engineering Report ("FER") and summarized in this chapter, which will be managed by the current owner and all future owners pursuant to a Site Management Plan ("SMP") and Environmental Easement ("EE"). With the EE already recorded, which mandates all current

and future owners and operators of Projected Development Site 1 to maintain the engineering and institutional controls in the SMP, the Proposed Actions are not expected to result in any significant adverse impacts to hazardous materials.

The hazardous materials assessments identified various potential sources of subsurface contamination on, or in close proximity to, Projected Development Site 2. To avoid the potential for adverse impacts associated with new construction resulting from the Proposed Actions, a hazardous materials (E) designation would be placed on the tax lot comprising Projected Development Site 2. The (E) designation requires approval by the New York City Office of Environmental Remediation (OER) prior to obtaining NYC Buildings Department (DOB) permits for any new development entailing soil disturbance. The environmental requirements for the (E) designation also include a mandatory Construction Health and Safety Plan (CHASP), which must be approved by OER.

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

C. GOVERNMENTAL COORDINATION AND OVERSIGHT

The governmental oversight of construction in New York City is extensive and involves a number of city, state, and federal agencies. **Table 17-3** shows the main agencies involved in construction oversight and each agency's areas of responsibility. The primary responsibilities lie with New York City agencies. The New York City Department of Buildings (DOB) has the primary responsibility for ensuring that the construction meets the requirements of the New York City Building Code and that buildings are structurally, electrically, and mechanically safe. In addition, DOB enforces safety regulations to protect both construction workers and the public. The areas of responsibility include the enforcement of regulations pertaining to the installation and operation of construction equipment, such as cranes and lifts, sidewalk sheds, and safety netting and scaffolding. The New York City Department of Parks and Recreation (NYC Parks) has oversight on tree protection and tree removal during construction. The New York City Department of Environmental Protection (DEP) enforces the New York City Noise Control Code (also known as Chapter 24 of the Administrative Code of the City of New York, or Local Law 113) and the DEP Notice of Adoption Rules for Citywide Construction Noise Mitigation (also known as Chapter 28), approves Remedial Action Plans (RAPs) and Construction Health and Safety Plans (CHASPs), regulates water disposal into the sewer system, and oversees dust control for construction activities. The New York City Fire Department (FDNY) has primary oversight for compliance with the New York City Fire Code and for the installation of tanks containing flammable materials. The New York City Department of Transportation (NYCDOT) reviews and approves any traffic lane and sidewalk closures. The New York City Landmarks Preservation Commission (LPC) approves studies and testing to prevent loss of archaeological materials and to prevent damage to fragile historic structures.

At the state level, the New York State Department of Environmental Conservation (NYSDEC) regulates discharge of water into rivers and streams, disposal of hazardous materials, and construction, operation, and removal of bulk petroleum and chemical storage tanks. The New York State Department of Labor (NYSDOL) licenses asbestos workers. New York City Transit (NYCT) is in charge of bus stop relocations, and any subsurface construction within 200 feet of a subway. On the federal level, the U.S. Environmental Protection Agency (EPA) has wide ranging authority over environmental matters, including air emissions, noise emission standards, hazardous materials, and the use of poisons. Much of the responsibility is

delegated to the state level. The U.S. Occupational Safety and Health Administration (OSHA) sets standards for work site safety and construction equipment.

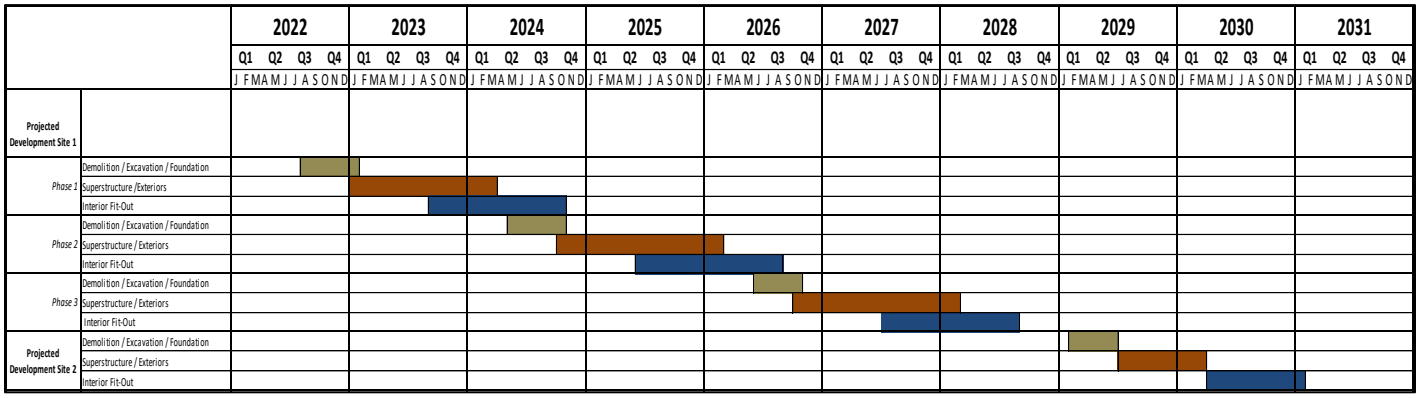
TABLE 17-3
Construction Oversight – Governmental Agencies

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

D. CONSTRUCTION SCHEDULE

The anticipated construction schedule is shown in **Figure 17-1** and described below. The construction schedule reflects the preliminary sequencing of construction events as currently contemplated by the Applicant. As shown in **Figure 17-1**, construction on Projected Development Site 1 would occur in three phases over a total of approximately 80-months, with an anticipated start date in the fourth quarter of 2022. It is anticipated that Phase 1 would include construction of Tower 1 (299 DUs, 17,581 gsf of medical office space and 1,887 gsf of local retail space) starting in late 2022 and end in 2024. Phase 2 would include the construction of Tower 2 (510 DUs and 5,057 gsf of medical office space) starting in 2024 and end in 2026. Phase 3 would include the construction of Tower 3 (591 DUs) starting in 2026 and ending in 2028. Because Projected Development Site 2 is not under the control of the Applicant, and there are no current plans for development, it is assumed that construction would begin at this site in early 2029 and would be completed over a total of 24 months.

FIGURE 17-1
Anticipated Construction Schedule



E. DESCRIPTION OF CONSTRUCTION ACTIVITIES

General Construction Practices

Hours of Work

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

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

Deliveries, Access, and Staging Areas

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

Description of Construction Activities

Construction of large-scale buildings in New York City typically follows a general pattern. The first task is construction startup, which involves the siting of work trailers, installation of temporary power and communication lines, and the erection of site perimeter fencing. If a site has existing structures, the structures are demolished with some of the materials (such as concrete, block, and brick) either recycled or crushed on-site to be reused as fill and the debris taken to a licensed disposal facility. Hazardous materials remediation typically occurs at this point. Excavation of the soils is next along with the construction of the foundations. When the below-grade construction is completed, construction of the superstructure of the new building begins. As the core and floor decks of the building are being erected, installation of the mechanical and electrical internal networks would start. As the building progresses upward, the exterior cladding is placed, and the interior fit out begins. During what is typically considered

the busiest time of building construction, the upper core and structure is being built while mechanical/electrical connections, exterior cladding, and interior finishing are progressing on lower floors.

The following provides a description of each of the anticipated construction tasks for the Projected Development Sites.

Construction Startup Tasks

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

Demolition

Projected Development Site 1 is currently vacant and therefore demolition for this site would not be required.

Projected Development Site 2 is currently occupied by a vacant warehouse building which would be demolished to facilitate construction of the development on this site. Before the commencement of demolition of any structures, the building would first be abated of any hazardous materials. A New York City-certified asbestos investigator would inspect the building for asbestos-containing materials (ACM), and if present, those materials would be removed by a DOL-licensed asbestos abatement contractor prior to interior demolition. Asbestos abatement is strictly regulated by DEP, DOL, EPA, and OSHA to protect the health and safety of construction workers and nearby residents, workers, and visitors. Depending on the extent and type of ACMs (if any), these agencies would be notified of the asbestos removal and may inspect the abatement area to ensure that work is being performed in accordance with applicable New York State and New York City regulations. Any activities with the potential to disturb lead-based paint (LBP) would be performed in accordance with the applicable OSHA regulation (including federal OSHA regulation 29 CFR 1926.62—Lead Exposure in Construction). In addition, any suspected polychlorinated biphenyls (PCB)-containing equipment (such as fluorescent light ballasts) would be evaluated prior to disturbance. Unless labeling or test data indicate the contrary, such equipment would be assumed to contain PCBs, and would be removed and disposed of at properly licensed facilities in accordance with all applicable regulatory requirements.

Prior to demolition, any economically salvageable materials that could be reused would typically be removed. Then the building would be demolished and demolition debris removed from Projected Development Site 2. Hand tools, excavators with hoe ram attachments, loaders, and generators, would be used during this stage of construction. Demolition debris would typically be sorted prior to being disposed at landfills to maximize recycling opportunities.

Prior to demolition, any economically salvageable materials that could be reused would typically be removed. Then the building would be demolished and demolition debris removed from the Development Site. Hand tools, excavators with hoe ram attachments, loaders, and generators, would be used during

this stage of construction. Demolition debris would typically be sorted prior to being disposed at landfills to maximize recycling opportunities.

Excavation and Foundation

The Projected Development Sites would require excavation for each of the proposed buildings' foundation. As the Projected Development Site 1 does not include a cellar/basement level, limited excavation is anticipated, along with backfilling with clean soil in order to support the foundation. Excavators would be used to excavate soil and the excavated materials would be loaded onto dump trucks for transport to a licensed disposal facility or for reuse on any portion of the project sites that need fill. No blasting is anticipated for the construction of the Projected Development Sites. This stage of construction would include the construction of the foundation and below-grade elements of the proposed buildings. Piles would be installed with the use of drill rigs. If boulders are encountered during pile installation activities, the obstructions would be removed by a rock hammer. Concrete trucks would be used to pour the foundation and the below-grade structures. Excavation and foundation activities may also involve the use of rebar benders, generators, air compressors, cherry pickers, rock hammers, and saws.

Superstructure and Exterior Façade – Core and Shell Construction

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

Interior Fit-Out

Interior fit-out activities would typically 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 system (e.g., electrical system, fire alarm, plumbing, etc.) testing and inspections would be part of this stage of construction. Equipment used during this stage of construction would include hoists, delivery trucks, and a variety of small handheld tools. In addition, grid power is expected to be available during this stage of construction although generators may be needed for welding operations. Interior fit-out activities would typically be the quietest period of construction in terms of its effect on the public, because most of the construction activities would occur inside the building with the façades substantially complete and the proposed buildings enclosed. It should be noted that fit-out of the office building would be limited to the core and shell, including common areas like building lobby.

Number of Construction Workers and Material Deliveries

The number of workers and the number of truck trips associated with material deliveries vary with the scale of the project and the general construction task. **Table 17-4**, below, shows the estimated number of workers and deliveries to the Projected Development Sites by calendar quarter for all construction

activities, based on the construction schedule provided in Figure **17-1**. As shown below in **Table 17-4**, the average number of workers would be approximately 155 per day throughout the construction period and the average number of trucks would be approximately 17 per day. The number of daily workers would peak in the third and fourth quarter of 2027 during construction of Phase 3 on Projected Development Site 1.

TABLE 17-4
Average Number of Daily Workers and Trucks by Quarter

Year	2022				2023				2024				2025			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	-	-	-	35	126	114	144	204	204	104	131	183	159	197	274	274
Trucks	-	-	-	13	18	14	16	21	21	12	21	25	20	22	27	27
Year	**2026**				**2027**				**2028**				**2029**			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	221	133	131	175	208	208	359	359	290	151	101	-	15	30	99	99
Trucks	20	13	24	24	27	27	27	27	21	9	5	-	6	12	12	12
Year	**2030**				**2031**											
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th								
Workers	99	78	78	78	78	-	-	-								
Trucks	12	6	6	6	6	-	-	-								

	Average	Peak
Workers	155	359
Trucks	17	27

F. PROBABLE IMPACTS OF THE PROPOSED ACTIONS

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

Transportation

Traffic

Construction activities would generate construction worker auto trips and truck trips. Similar to other construction projects in New York City, most of the construction activity at the Projected Development Sites is expected to take place during the typical construction shift of 7:00 AM to 3:30 PM. The estimated daily vehicle trips were distributed throughout the workday based on projected work shift allocations and conventional arrival/departure patterns of construction workers and trucks. While construction truck trips would be made throughout the day (with more trips typically made during the early morning), construction workers would typically commute during the hours before and after the work shift. For analysis purposes, each truck delivery was assumed to result in two truck trips during the same hour (one "in" and one "out"), and each truck trip was assumed to have a passenger car equivalent (PCE) of 2.0,

consistent with *CEQR Technical Manual* guidance. For construction workers, the majority (80 percent) of arrival and departure trips are expected to take place during the hour before and after each shift. For construction trucks, deliveries would typically peak during the early morning, with an estimated 25 percent overlapping with construction worker arrival traffic.

Based on a 2017 survey of construction workers at a development site in Astoria, and guidance from NYCDOT, it is estimated that approximately 51 percent of construction workers would travel to the Project Area by motor vehicle (approximately 48 percent by private autos and 3 percent by taxis/rideshare services), 44 percent by public transportation (4 percent by bus and 40 percent by a combination of subway and bus) and 5 percent by walking, bicycle or other modes. It is also estimated that auto occupancy would average approximately 1.5 persons per vehicle. These trip generation assumptions were used as the basis for assessing the potential transportation-related impacts during construction.

Table 17-5 presents the hourly construction vehicle trip estimates in PCEs during the 2027 Q3 and Q4 peak construction period, based on the assumptions described above. As shown in **Table 17-5**, it is estimated that peak construction activities would result in 134 PCEs between 6:00 AM and 7:00 AM during the third and fourth quarter of 2027. For the 3:00 PM to 4:00 PM peak hour, there would be a maximum of 106 PCEs associated with construction activities during this same period.

TABLE 17-5
2027(Q3 & Q4) Peak 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	92	0	0	92	80	6	0	6	12	25	15	25	15	30	113	21	134
7-8 AM	20	23	0	0	23	20	2	0	2	4	10	5	10	5	10	30	7	37
8-9 AM	0	0	0	0	0	0	0	0	0	0	10	5	10	5	10	5	5	10
9-10 AM	0	0	0	0	0	0	0	0	0	0	10	5	10	5	10	5	5	10
10-11 AM	0	0	0	0	0	0	0	0	0	0	10	5	10	5	10	5	5	10
11 AM-12 PM	0	0	0	0	0	0	0	0	0	0	10	5	10	5	10	5	5	10
12-1 PM	0	0	0	0	0	0	0	0	0	0	10	5	10	5	10	5	5	10
1-2 PM	0	0	0	0	0	0	0	0	0	0	5	4	5	4	8	4	4	8
2-3 PM	0	0	5	6	6	0	0	5	0	0	5	3	5	3	6	3	9	12
3-4 PM	0	0	80	92	92	0	6	80	6	12	2.5	1	2.5	1	2	7	99	106
4-5 PM	0	0	15	17	17	0	1	15	1	2	2.5	1	2.5	1	2	2	19	21
5-6 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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

As it is anticipated that Towers 1 and 2 would be fully operational by the third quarter of 2027, there would likely be some overlap between operational traffic and construction traffic during the 2027 Q3 and Q4 peak construction period. **Table 17-6** shows an estimate (in PCEs) of the combined hourly construction traffic and incremental operational traffic during this period. As shown in **Table 17-6**, combined with the incremental operational trips generated by the completed buildings on Projected Development Site 1, there would be a net increase of 158 vehicle trips during the 6:00 AM – 7:00 AM construction peak hour and a net increase of 227 vehicle trips during the 3:00 PM – 4:00 PM construction peak hour.

TABLE 17-6
2027 (Q3 & Q4) Hourly Construction + Incremental Operational Vehicle Trips (Autos, Taxis and Trucks in PCEs)

	Construction Trips				Operational Trips					Total Construction + Operational Trips
	Auto	Taxi	Truck	Total	Auto	Taxi	Shuttle Bus	Truck	Total	
6 AM – 7 AM	92	12	30	134	26	4	4	-10	24	158
3 PM – 4 PM	92	12	2	106	115	16	6	-16	121	227

Notes: Negative operational truck increments reflect the displacement of No-Action warehouse use on Projected Development Site 1.

As shown in **Table 11-2** in Chapter 11, "Transportation," the Proposed Actions are expected to generate a net total of approximately 361 vehicle trips (355 PCEs) in the weekday 7:45 AM – 8:45 AM operational peak hour and 375 vehicle trips (364 PCEs) in the weekday 4:30 PM – 5:30 PM operational peak hour.[2] Total weekday AM and PM peak hour incremental vehicle trips with completion of the Projected Development Sites 1 and 2 in 2031 would therefore be substantially greater than the combined operational and construction demand generated during the 6:00 AM – 7:00 AM and 3:00 PM – 4:00 PM construction peak hours in the 2027 Q3 and Q4 peak construction period (158 PCEs and 227 PCEs, respectively).

Figure 17-2 shows an assignment of the combined construction and incremental operational peak hour vehicle trips to the study area street network. As it is expected that the proposed 525-space on-site parking garage on Projected Development Site 1 would be completed in an early phase of construction, it is anticipated that it would be available to accommodate construction worker parking demand during the peak construction period. Therefore, all construction worker autos were assigned directly to and from the site. As shown in **Figure 17-2**, based on the assignment, a total of 21 analyzed intersections (10 signalized and 11 unsignalized) would experience a net incremental increase of 50 or more PCEs during the 6:00 AM to 7:00 AM and/or 3:00 PM to 4:00 PM construction peak hours. These intersections and the construction peak hours during which they would experience 50 or more PCEs are listed below.

<u>Signalized</u>

- 26th Avenue at 21st Street – PM*
- 27th Avenue at 4th Street – AM*, PM*
- 27th Avenue at 8th Street – AM*, PM*
- 27th Avenue at 9th Street – AM*, PM*
- 27th Avenue at 12th Street – AM*, PM*
- 27th Avenue at 14th Street – AM*, PM*
- Astoria Boulevard at 8th Street – PM*
- Astoria Boulevard at 18th Street – PM
- Astoria Boulevard at 21st Street – AM*, PM*

[2] The number of PCE trips in each peak hour is lower than the non-PCE totals as there would be a net reduction in truck trips in each period under the Proposed Actions.

- Hoyt Avenue South at 21st Street – PM*

Unsignalized

- 26th Avenue at 3rd Street – AM, PM
- 26th Avenue at 4th Street – AM, PM
- 26th Avenue at 9th Street – PM
- 27th Avenue at 3rd Street – AM*, PM*
- 27th Avenue at 18th Street – AM, PM*
- Astoria Boulevard at Newtown Avenue – AM, PM
- 30th Avenue at 8th Street – PM*
- 30th Avenue at Main Street – PM*
- 30th Avenue at 12th Street – PM
- 25th Road at 21st Street – PM
- 26th Avenue at Site 1 Exit – AM, PM*

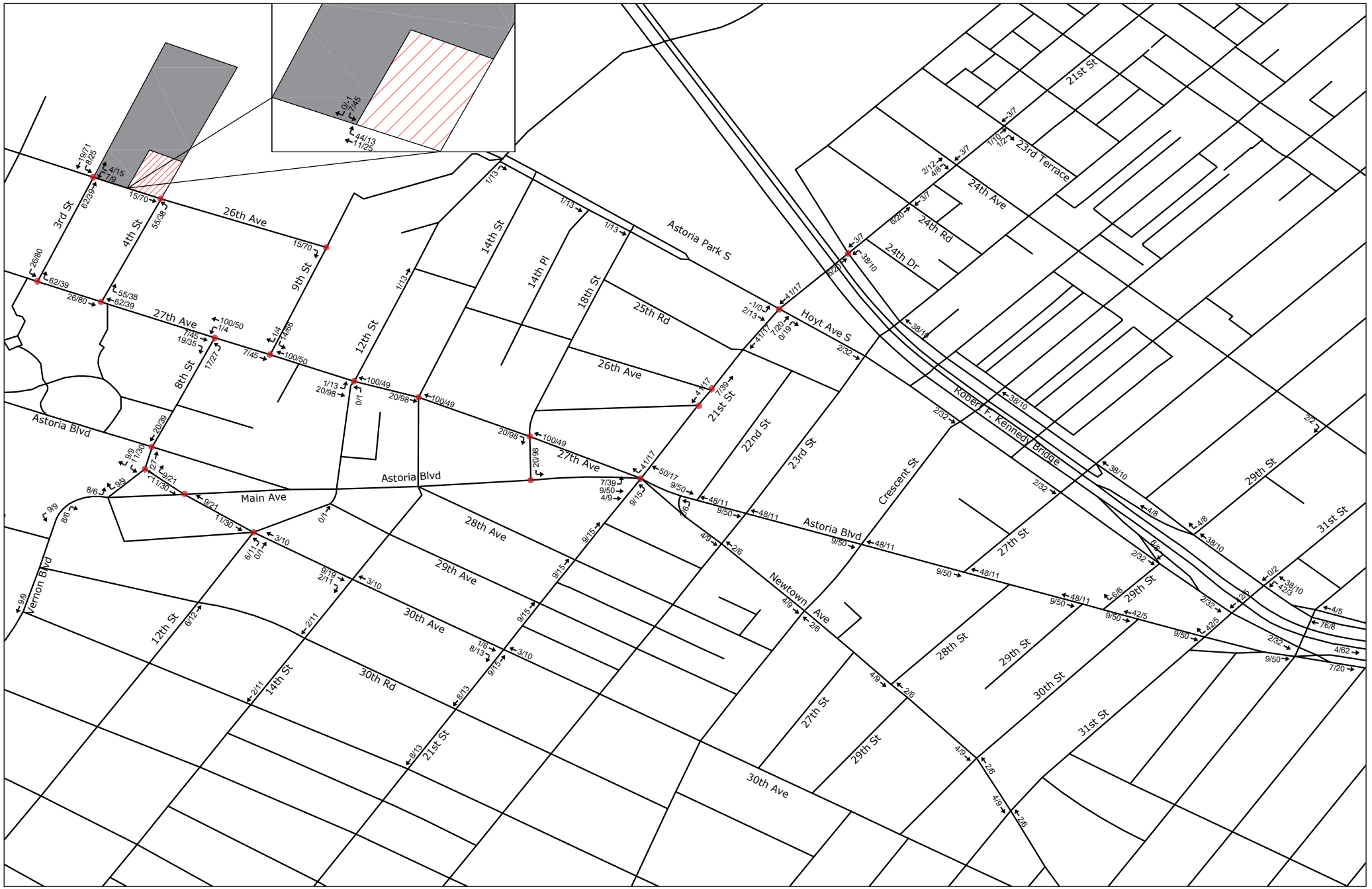
(* - denotes intersection significantly adversely impacted by operational traffic in the AM or PM operational peak hour.)

In order to assess construction traffic conditions, a 2021 Existing traffic network was established based on ATR data collected during the 6:00 to 7:00 AM and 3:00 to 4:00 PM construction peak hours (refer to **Figure 17-3**). The existing construction peak hour volume-to-capacity (v/c) ratios, delays and levels of service for all lane groups at the 21 analyzed intersections are provided in **Table 17-7**. 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 **Table 17-7**, four lane groups at one analyzed intersection currently experience congestion in the construction AM peak hour, and ten lane groups at four intersections currently experience congestion in the construction PM peak hour.

A 2027 No-Action construction traffic network was established by applying an annual background growth rate of 0.5 percent per year for the 2021 through 2026 period and 0.25 percent per year for 2026 to 2027, as recommended in the *CEQR Technical Manual* for projects in Queens (refer to **Figure 17-4**). The No-Action construction peak hour v/c ratios, delays and levels of service for all lane groups at all analyzed intersections are provided in **Table 17-8**. As shown in **Table 17-8**, under 2027 (Q3 & Q4) No-Action conditions, a total of five lane groups at two intersections are expected to be congested during the construction AM peak hour, and 11 lane groups at five intersections during the construction PM peak hour.

The 2027 incremental operational vehicle trips and vehicle trips associated with construction workers and trucks (shown in **Figure 17-2**) were added to the No-Action traffic network (shown in **Figure 17-4**) to establish the With-Action (construction) traffic network shown in **Figure 17-5**. The v/c ratios, delays and levels of service for all lane groups at the analyzed intersections in both peak periods under With-Action (construction) conditions are shown in **Table 17-9**. As shown in **Table 17-9**, two lane groups at one intersection in the construction AM peak hour and ten lane groups at five intersections in the construction PM peak hour are expected to have the potential for significant adverse traffic impacts in 2027 (Q3 & Q4) as a result of construction activities and demand from completed development on the Projected

Combined Operational and Construction Peak Hour Vehicle Trips During the 2027 Q3 Through 2027 Q4 Peak Construction Period



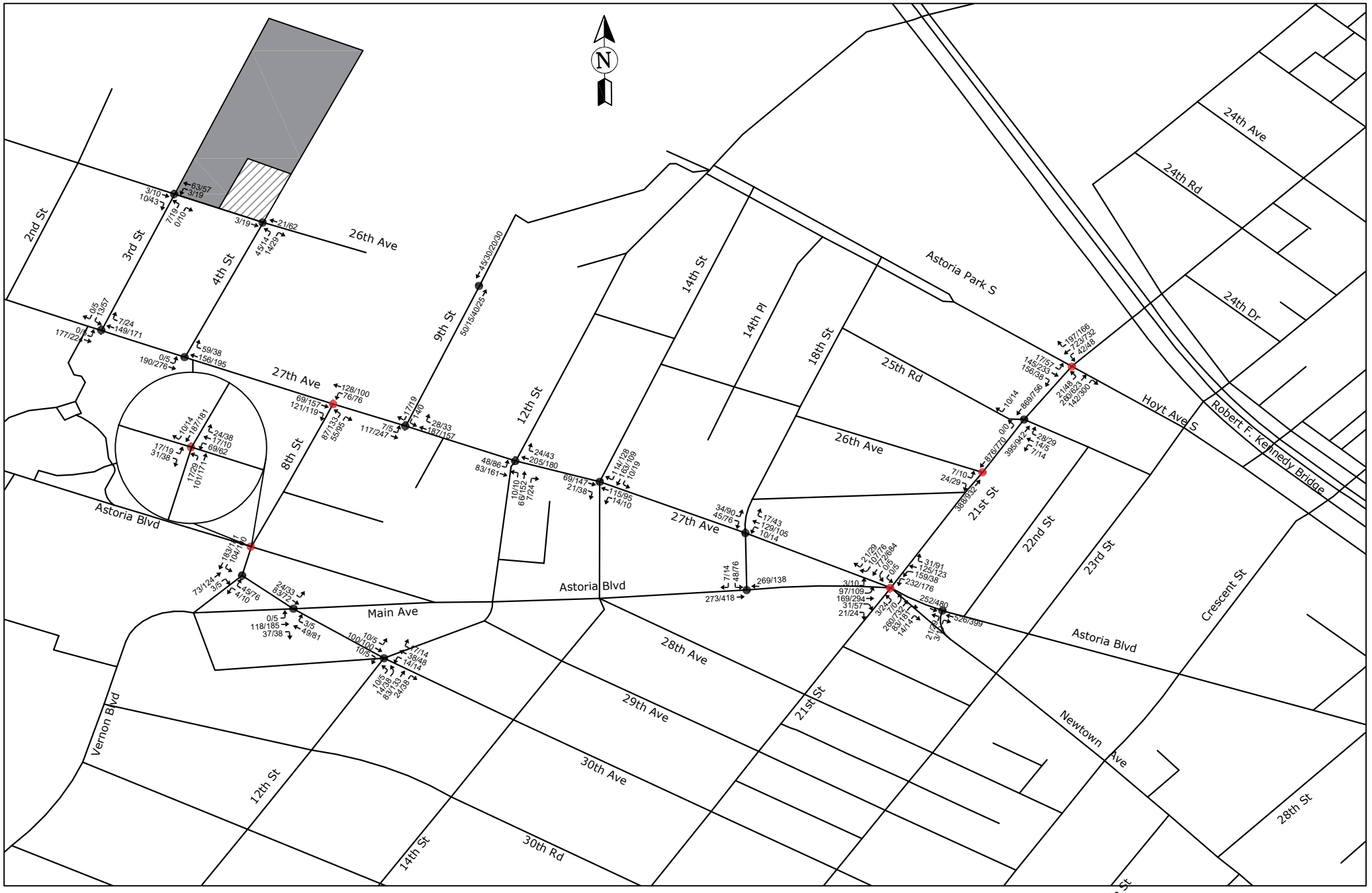
← x/x - AM(6-7)/PM(3-4) Vehicular Volumes (PCE)

Construction Hours Analyzed Intersections

Projected Development Site 1

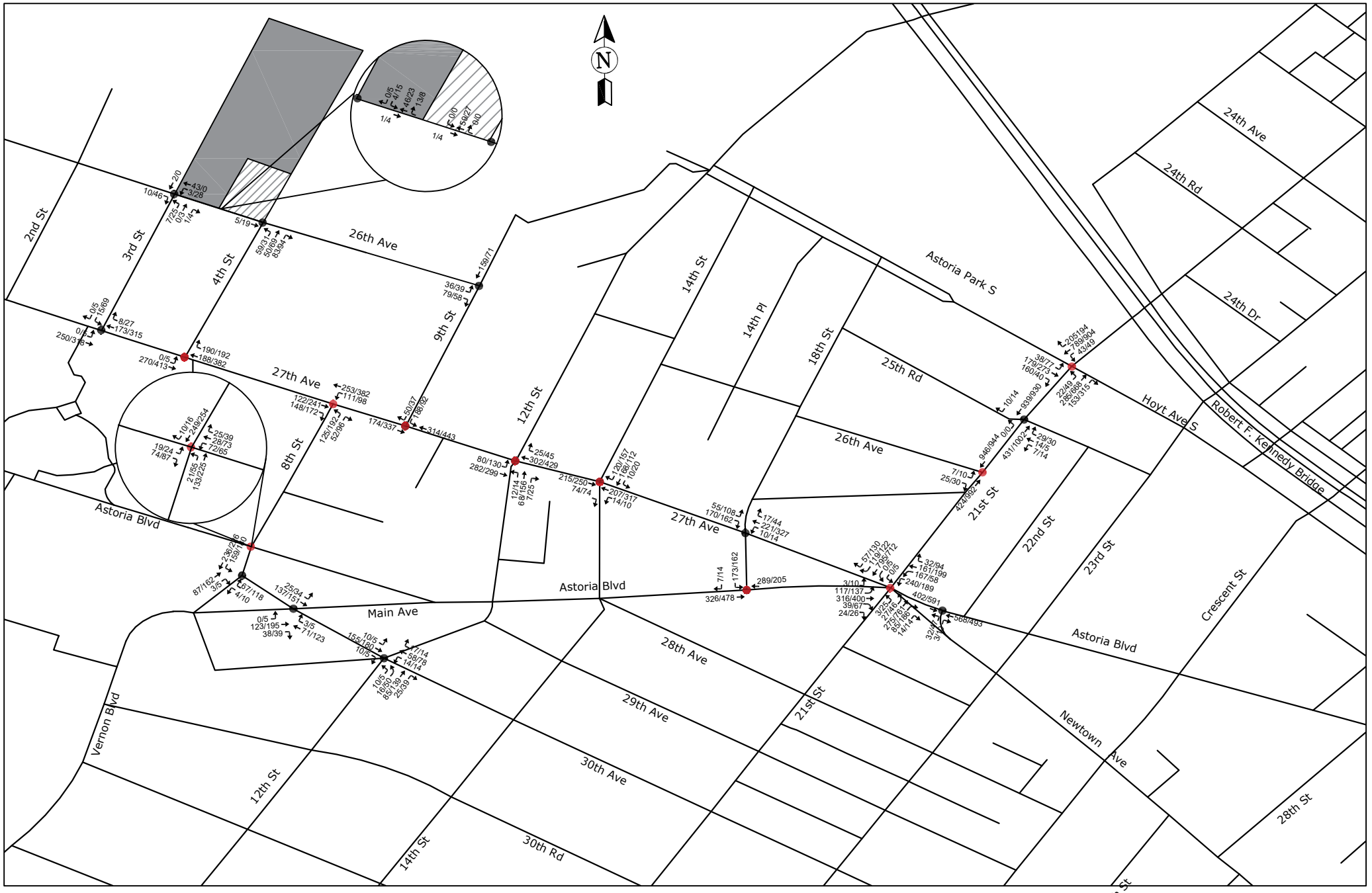
Projected Development Site 2

2021 Existing Traffic Volumes - Construction Peak Hours



← 10/5 - AM/PM Vehicular Volumes

2027 Peak Construction Period No-Action Traffic Volumes



← 10/5 - AM/PM Vehicular Volumes

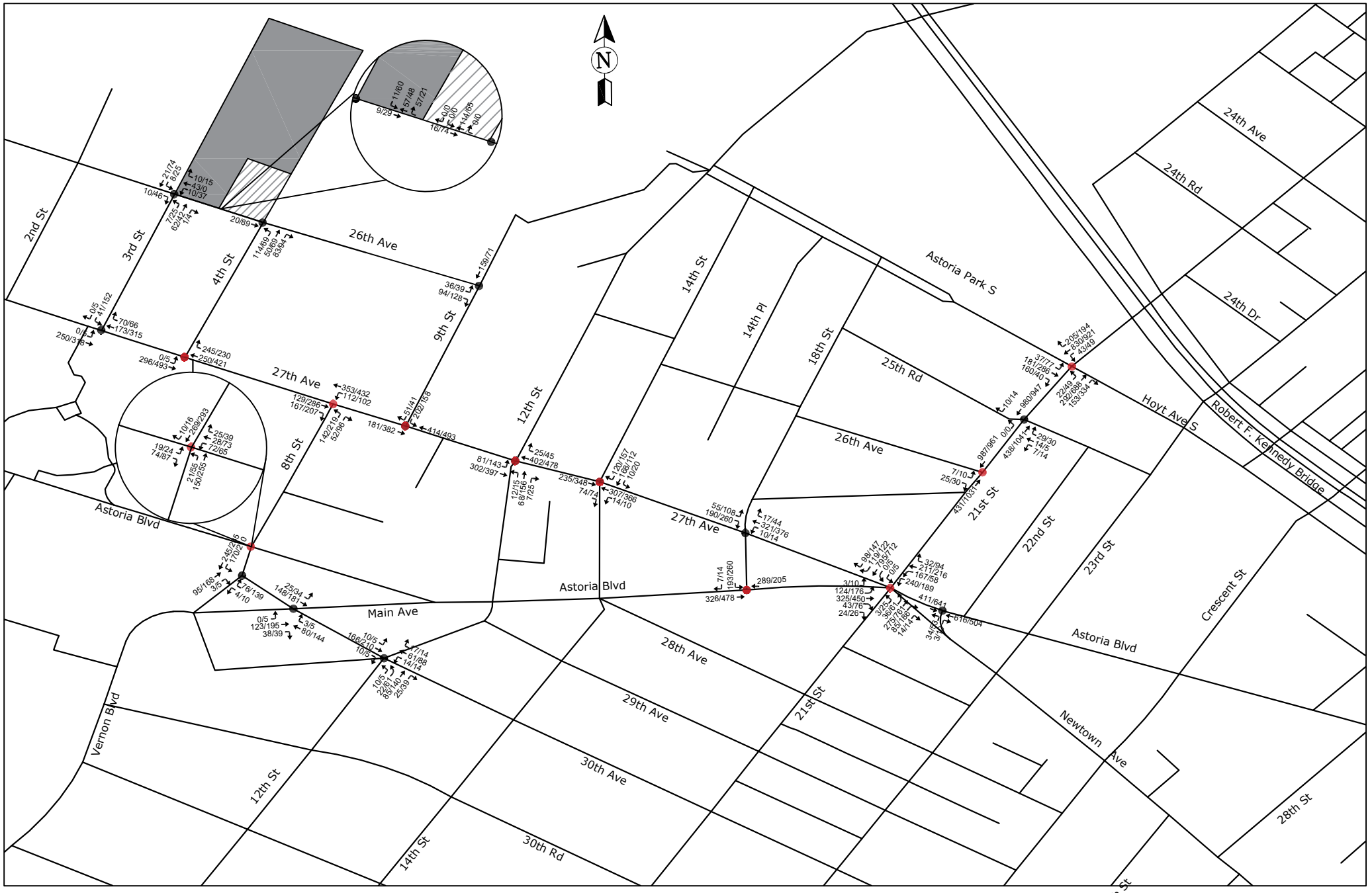
● Signalized Analysis Intersection

● Unsignalized Analysis Intersection

Projected Development Site 1

Projected Development Site 2

2027 Peak Construction Period With-Action Traffic Volumes



← 10/5 - AM/PM Vehicular Volumes

● Signalized Analysis Intersection

● Unsignalized Analysis Intersection

Projected Development Site 1

Projected Development Site 2

Development Sites. Potential measures to mitigate the significant adverse traffic impacts identified in **Table 17-9** are discussed in Chapter 18, "Mitigation."

Curb Lane Closures and Staging

Based on preliminary construction logistics planning for the Proposed Project, it is anticipated that all construction staging would occur on the Projected Development Sites. It is also anticipated that no closures of sidewalks, parking lanes or travel lanes would be needed to facilitate construction work. Dedicated gates, driveways, or ramps would be provided for delivery vehicle access, and flag persons are expected to be present at active project site driveways, where needed, to manage the access and movement of trucks to ensure no on-street queuing. Construction logistics planning would be coordinated with the NYCDOT-OCMC, the entity that ensures critical travel arteries are not interrupted, especially in peak travel periods.

TABLE 17-7
Existing Traffic Levels of Service – Construction Peak Hours

			Weekday AM				Weekday PM			
Intersections	Approach	Lane Group	V/C Ratio	Delay (sec/veh)	LOS		V/C Ratio	Delay (sec/veh)	LOS	
26th Av &	WB	LT	0.00	7.3	A		0.02	7.5	A	
3rd St	NB	LR	0.01	9.3	A		0.04	9.5	A	
(Stop-Control)										
26th Av &	NB	LR	0.08	9.5	A		0.05	8.9	A	
4th St										
(Stop-Control)										
26th Av &	EB	LR	0.06	22.3	C		0.08	22.5	C	
21st St	NB	T	0.35	21.7	C		0.71	28.9	C	
(Signalized)	SB	T	0.67	28.0	C		0.65	27.4	C	
27th Av &	EB	LT	0.00	7.7	A		0.00	7.8	A	
3rd St	SB	LR	0.03	11.8	B		0.15	13.2	B	
(Stop-Control)										
27th Av &	EB	LT	0.00	8.1	A		0.01	8.1	A	
4th St										
(Stop-Control)										
27th Av &	EB	TR	0.37	13.8	B		0.45	15.0	B	
8th St	WB	LT	0.39	14.2	B		0.38	14.2	B	
(Signalized)	NB	L	0.24	21.7	C		0.35	23.4	C	
	NB	R	0.16	20.5	C		0.24	21.6	C	
27th Av &	EB	LT	0.01	8.3	A		0.01	8.3	A	
9th St	SB	LR	0.07	11.7	B		0.04	10.9	B	
(Stop-Control)										
27th Av &	EB	LT	0.05	8.3	A		0.09	8.4	A	
12th St	NB	LTR	0.26	17.2	C		0.79	51.7	F	*
(Stop-Control)										
27th Av &	EB	TR	-	9.0	A		-	10.0	A	
14th St	WB	LT	-	9.6	A		-	9.8	A	
(Stop-Control)	SB	LTR	-	10.7	B		-	10.9	B	
27th Av &	EB	LTR	0.04	8.3	A		0.10	8.6	A	
18th St	WB	LTR	0.01	7.6	A		0.01	7.7	A	
(Stop-Control)										
Astoria Blvd &	EB	LR	0.14	26.7	C		0.17	27.2	C	
8th St	WB	LTR	0.30	29.2	C		0.31	29.7	C	
(Signalized)	NB	LT	0.22	14.2	B		0.33	15.7	B	
	SB	T	0.27	14.5	B		0.25	14.3	B	
	SB	R	0.02	11.9	B		0.03	11.9	B	
Astoria Blvd &	SB	LR	0.16	14.9	B		0.21	15.0	B	
18th St										
(Stop-Control)										
Astoria Blvd &	EB	L	0.50	51.4	D		0.48	47.5	D	
21st St	EB	TR	1.05	120.6	F	*	1.05	104.4	F	*
(Signalized)	WB	L	0.86	68.8	E	*	0.84	74.7	E	*
	WB	T	1.05	110.9	F	*	0.99	112.3	F	*
	WB	R	0.17	38.3	D		0.56	55.4	E	*
	NB	LTR	0.50	29.1	C		1.05	75.0	E	*
	SB	TR	0.99	61.1	E	*	0.90	44.4	D	*
Astoria Blvd &	NB	LR	0.07	14.1	B		0.14	17.4	C	
Newtown Av										
(Stop-Control)										
30th Av &	SB	LT	0.09	7.9	A		0.10	8.1	A	
8th St	WB	LR	0.07	9.9	A		0.15	11.0	B	
(Stop-Control)										
30th Av &	EB	LT	0.02	7.8	A		0.03	7.9	A	
Main Av	NB	TR	0.31	13.7	B		0.43	15.6	C	
(Stop-Control)										
30th Av &	EB	LTR	-	8.6	A		-	8.8	A	
12th St	WB	LTR	-	8.3	A		-	8.6	A	
(All-Way Stop)	NB	LTR	-	8.6	A		-	9.5	A	
Astoria Park S/ Hoyt Av &	EB	L	0.04	22.0	C		0.11	23.0	C	
21st St	EB	TR	0.69	37.2	D		0.55	31.4	C	
(Signalized)	NB	LTR	0.50	24.7	C		1.05	74.1	E	*
	SB	LTR	0.86	36.8	D		1.05	76.2	E	*
25th Rd &	NB	LT	0.00	10.1	B		0.00	11.3	B	
21st St	WB	LTR	0.28	28.6	D		0.69	113.0	F	*
(Stop-Control)										

Notes:
EB - eastbound, WB - westbound, NB - northbound, SB - southbound
L - left, T - through, R - right, DefL - Analysis considers a defacto left-turn lane on this approach
V/C ratio - volume-to-capacity ratio
Sec/veh - seconds per vehicle
LOS - level of service
* - Denotes a congested movement (LOS E or F, or v/c ratio greater than or equal to 0.9)
Analysis is based on the 2000 Highway Capacity Manual methodology (HCS+, version 5.5)

TABLE 17-8
2027 (Q3 & Q4) No-Action Traffic Levels of Service – Construction Peak Hours

			Existing AM			No-Action AM			Existing PM			No-Action PM		
Intersections	Approach	Lane Group	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS
26th Av &	WB	LT	0.00	7.3	A	0.00	7.3	A	0.02	7.5	A	0.02	7.5	A
3rd St	NB	LR	0.01	9.3	A	0.01	9.3	A	0.04	9.5	A	0.05	9.9	A
(Stop-Control)	SB	LTR				0.00	10.8	B				0.00	0.0	A
26th Av & Site 1 (Stop-Control)	SB	LR				0.00	9.4	A				0.03	9.0	A
26th Av &	EB	T	-	-	-	-	7.5	A	-	-	-	-	7.5	A
4th St	NB	LR	0.08	9.5	A	-	-	-	0.05	8.9	A	-	-	-
(Stop-Control-->All-Way Stop)	NB	LTR	-	-	-	-	8.5	A	-	-	-	-	8.1	A
26th Avenue & 9th St (Stop-Control)	EB	LR	-	-	-	0.19	10.9	B	-	-	-	0.14	9.8	A
26th Av &	EB	LR	0.06	22.3	C	0.06	22.4	C	0.08	22.5	C	0.08	22.6	C
21st St	NB	T	0.35	21.7	C	0.38	22.2	C	0.71	28.9	C	0.75	30.4	C
(Signalized)	SB	T	0.67	28.0	C	0.73	29.7	C	0.65	27.4	C	0.80	32.5	C
27th Av &	EB	LT	0.00	7.7	A	0.00	7.9	A	0.00	7.8	A	0.01	9.3	A
3rd St	SB	LR	0.03	11.8	B	0.04	13.5	B	0.15	13.2	B	0.37	28.0	D
(Stop-Control)														
27th Av &	EB	LT	0.00	8.1	A	0.41	13.5	B	0.01	8.1	A	0.58	13.8	B
4th St	WB	T	-	-	-	0.25	11.5	B	-	-	-	0.47	11.5	B
(Stop-Control-->Signalized)	WB	R	-	-	-	0.44	14.9	B	-	-	-	0.59	17.3	B
27th Av &	EB	TR	0.37	13.8	B	-	-	-	0.45	15.0	B	-	-	-
8th St	EB	T	-	-		0.17	10.2	B	-	-	-	0.32	12.8	B
(Signalized)	EB	R	-	-		0.29	11.7	B	-	-	-	0.36	14.0	B
	WB	LT	0.39	14.2	B	-	-	-	0.38	14.2	B	-	-	-
	WB	L	-	-	-	0.24	11.2	B	-	-	-	0.28	13.2	B
	WB	T	-	-	-	0.34	12.0	B	-	-	-	0.66	20.0	B
	NB	L	0.24	21.7	C	0.37	25.3	C	0.35	23.4	C	0.50	26.6	C
	NB	R	0.16	20.5	C	0.16	22.0	C	0.24	21.6	C	0.52	30.7	C
27th Av &	EB	LT	0.01	8.3	A				0.01	8.3	A			
9th St	EB	T				0.27	15.0	B				0.41	11.8	B
(Stop-Control-->Signalized)	WB	TR	-	-	-				-	-	-			
	WB	T				0.51	18.9	B				0.63	16.1	B
	SB	LR	0.07	11.7	B	-	-	-	0.04	10.9	B	-	-	-
	SB	L	-	-	-	0.39	20.4	C	-	-	-	0.25	24.4	C
		R	-	-	-	0.11	16.8	B	-	-	-	0.11	22.7	C
27th Av &	EB	LT	0.05	8.3	A	0.39	6.0	A	0.09	8.4	A	0.61	9.9	A
12th St	WB	TR	-	-	-	0.36	5.6	A	-	-	-	0.54	8.1	A
(Stop-Control-->Signalized)	NB	LTR	0.26	17.2	C	0.45	39.6	D	0.79	51.7	F *	0.91	73.2	E *
27th Av &	EB	TR	-	9.0	A	0.49	19.4	B	-	10.0	A	0.49	17.6	B
14th St	WB	LT	-	9.6	A	0.36	17.2	B	-	9.8	A	0.54	18.9	B
(Stop-Control-->Signalized)	SB	LTR	-	10.7	B	0.58	23.1	C	-	10.9	B	0.63	27.0	C
27th Av &	EB	LTR	0.04	8.3	A	0.07	9.1	A	0.10	8.6	A	0.45	26.8	D
18th St	WB	LTR	0.01	7.6	A	0.01	8.1	A	0.01	7.7	A	0.02	10.3	B
(Stop-Control)														
Astoria Blvd &	EB	LR	0.14	26.7	C	-	-	-	0.17	27.2	C	-	-	-
8th St	EB	L	-	-	-	0.06	23.1	C	-	-	-	0.11	26.5	C
(Signalized)	EB	R	-	-	-	0.19	25.0	C	-	-	-	0.27	28.9	C
	WB	LTR	0.30	29.2	C	0.30	26.7	C	0.31	29.7	C	0.46	32.8	C
	NB	LT	0.22	14.2	B	0.32	17.7	B	0.33	15.7	B	0.51	19.3	B
	SB	T	0.27	14.5	B	0.38	18.3	B	0.25	14.3	B	0.35	15.6	B
	SB	R	0.02	11.9	B	0.02	13.7	B	0.03	11.9	B	0.03	12.0	B
Astoria Blvd &	EB	T				0.50	25.0	C				0.64	28.4	C
18th St	WB	T				0.41	23.1	C				0.27	20.9	C
(Stop-Control-->Signalized)	SB	LR	0.16	14.9	B	0.36	22.8	C	0.21	15.0	B	0.29	21.4	C
Astoria Blvd &	EB	L	0.50	51.4	D	0.61	55.7	E *	0.48	47.5	D	0.60	51.8	D
21st St	EB	TR	1.05	120.6	F *	1.79	421.0	F *	1.05	104.4	F *	1.38	233.7	F *
(Signalized)	WB	L	0.86	68.8	E *	0.89	73.3	E *	0.84	74.7	E *	0.91	84.4	F *
	WB	T	1.05	110.9	F *	1.22	169.2	F *	0.99	112.3	F *	1.58	333.6	F *
	WB	R	0.17	38.3	D	0.19	38.8	D	0.56	55.4	E *	0.80	81.5	F *
	NB	LT				0.43	28.0	C				1.07	83.5	F *
	NB	R	-	-	-	0.33	27.2	C	-	-	-	0.53	30.5	C
	NB	LTR	0.50	29.1	C		27.8	C	1.05	75.0	E *		73.4	E *
	SB	LT				0.77	36.1	D				0.74	33.2	C
	SB	R	-	-	-	0.58	34.5	C	-	-	-	0.65	35.3	D
	SB	LTR	0.99	61.1	E *		35.7	D	0.90	44.4	D *		33.8	C
Astoria Blvd & Newtown Av (Stop-Control)	NB	LR	0.07	14.1	B	0.13	18.2	C	0.14	17.4	C	0.29	25.7	D

TABLE 17-8 (continued)
2027 (Q3 & Q4) No-Action Traffic Levels of Service – Construction Peak Hours

Intersections	Approach	Lane Group	Existing AM V/C Ratio	Existing AM Delay (sec/veh)	Existing AM LOS	No-Action AM V/C Ratio	No-Action AM Delay (sec/veh)	No-Action AM LOS	Existing PM V/C Ratio	Existing PM Delay (sec/veh)	Existing PM LOS	No-Action PM V/C Ratio	No-Action PM Delay (sec/veh)	No-Action PM LOS
30th Av &	SB	LT	0.09	7.9	A	0.16	8.4	A	0.10	8.1	A	0.59	27.6	D
8th St	WB	LR	0.07	9.9	A	0.12	10.9	B	0.15	11.0	B	1.18	199.3	F *
(Stop-Control)														
30th Av &	EB	LT	0.02	7.8	A	0.02	7.9	A	0.03	7.9	A	0.03	8.1	A
Main Av	NB	TR	0.31	13.7	B	0.36	15.6	C	0.43	15.6	C	0.55	21.1	C
(Stop-Control)														
30th Av &	EB	LTR	-	8.6	A	-	9.4	A	-	8.8	A	-	10.2	B
12th St	WB	LTR	-	8.3	A	-	8.6	A	-	8.6	A	-	9.3	A
(All-Way Stop)	NB	LTR	-	8.6	A	-	9.0	A	-	9.5	A	-	10.7	B
Astoria Park S/ Hoyt Av &	EB	L	0.04	22.0	C	0.08	22.6	C	0.11	23.0	C	0.15	23.5	C
21st St	EB	TR	0.69	37.2	D	0.77	41.5	D	0.55	31.4	C	0.64	34.0	C
(Signalized)	NB	LTR	0.50	24.7	C	0.57	26.3	C	1.05	74.1	E *	1.24	149.9	F *
	SB	LTR	0.86	36.8	D	0.93	43.5	D *	1.05	76.2	E *	1.30	176.4	F *
25th Rd &	NB	LT	0.00	10.1	B	0.00	10.4	B	0.00	11.3	B	0.00	12.6	B
21st St	WB	LTR	0.28	28.6	D	0.33	34.0	D	0.69	113.0	F *	0.98	222.0	F *
(Stop-Control)														

Notes:
EB - eastbound, WB - westbound, NB - northbound, SB - southbound
L - left, T - through, R - right, DefL - Analysis considers a defacto left-turn lane on this approach
V/C ratio - volume-to-capacity ratio
Sec/veh - seconds per vehicle
LOS - level of service
* - Denotes a congested movement (LOS E or F, or v/c ratio greater than or equal to 0.9)
Analysis is based on the 2000 Highway Capacity Manual methodology (HCS+, version 5.5)

TABLE 17-9
2027 (Q3 & Q4) With-Action Traffic Levels of Service – Construction Peak Hours

			No-Action AM			With-Action AM				No-Action PM			With-Action PM			
Intersections	Approach	Lane Group	V/C Ratio	Delay sec/veh	LOS	V/C Ratio	Delay (sec/veh)	LOS		V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	
26th Av &	WB	LT	0.00	7.3	A	0.01	7.4	A		0.02	7.5	A	0.03	7.5	A	
3rd St	NB	LR	0.01	9.3	A	-	-	-		0.05	9.9	A	-	-	-	
(Stop-Control)	NB	LTR	-	-	-	0.11	10.4	B		-	-	-	0.15	12.2	B	
	SB	LTR	-	-	-	0.06	11.4	B		-	-	-	0.21	13.0	B	
26th Av & Site 1 (Stop-Control)	SB	LR	0.00	9.4	A	0.02	11.4	B		0.03	9.0	A	0.14	12.8	B	
26th Av &	EB	T	-	7.5	A	-	7.7	A		-	7.5	A	-	8.3	A	
4th St	NB	LTR	-	8.5	A	-	9.5	A		-	8.1	A	-	9.1	A	
(Stop-Control-->All-Way Stop)																
26th Avenue & 9th St (Stop-Control)	EB	LR	0.19	10.9	B	0.21	11.1	B		0.14	9.8	A	0.24	10.4	B	
26th Av &	EB	LR	0.06	22.4	C	0.06	22.4	C		0.08	22.6	C	0.08	22.6	C	
21st St	NB	T	0.38	22.2	C	0.39	22.3	C		0.75	30.4	C	0.78	31.6	C	
(Signalized)	SB	T	0.73	29.7	C	0.76	30.8	C		0.80	32.5	C	0.81	33.2	C	
27th Av &	EB	LT	0.00	7.9	A	0.00	8.1	A		0.01	9.3	A	0.01	9.5	A	
3rd St	SB	LR	0.04	13.5	B	0.12	14.9	B		0.37	28.0	D	0.83	68.7	F	*
(Stop-Control)																
27th Av &	EB	LT	0.41	13.5	B	0.45	14.2	B		0.58	13.8	B	0.69	16.7	B	
4th St	WB	T	0.25	11.5	B	0.34	12.4	B		0.47	11.5	B	0.51	12.3	B	
(Signalized)	WB	R	0.44	14.9	B	0.63	20.2	C		0.59	17.3	B	0.81	32.2	C	
27th Av &	EB	T	0.17	10.2	B	0.18	10.3	B		0.32	12.8	B	0.38	13.5	B	
8th St	EB	R	0.29	11.7	B	0.33	12.3	B		0.36	14.0	B	0.44	15.6	B	
(Signalized)	WB	L	0.24	11.2	B	0.24	11.3	B		0.28	13.2	B	0.32	14.0	B	
	WB	T	0.34	12.0	B	0.48	14.0	B		0.66	20.0	B	0.66	19.6	B	
	NB	L	0.37	25.3	C	0.42	26.4	C		0.50	26.6	C	0.58	28.6	C	
	NB	R	0.16	22.0	C	0.17	22.1	C		0.52	30.7	C	0.53	31.2	C	
27th Av &	EB	T	0.27	15.0	B	0.28	15.1	B		0.41	11.8	B	0.47	12.5	B	
9th St	WB	T	0.51	18.9	B	0.68	23.3	C		0.63	16.1	B	0.70	18.2	B	
(Signalized)	SB	L	0.39	20.4	C	0.42	20.9	C		0.25	24.4	C	0.42	27.4	C	
	SB	R	0.11	16.8	B	0.12	16.8	B		0.11	22.7	C	0.13	22.9	C	
27th Av &	EB	LT	0.39	6.0	A	0.43	6.4	A		0.61	9.9	A	0.78	15.7	B	
12th St	WB	TR	0.36	5.6	A	0.47	6.6	A		0.54	8.1	A	0.60	8.9	A	
(Signalized)	NB	LTR	0.45	39.6	D	0.45	39.6	D		0.91	73.2	E	0.92	74.6	E	
27th Av &	EB	TR	0.49	19.4	B	0.52	20.1	C		0.49	17.6	B	0.63	20.6	C	
14th St	WB	LT	0.36	17.2	B	0.51	19.9	B		0.54	18.9	B	0.63	20.9	C	
(Signalized)	SB	LTR	0.58	23.1	C	0.58	23.1	C		0.63	27.0	C	0.63	27.0	C	
27th Av &	EB	LTR	0.07	9.1	A	0.08	9.7	A		0.45	26.8	D	0.55	36.6	E	*
18th St	WB	LTR	0.01	8.1	A	0.01	8.2	A		0.02	10.3	B	0.03	11.2	B	
(Stop-Control)																
Astoria Blvd &	EB	L	0.06	23.1	C	0.07	23.2	C		0.11	26.5	C	0.11	26.5	C	
8th St	EB	R	0.19	25.0	C	0.19	25.0	C		0.27	28.9	C	0.27	28.9	C	
(Signalized)	WB	LTR	0.30	26.7	C	0.30	26.7	C		0.46	32.8	C	0.46	32.8	C	
	NB	LT	0.32	17.7	B	0.35	18.2	B		0.51	19.3	B	0.56	20.7	C	
	SB	T	0.38	18.3	B	0.41	18.8	B		0.35	15.6	B	0.40	16.5	B	
	SB	R	0.02	13.7	B	0.02	13.7	B		0.03	12.0	B	0.04	12.1	B	
Astoria Blvd &	EB	T	0.50	25.0	C	0.50	25.0	C		0.64	28.4	C	0.64	28.4	C	
18th St	WB	T	0.41	23.1	C	0.41	23.1	C		0.27	20.9	C	0.27	20.9	C	
(Signalized)	SB	LR	0.36	22.8	C	0.40	23.5	C		0.29	21.4	C	0.45	24.4	C	
Astoria Blvd &	EB	L	0.61	55.7	E	0.64	57.7	E		0.60	51.8	D	0.75	61.2	E	*
21st St	EB	TR	1.79	421.0	F	1.85	447.5	F	*	1.38	233.7	F	1.54	303.3	F	*
(Signalized)	WB	L	0.89	73.3	E	0.89	73.3	E		0.91	84.4	F	0.91	84.4	F	
	WB	T	1.22	169.2	F	1.41	245.8	F	*	1.58	333.6	F	1.68	377.9	F	*
	WB	R	0.19	38.8	D	0.19	38.8	D		0.80	81.5	F	0.81	83.5	F	
	NB	T	0.43	28.0	C	0.49	29.5	C		1.07	83.5	F	1.15	114.7	F	*
	NB	R	0.33	27.2	C	0.33	27.2	C		0.53	30.5	C	0.53	30.5	C	
	SB	LT	0.77	36.1	D	0.77	36.1	D		0.74	33.2	C	0.74	33.3	C	
	SB	R	0.58	34.5	C	0.71	41.2	D		0.65	35.3	D	0.70	37.6	D	
Astoria Blvd & Newtown Av (Stop-Control)	NB	LR	0.13	18.2	C	0.15	19.4	C		0.29	25.7	D	0.35	30.4	D	

TABLE 17-9 (continued)
2027 (Q3 & Q4) With-Action Traffic Levels of Service – Construction Peak Hours

			No-Action AM			With-Action AM			No-Action PM			With-Action PM			
Intersections	Approach	Lane Group	V/C Ratio	Delay sec/veh	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	
30th Av &	SB	LT	0.16	8.4	A	0.17	8.6	A	0.59	27.6	D	0.77	44.4	E	*
8th St	WB	LR	0.12	10.9	B	0.14	11.3	B	1.18	199.3	F	1.95	537.3	F	*
(Stop-Control)															
30th Av &	EB	LT	0.02	7.9	A	0.02	7.9	A	0.03	8.1	A	0.04	8.1	A	
Main Av	NB	TR	0.36	15.6	C	0.37	16.1	C	0.55	21.1	C	0.59	24.0	C	
(Stop-Control)															
30th Av &	EB	LTR	-	9.4	A	-	9.7	A	-	10.2	B	-	10.9	B	
12th St	WB	LTR	-	8.6	A	-	8.7	A	-	9.3	A	-	9.6	A	
(All-way Stop)	NB	LTR	-	9.0	A	-	9.2	A	-	10.7	B	-	11.3	B	
Astoria Park S/ Hoyt Av &	EB	L	0.08	22.6	C	0.08	22.6	C	0.15	23.5	C	0.15	23.5	C	
21st St	EB	TR	0.77	41.5	D	0.77	41.7	D	0.64	34.0	C	0.66	35.0	C	
(Signalized)	NB	LTR	0.57	26.3	C	0.59	26.8	C	1.24	149.9	F	1.28	164.9	F	*
	SB	LTR	0.93	43.5	D	0.96	48.3	D	1.30	176.4	F	1.33	189.7	F	*
25th Rd &	NB	LT	0.00	10.4	B	0.00	10.6	B	0.00	12.6	B	0.00	12.7	B	
21st St	WB	LTR	0.33	34.0	D	0.35	36.5	E	0.98	222.0	F	1.09	271.3	F	**
(Stop-Control)															

Notes:
EB - eastbound, WB - westbound, NB - northbound, SB - southbound
L - left, T - through, R - right, DefL - Analysis considers a defacto left-turn lane on this approach
V/C ratio - volume-to-capacity ratio
Sec/veh - seconds per vehicle
LOS - level of service
* - Denotes a significant adverse impact
**- denotes no significant adverse impact under CEQR Technical Manual criteria as minor street volume would total less than 90 PCEs in the With Action condition.
Analysis is based on the 2000 Highway Capacity Manual methodology (HCS+, version 5.5)

Transit

As discussed above and shown in **Table 17-4**, in the 2027 Q3 and Q4 peak construction period, approximately 359 construction workers would travel to and from the Project Area each day. As also discussed above, approximately 44 percent of construction workers are expected to travel to and from the Project Area by public transit (subway, bus or a combination of the two) and 5 percent by walking, bicycle or other modes. In addition, it is estimated that approximately 80 percent of all construction workers would arrive and depart in the peak hour before and after each shift. Therefore, it is estimated that approximately 158 construction workers would travel to and from the Project Area via public transit each day, and that approximately 126 of these trips would occur in each of the 6:00 AM to 7:00 AM and 3:00 PM to 4:00 PM construction peak hours. These construction worker trips, which would occur outside of the peak periods for overall transit ridership, would be distributed among nearby subway stations (114 trips) and nearby bus routes (126 trips including bus trips to/from the subway). Approximately 70 percent of the peak hour subway trips (80 trips) are expected to use the analyzed 30th Avenue (N/W) station, while bus trips would be distributed between the four MTA Bus routes serving the Project Area (the Q18, Q19, Q102 and Q103).

It is anticipated that Towers 1 and 2 would be fully operational by the fourth quarter of 2027, and that during this period they would generate an estimated 83 subway trips and 9 bus trips during the 6:00 AM to 7:00 AM construction peak hour and 204 subway trips and 28 bus trips during the 3:00 PM to 4:00 PM construction peak hour. It is expected that approximately 70 percent of the subway trips (58 trips in the AM and 143 trips in the PM) would be en route to and from the analyzed 30th Avenue station, most of which would utilize the Project's proposed shuttle service. The remaining 30 percent of subway trips (totaling 25 trips in the AM and 61 trips in the PM) would travel to/from other subway stations via the four local bus routes serving the Project Area.

Overall, combined construction and operational subway demand at the analyzed 30th Avenue (N/W) station in the 2027 Q3 and Q4 peak construction period would total approximately 138 trips in the 6:00 AM to 7:00 AM construction peak hour, and 223 subway trips in the 3:00 PM to 4:00 PM construction peak hour. This demand would be substantially less than the numbers of trips generated by full build-out of the Proposed Actions in the operational AM and PM peak hours (796 and 886 trips, respectively). It would also occur outside of the analyzed peak commuter periods when overall demand on the subway system is typically greatest. Consequently, the Proposed Actions are not expected to result in significant adverse impacts to the analyzed 30th Avenue (N/W) subway station or to subway line haul conditions during the construction peak hours in the 2027 Q3 and Q4 peak construction period. Additionally, a sensitivity analysis was conducted to examine the effects of the construction peak incremental subway trips during the 3-4PM period on the 30th Avenue subway station elements using the existing base volumes during the traditional PM commuter peak period (the volumes used in the operational analysis). This analysis found that the 3-4PM construction subway increment superimposed with the traditional PM commuter peak period volumes would not result in the potential for any significant impacts.

Combined operational and construction bus demand in the 2027 Q3 and Q4 peak construction period would total approximately 155 trips in the 6:00 AM to 7:00 AM construction peak hour, and 208 trips in the 3:00 PM to 4:00 PM construction peak hour. As these trips would be distributed among the four MTA Bus routes serving the Project Area, and would occur outside of the analyzed peak commuter periods when overall transit bus demand is typically greatest, the Proposed Actions are not expected to result in significant adverse impacts to local bus service during the 2027 Q3 and Q4 peak construction period.

Pedestrians

As discussed previously, it is anticipated that approximately 359 construction workers would travel to and from the Project Area in the 2027 Q3 and Q4 peak construction period. An estimated 287 of these workers (80 percent) would arrive and depart in the peak hour before and after each shift. Furthermore, as discussed below, approximately 48 percent of construction workers are expected to travel by private auto and would park on-site. Therefore, construction worker pedestrian trips, including walk trips en route to/from nearby bus stops, would total approximately 140 in each peak hour. In addition, it is anticipated that Towers 1 and 2 would be fully operational by the fourth quarter of 2027, and that during this period they would generate an estimated 50 pedestrian trips during the 6:00 AM to 7:00 AM construction peak hour (including walk-only trips and pedestrians walking to bus stops and the ferry), and 183 pedestrian trips during the 3:00 PM to 4:00 PM construction peak hour. Combined operational and construction pedestrian demand in the 2027 Q3 and Q4 peak construction period would therefore total approximately 190 trips in the 6:00 AM to 7:00 AM construction peak hour, and 323 trips in the 3:00 PM to 4:00 PM construction peak hour. As these trips would be distributed among multiple access points along both 3rd Street and 26th Avenue, pedestrian demand during each peak hour is not expected to reach the 200 trips/hour *CEQR Technical Manual* analysis threshold for a detailed pedestrian analysis on any one analyzed sidewalk, corner area or crosswalk, and significant adverse pedestrian impacts are not expected to occur during the 2027 Q3 and Q4 peak construction period.

Parking

Of the approximately 359 construction workers who would travel to the Project Area during the 2027 Q3 and Q4 peak construction period, it is estimated that 48 percent would travel to the area by private auto. Based on an average auto occupancy of 1.5 persons per auto, the maximum daily parking demand from construction workers would total approximately 115 spaces beginning in the 7:00 AM – 8:00 AM period. In addition, it is estimated that Towers 1 and 2 (which would be operational by the fourth quarter of 2027) would generate a demand for approximately 291 parking spaces in the 7:00 AM – 8:00 AM period. Therefore, site-generated parking demand during the 2027 Q3 and Q4 peak construction period would total approximately 406 spaces.

It is anticipated that the Proposed Project's 525-space on-site parking garage would be completed prior to the 2027 Q3 and Q4 peak construction period, and that this parking capacity would be available to accommodate both operational demand and construction workers during the peak construction period. Therefore, the 406 spaces of combined construction and operational parking demand during the 2027 Q3 and Q4 peak construction period would be fully accommodated on-site, and the Proposed Actions are not expected to result in significant adverse construction parking impacts.

Air Quality

As is typical with construction projects in New York City, construction of the Proposed Project would require use of both non-road construction equipment and on-road vehicles. Non-road construction equipment includes equipment operating on-site such as excavators and compressors. On-road vehicles include construction delivery trucks, dump trucks, concrete trucks, and construction worker vehicles arriving at and departing from the construction site as well as operating on-site. Emissions from non-road construction equipment and on-road vehicles have the potential to affect air quality. In addition, emissions from dust-generating construction activities (i.e., truck loading and unloading operations) also have the potential to affect air quality. A quantitative analysis of the overall combined impact of both

non-road and on-road sources of construction-related air emissions, including dust emissions, was performed to determine the potential for significant adverse impacts from these sources of air emissions generated during construction of the Proposed Project. **Chapter 12, "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 in accordance with all applicable laws, regulations, and building codes. In addition, contractors would be required under contract specifications to implement an emissions reduction program to minimize the air quality effects from construction of the Proposed Project, consisting of the following components:

A. *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 Project Area; 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.

B. *Idling Restriction.* In addition to adhering to the local law restricting unnecessary idling on roadways, on-site vehicle except concrete truck 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 or are otherwise required for the proper operation of the engine.

C. *Clean Fuel*. ULSD fuel would be used exclusively for all diesel engines throughout the Project Area.

D. *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).

E. *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.

Overall, this emissions reduction program is expected to substantially reduce diesel emissions. The analysis accounted for the emissions reduction measures listed above that would be implemented during construction of the Proposed Project.

On-Site Construction Activity Assessment

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 $PM_{2.5}$. $PM_{2.5}$ is 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 residences, other sensitive uses, and publicly accessible open spaces, worst-case short-term and annual periods for construction were identified for dispersion modeling of annual and short-term (i.e., 24-hour, 8-hour, and 1-hour) averaging periods. October 2024 and the 12-month period from June 2024 to May 2025 were identified as worst-case short-term and annual periods, respectively, since the highest project-wide emissions were predicted in these periods. During these times, construction activities are projected to occur simultaneously at Projected Development Site 1, Phases 1 and 2 under the construction schedule. In addition, these peak periods include construction activities that would take place in close proximity to existing residential locations nearby the Project Area, as well as the potential future build Astoria Cove Development buildings.

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

ENGINE EMISSIONS

The sizes, types, and number of units of construction equipment were estimated based on the construction activity schedule developed by the Applicant for the Proposed Project. Emission rates for NO_X, CO, PM_{10}, and $PM_{2.5}$ from truck engines were developed using the EPA Motor Vehicle Emission Simulator (MOVES2014b) 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 MOVES2014b emission model.

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 USEPA procedures delineated in AP-42 Table 13.2.3-1. Since construction is required to follow the New York City Air Pollution Control Code regarding construction-related dust emissions, a 50 percent reduction in particulate emissions from fugitive dust were 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 Proposed Project's construction sources were evaluated using a refined dispersion model, the EPA/AMS AERMOD dispersion model. AERMOD is a state-of-the-art dispersion model, applicable to rural and urban areas, flat and complex terrain, surface and elevated releases, and multiple sources (including point, area, and volume sources). AERMOD is a steady-state plume model that incorporates current concepts about flow and dispersion in complex terrain and includes updated

treatments of the boundary layer theory, understanding of turbulence and dispersion, and handling of terrain interactions.

SOURCE SIMULATION

For short-term model scenarios (predicting concentration averages for periods of 24 hours or less), all emission sources were simulated as area sources. For periods of 8 hours or less (less than the length of a shift), it was assumed that all engines would be active simultaneously.

METEOROLOGICAL DATA

The meteorological data set consists of five consecutive years of latest available meteorological data to be provided by the New York State Department of Environmental Conservation (DEC): surface data collected at the nearest representative National Weather Service Station (La Guardia Airport) from 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 USEPA AERMET program to develop data in a format which can be readily processed by the AERMOD model.

BACKGROUND CONCENTRATIONS

To estimate the maximum expected total pollutant concentrations, the calculated impacts from the emission sources must be added to a background value that accounts for existing pollutant concentrations from other sources. The background levels are based on concentrations monitored at the nearest New York State Department of Environmental Conservation (NYSDEC) ambient air monitoring stations (See **Table 12-6** in **Chapter 12, "Air Quality"**).

RECEPTOR LOCATIONS

Receptors were placed at locations that would be publicly accessible, at residential and other sensitive uses at both ground-level and elevated locations (e.g., residential windows), at adjacent sidewalk locations, at publically accessible open spaces, at the schools on the adjacent blocks.

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 were included with the on-site dispersion analysis (in addition to on-site truck and non-road engine activity) to address all local project-related emissions cumulatively.

ON-ROAD VEHICLE EMISSIONS

Vehicular engine emission factors were computed using the EPA mobile source emissions model, MOVES2014b.[3] This emissions model is capable of calculating engine emission factors for various vehicle types, based on the fuel type (gasoline, diesel, or natural gas), meteorological conditions, vehicle speeds, vehicle age, roadway type and grade, number of starts per day, engine soak time, and various other factors

[3] EPA, Motor Vehicle Emission Simulator (MOVES), User Guide for MOVES2014a, November 2015.

that influence emissions, such as inspection maintenance programs. The inputs and use of MOVES incorporate the most current guidance available from NYSDEC.

ON-ROAD DUST EMISSIONS

$PM_{2.5}$ emission rates were determined with fugitive road dust to account for their impacts. Road dust emission factors were calculated according to the latest procedure delineated by EPA[4]. An average weight of 20 tons and 2.6 tons were 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 Project are presented in **Table 17-10**. To estimate the maximum total pollutant NO_2, CO, $PM_{2.5}$ and PM_{10} concentrations, the modeled concentrations from the Proposed Project were added to a background value that accounts for existing pollutant concentrations from other nearby sources. As shown in **Table 17-10**, the maximum predicted total concentrations of NO_2, CO, $PM_{2.5}$ and PM_{10} are below the applicable NAAQS for both short-term and annual averaging periods. Emissions from the other less intensive construction periods would be less than the emissions during the modeled worst-case periods; therefore, the resulting concentrations from these non-peak periods are expected to be less than the concentrations presented in **Table 17-10**.

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

TABLE 17-10
Maximum Pollutant Concentrations from Phase 1 Construction

Pollutant	Averaging Period	Units	Maximum Modeled Impact	Background Concentration (1)	Total Concentration	Criterion
NO_2	Annual	$\mu g/m^3$	11.4	29.7	41.1	100 (2)
CO	1-hour	ppm	2.5	2.1	4.6	35 (2)
	8-hour	ppm	0.8	1.8	2.6	9 (2)
PM_{10}	24-hour	$\mu g/m^3$	15.6	28.0	43.6	150 (2)
$PM_{2.5}$	24-hour	$\mu g/m^3$	8.9	17.7	26.6	35 (2)
	Annual	$\mu g/m^3$	0.6	7.0	7.6	12 (2)

Notes:
[1] The background levels are based on the most representative concentrations monitored at DEC ambient air monitoring stations (see Table 12-6 in Chapter 12, "Air Quality").
[2] NAAQS.

Conclusion

The dispersion modeling analysis of construction-related air emissions for both non-road and on-road sources determined that $PM_{2.5}$ and PM_{10}, annual-average NO_2, and CO concentrations would be below their corresponding NAAQS, respectively. Therefore, construction of the Proposed Project would not result in significant adverse air quality impacts due to construction sources.

Noise

Potential impacts on community noise levels during construction of the Proposed Project could result from construction equipment operation and construction trucks and worker vehicles traveling to and from the Project Area. Noise levels at a given location are dependent on the type and number of pieces of construction equipment operated, the acoustical utilization factor of the equipment (i.e., the percentage of time a piece of equipment is operating at full power), the distance from the construction site, and any shielding effects (from structures such as buildings, walls, or barriers).

Noise levels from construction activities would vary widely, depending on the stage of construction and the location of the construction relative to receptor locations as described below. The most noise-intensive construction activities would not occur every day or every hour on those days that they would occur. During hours when the loudest pieces of construction equipment are not in use, receptors would experience lower construction noise levels. Construction noise levels would fluctuate during the construction period at each receptor, with the highest construction noise levels occurring for limited periods. The most substantial construction noise sources are expected to be impact equipment such as excavators with hydraulic break rams and paving breakers, as well as the movements of trucks.

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

York City Noise Control Code. In addition, as required under the *New York City Noise Control Code*, a site-specific noise mitigation plan for the Proposed Development would be developed and implemented that may include source and path controls.

Construction Noise Analysis Fundamentals

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

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

- The noise emission level and the usage factor, which accounts for the percentage of time the equipment is operating at full power, of the equipment per CEQR Table 22-2**;**
- Construction-related vehicle classification, volume, and speed;
- The distance between the sources and the receptors;
- Topography and ground effects; and
- Shielding from construction fencing and building.

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.);
- The volume of vehicular traffic on each roadway segment;
- Vehicular speed;
- The distance between the roadway and the receptor;
- Topography and ground effects; and
- Shielding.

Construction Noise Impact Criteria

Chapter 22 of the *CEQR Technical Manual* breaks construction duration into "short-term" and "long-term" and states that construction noise is not likely to require analysis unless it "affects a sensitive receptor over a long period of time." Consequently, the construction noise analysis considers the potential for the construction of a project to create high noise levels (the "intensity") 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 a proposed project would not result in any exceedances of these criteria at a given receptor, then that receptor would not have the potential to experience a construction noise impact. However, as is the case with the Proposed

Project, if construction would result in exceedances of these noise impact criteria, then further consideration of the intensity and duration of construction noise is warranted at that receptor. 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 10 PM and 7 AM), the threshold requiring further consideration would be 3 dBA $L_{eq(1)}$.

The noise impact criteria are described in Table B of New York State Assessing and Mitigating Noise Impact issued in October 2000. The noise impact is defined as follows:

- Objectionable: Equal to or greater than 15 dBA increment over ambient noise for 12 consecutive months or more
- Very objectionable: Equal to or greater than 20 dBA increment over ambient noise for 3 consecutive months or more

A significant adverse construction noise impact from the Proposed Development would be defined if an objectionable or very objectionable noise increase is determined at a sensitive receptor. Therefore, further consideration of the intensity and duration of construction noise is warranted at that receptor will be required to address the significant adverse impacts.

Construction Noise Analysis Methodology

CadnaA was used as the sound propagation model to determine the construction noise impact. The CadnaA model is a state-of-the-art tool for noise analysis and an appropriate tool for construction noise impact analysis, as noted in Chapter 22 of the *CEQR Technical Manual*.

CadnaA is a three-dimensional modeling platform based on the International Organization for Standardization (ISO) 9613, "Attenuation of Sound during Propagation Outdoors." Noise effects from construction activities were evaluated using the CadnaA model developed by DataKustik for noise assessment. The model analyzes stationary sources from construction equipment, and mobile sources from construction-related traffic. In addition, the model considers the reference sound power levels from the noise sources attenuation from sound propagation, ground absorption, reflections from barriers and structures, attenuation due to shielding from construction barriers.

Multiple CadnaA models were developed to study the construction-related noise increment. First, an existing noise model was developed to calculate the noise generated from the existing traffic. Next, existing modeled levels for all receptors were then adjusted based on the adjusted monitored levels to account for modeling limitations and to calibrate modeled noise levels to account for non-traffic-related background noise. Then the construction equipment used during the worst-case construction scenario was developed to study the noise levels. Finally, the projected construction noise levels for multiple

representative construction scenarios were compared to the adjusted existing levels to calculate the potential construction-related increment to determine the magnitude of the noise impacts.

Background Noise Levels

Field measurements were conducted in the vicinity of the project area in November 2020 to determine the ambient noise levels. **Figure 14-2** in **Chapter 14, "Noise,"** shows the field measurement location. Those locations were used to calculate baseline noise levels for sensitive receptors. Two adjustment factors were incorporated for each representative receptor. The first adjustment was conducted to account for the traffic difference between the observed traffic during the noise measurement and existing traffic volume in the traffic study.

Based on the difference between the existing Cadna background calculation and the adjusted noise level described above, a second adjustment factor is applied to reconcile the difference between the noise model and the traffic adjusted measurement data. The correction factor for measurement for the field measurement is summarized in **Table 17-11** below:

TABLE 17-11:
Adjustment Factors Applied in the CadnaA model Receptors

Representative Monitoring Location	Measured AM Leq (dBA)	Traffic Adjustment (dBA)	Traffic Adjusted Leq (dBA)	Cadna Modeled Leq (dBA)	Cadna Adjustment for all receptors (dBA)
1	65.4	2.9	68.3	67.1	1.2
2	53.9	0	53.9	43.8	10.1
3	60.4	2.9	63.3	64.4	-1.1

The CadnaA adjustment is applied to all receptor locations using one of the representative monitoring locations. The baseline noise level for each Cadna receptor will be determined by the maximum noise levels between the traffic adjusted L_{90} of the representative monitoring location and the Cadna adjusted noise level.

Construction Sources

The Applicant's construction specialists prepared a construction equipment schedule to estimate noise impacts from on-site equipment and trucks.

The CadnaA model incorporates the construction equipment within the site footprints, building footprints, roadway links, and sensitive receptors as inputs. Each piece of construction equipment was input into the model as a point source. The model produces A-weighted L_{eq} noise levels at each receptor location.

Construction activity associated with the Proposed Development is expected to occur over approximately 73 months. A peak-period analysis was performed to determine the worst-case noise impacts magnitude. **Table 17-12** summarizes the equipment types, usage factors, and reference sound power levels used in the analysis. Based on the construction and equipment schedules, it is determined that the truck and equipment used in September 2022, October 2022, June 2023, June 2026, and June 2027 are the years that represent the extent and duration of the project impact.

TABLE 17-12
Construction Equipment Used in Noise Analysis

Equipment Type	Sep-22[5]	Oct-22	Jun-23	Jun-26	Jun-27	Usage Factor	Lmax at 50'	Sound Power Level
Concrete Mixer Trucks[6]	10	10	25	0	25	40%	85	112.7
Concrete Pump Trucks	1	1	1	0	1	20%	82	106.7
Fuel Trucks	1	1	0	1	0	40%	55	82.7
Excavators	4	4	0	4	0	40%	85	112.7
Caisson Rigs (Impact Pile Drivers)	2	0	0	2	0	20%	95	119.7
Portable Concrete Mixers	0	0	1	0	1	50%	80	108.7
Compressors (Diesel)	2	2	3	2	3	40%	80	107.7
Generators	3	3	5	3	5	50%	82	110.7
Rebar Benders	0	0	1	0	1	20%	80	104.7
Concrete Tower Cranes (Stationary Jumping Mast)	0	0	1	0	1	16%	85	108.7
Asphalt Laying Equipment	0	0	1	0	1	50%	85	113.7
Dual Hoists (400 Amp)	0	0	2	0	2	50%	75	103.7
Compressors	0	0	0	2	0	40%	80	107.7
Circular Saws	0	0	0	5	0	20%	76	100.7

[5] This analysis period was conservatively analyzed with concrete equipment.
[6] Daily volumes are assumed in the table. Therefore, it is assumed that no more than 5 concrete mixer truck will be on site at the same time for all analysis scenario.

Impact Analysis Procedure

The construction noise impact assessment follows these procedures:

1. Since the project will take over 24 consecutive months duration to construct, the potential magnitude of construction noise levels and duration on the building exterior will be considered to determine the impact significance.
2. The impacted magnitude and duration will be considered when determining significant adverse impact.
3. Considering the construction schedule and proximity between construction site and receptor location, analyzed impacts based on selected analysis periods will be used to extrapolate potential significant adverse impact during construction periods that were not analyzed in detail.

Noise Receptor Locations

A receptor network was developed within the study area around the Project Area. Sensitive receptor locations, such as residential properties, commercial space, and open space, were selected as noise receptor sites. Receptors were placed on each floor of buildings. The receptor network also included recently constructed and planned buildings identified in the Astoria Cove Rezoning.

Noise Reduction Measures Section

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

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

Construction for the Proposed Project would be required to follow the NYC Noise Code for construction noise control measures. In addition, specific noise control measures would be incorporated in the noise mitigation plan(s) required under the NYC Noise Code. These measures could include a variety of source and path controls, including the following:

- The project would reduce the noise level at the source during the most time-sensitive time period per NYC Noise Code. An after-hour noise variance from NYC DEP would be required for weekend and after-hours work.

- Appropriate usage and maintenance procedures should be followed for all construction equipment to limit noise emissions. The procedures include:
    - Employ the manufacturer's appropriate noise reduction procedures to maintain all equipment and mufflers.
    - Closure of engine's housing doors during operation.
    - Cover portable noise-generating equipment with noise-insulating fabric where feasible and practicable.
    - Use equipment that meets the sound level standards specified in Subchapter 5 of the New York City Noise Control Code from the start of construction.
- Where feasible and practicable, construction sites would be configured to minimize backup alarm noise.
- All trucks, other than trucks operate a loading, unloading, or processing device (e.g., concrete mixing trucks), would not be allowed to idle more than three minutes at the construction site based upon Title 24, Chapter 1, Subchapter 7, Section 24-163 of the NYC Administrative Code.
- Where logistics allow, path controls (such as portable barriers or shrouds around specific equipment) would be considered during the development of the construction noise mitigation plan.
- 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.
- 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.
- 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 barrier); and
- Where logistics allow, truck deliveries would take place behind the noise barriers.

Construction Noise Analysis Results

Using the methodology described above, cumulative noise analyses that incorporate the stationary and mobile sources were performed to determine maximum 1-hour equivalent (L_{eq}) noise levels that would be expected at each of the noise receptor locations during each of the five selected construction periods. This resulted in a predicted range of peak hourly construction noise levels throughout the construction period at each receptor point and at each floor of the represented building. The results of the detailed construction noise analysis are summarized by residential and mixed residential/commercial address/location in **Table 17-13**. **Table 17-14** summarizes the extent of the noise impact. **Table 17-14** summarizes the significant adverse noise determination based on the impact criteria listed in the Construction Noise Impact Criteria section below. More refined work will be conducted between the DEIS and FEIS.

TABLE 17-13
Construction Noise Analysis Results (dBA)

Address / Receptor ID	Land Use	Background Noise Range	Total Projected Noise Range	Highest Noise Increments
1-02 26 AVENUE	Residential	55.3 - 56.6	55.3 - 71.9	16.6
Astoria Athletic Field	Playground	59.1	55.3	0.0
26-01 2 STREET	Residential	56 - 66.9	55.3 - 70.8	9.9
26-03 2 STREET	Residential	55.3 - 58.7	55.3 - 70.1	11.9
26-05 2 STREET	Residential	55.3 - 56.1	55.3 - 70.4	14.3
26-07 2 STREET	Residential	55.3 - 55.8	55.3 - 69.4	13.6
26-27 2 STREET	Residential	55.3	55.3 - 69.9	14.6
26-33 2 STREET	Residential	55.3	55.3 - 58.4	3.1
26-18 3 STREET	Residential	55.3	55.3 - 69.1	13.8
26-24 3 STREET	Residential	55.3 - 56.3	55.3 - 68.4	13.1
2-15 26 AVENUE	Industrial Warehouse	55.3 - 61.4	55.3 - 77.6	22.3
3-02 26 AVENUE	Industrial	62.2 - 64.7	65.2 - 76.9	12.2
3-04 26 AVENUE	Residential	55.3 - 63.4	55.3 - 82.4	19.5
3-06 26 AVENUE	Residential	55.3 - 64	55.3 - 82.8	19.0
3-08 26 AVENUE	Residential	55.3 - 62.3	55.3 - 81.5	22.9
3-10 26 AVENUE	Residential	55.3 - 62.4	55.3 - 81.3	22.8
26-02 4 STREET	Residential	55.3 - 63.7	55.3 - 80.7 (82.8)[7]	19.6 (22.9)[8]
26-11 3 STREET	Residential	55.3 - 59.1	55.3 - 70.1	12.1
26-12 4 STREET	Commercial / Industrial	55.3 - 60.6	55.3 - 64.4	3.8
26-18 4 STREET	Residential	55.3 - 61	55.3 - 65.7	8.8
26-24 4 STREET	Commercial / Industrial	61 - 61.1	61.7 - 68.7	7.6
26-15 3 STREET	Residential	55.3 - 59.7	55.3 - 71.4	12.5
26-19 3 STREET	Residential	55.3 - 57.9	55.3 - 67.1	11.0
26-31 3 STREET	Residential	55.3 - 57.5	55.3 - 65	7.5
26-34 3 STREET	Commercial / Industrial	55.3	59 - 60.7	5.4
26-25 4 STREET	Commercial / Industrial	61.8 - 61.9	64.8 - 65.7	3.8
2-20 26 AVENUE	Commercial / Industrial	56.5	57.2 - 71.9	15.4

[7] The value in Bracket "( )" refers to the highest projected noise impact expected for a construction period that is not directly modeled by CadnaA. The value is derived based on extrapolation of modeled noise results for some similar receptors.
[8] The value in Bracket "( )" refers to the highest projected noise impact expected for a construction period that is not directly modeled by CadnaA. The increment is based on the highest total projected noise, either directly modeled or extrapolated.

Address / Receptor ID	Land Use	Background Noise Range	Total Projected Noise Range	Highest Noise Increments
Astoria Cove Projected Site #1 Podium	Mixed Use	55.3	55.3 - 69.5 (82.8)[9]	14.2 (27.5)[10]
Astoria Cove Projected Site #1 North Tower	Mixed Use	50.9 - 57.7	55.3 - 77	20.1
Astoria Cove Projected Site #1South Tower	Mixed Use	55.3	55.3 - 77	21.7
Astoria Cove Projected Site #2 Podium	Mixed Use	55.3 - 57.3	55.3 - 67.2	10.8
26-01 4 STREET Future Development	Mixed Use	55.3 - 62.2	55.3 - 70.2	13.0
Astoria Cove Projected Site #4	Mixed Use	55.3 - 58	55.3 - 72.3	17.0
Astoria Cove Projected Site #2 North Tower	Mixed Use	55.3	55.3 - 71.6	16.3
Astoria Cove Projected Site #2 South Tower 2	Mixed Use	55.3	55.3 - 73.6	18.3
Astoria Cove Projected Site #2 South Tower 1	Mixed Use	55.3	55.3 - 73.1	17.8

TABLE 17-14[11]
Construction Noise Impact Determination

Address / Receptor ID	Land Use	Consecutive Months with 15 dBA Increment Exceeding Impact Criteria	Consecutive Months with 20 dBA Increment Exceeding Impact Criteria	Significant Adverse Impact
1-02 26 AVENUE	Residential	No	No	No
Astoria Athletic Field	Playground	No	No	No
26-01 2 STREET	Residential	No	No	No
26-03 2 STREET	Residential	No	No	No
26-05 2 STREET	Residential	No	No	No
26-07 2 STREET	Residential	No	No	No
26-27 2 STREET	Residential	No	No	No
26-33 2 STREET	Residential	No	No	No
26-18 3 STREET	Residential	No	No	No
26-24 3 STREET	Residential	No	No	No
2-15 26 AVENUE	Industrial Warehouse	No	No	No
3-02 26 AVENUE	Industrial	No	No	No
3-04 26 AVENUE	Residential	**Yes**	No	**Yes**

[9] The value in Bracket "( )" refers to the highest projected noise impact expected for a construction period that is not directly modeled by CadnaA. The value is derived based on extrapolation of modeled noise results for some similar receptors.
[10] The value in Bracket "( )" refers to the highest projected noise impact expected for a construction period that is not directly modeled by CadnaA. The increment is based on the highest total projected noise, either directly modeled or extrapolated.
[11] All increment durations that is considered significant adverse impact are in **bold**

Address / Receptor ID	Land Use	Consecutive Months with 15 dBA Increment Exceeding Impact Criteria	Consecutive Months with 20 dBA Increment Exceeding Impact Criteria	Significant Adverse Impact
3-06 26 AVENUE	Residential	**Yes**	No	**Yes**
3-08 26 AVENUE	Residential	**Yes**	**Yes**	**Yes**
3-10 26 AVENUE	Residential	**Yes**	**Yes**	**Yes**
26-02 4 STREET[12]	Residential	**Yes**	**Yes**	**Yes**
26-11 3 STREET	Residential	No	No	No
26-12 4 STREET	Commercial / Industrial	No	No	No
26-18 4 STREET	Residential	No	No	No
26-24 4 STREET	Commercial / Industrial	No	No	No
26-15 3 STREET	Residential	No	No	No
26-19 3 STREET	Residential	No	No	No
26-31 3 STREET	Residential	No	No	No
26-34 3 STREET	Commercial / Industrial	No	No	No
26-25 4 STREET	Commercial / Industrial	No	No	No
2-20 26 AVENUE	Commercial / Industrial	No	No	No
Astoria Cove Projected Site #1 Podium[13]	Mixed Use	**Yes**	**Yes**	**Yes**
Astoria Cove Projected Site #1 North Tower	Mixed Use	**Yes**	**Yes**	**Yes**
Astoria Cove Projected Site #1 South Tower	Mixed Use	**Yes**	**Yes**	**Yes**
Astoria Cove Projected Site #2 Podium	Mixed Use	No	No	No
26-01 4 STREET Future Development	Mixed Use	No	No	No
Astoria Cove Projected Site #4	Mixed Use	No	No	No
Astoria Cove Projected Site #2 North Tower	Mixed Use	No	No	No
Astoria Cove Projected Site #2 South Tower 2	Mixed Use	No	No	No
Astoria Cove Projected Site #2 South Tower 1	Mixed Use	No	No	No

[12] Determination of impact criteria exceedance and determination of significant adverse impact at this receptor includes extrapolation of analyzed results to represent noise impacts at construction periods that were not directly modeled.

[13] Determination of impact criteria exceedance and determination of significant adverse impact at this receptor includes extrapolation of analyzed results to represent noise impacts at construction periods that were not directly modeled.

*[1] All increment durations that is considered significant adverse impact are in **bold***

Open Space

The background daytime noise level predicted at Astoria Athletic Field is approximately 55.3 dBA (L_{eq}). Construction noise increments of approximately 0 dBA would occur. Therefore, no significant adverse impact is projected for the Astoria Athletic Field.

Residential and Mixed-use Buildings

1-02 26th Avenue

A total of 44 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 71.9 dBA, with the maximum noise increment of 16.6 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would not experience noise increase of 15 dBA for 12 consecutive months or 20 dBA for 3 consecutive months. Therefore, based on the limited duration and magnitude of predicted noise increases, construction noise associated with the proposed actions at 1-02 26th Avenue would not rise to the level of significant adverse impact.

26-01 2nd Street

A total of 9 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 70.8 dBA, with the maximum noise increment of 9.9 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would not experience noise increase of 15 dBA for 12 consecutive months or 20 dBA for 3 consecutive months. Therefore, based on the limited duration and magnitude of predicted noise increases, construction noise associated with the proposed actions at 26-01 2nd Street would not rise to the level of significant adverse impact.

26-03 2nd Street

A total of 6 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 70.1 dBA, with the maximum noise increment of 11.9 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would not experience noise increase of 15 dBA for 12 consecutive months or 20 dBA for 3 consecutive months. Therefore, based on the limited duration and magnitude of predicted noise increases, construction noise associated with the proposed actions at 26-03 2nd Street would not rise to the level of significant adverse impact.

26-05 2nd Street

A total of 6 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 70.4 dBA, with the maximum noise increment of 14.3 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would not experience noise increase of 15 dBA for 12 consecutive months or 20 dBA for 3 consecutive months. Therefore, based on the limited duration and magnitude of predicted noise increases, construction noise associated with the proposed actions at 26-05 2nd Street would not rise to the level of significant adverse impact.

26-07 2nd Street

A total of 9 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 69.4 dBA, with the maximum noise increment of 13.6 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would not experience noise increase of 15 dBA for 12 consecutive months or 20 dBA for 3 consecutive months. Therefore, based on the limited duration and magnitude of predicted noise increases, construction noise associated with the proposed actions at 26-07 2nd Street would not rise to the level of significant adverse impact.

26-27 2nd Street

A total of 10 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 69.9 dBA, with the maximum noise increment of 14.6 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would not experience noise increase of 15 dBA for 12 consecutive months or 20 dBA for 3 consecutive months. Therefore, based on the limited duration and magnitude of predicted noise increases, construction noise associated with the proposed actions at 26-27 2nd Street would not rise to the level of significant adverse impact.

26-33 2nd Street

A total of 1 receptor was studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 58.4 dBA, with the maximum noise increment of 3.1 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would not experience noise increase of 15 dBA for 12 consecutive months or 20 dBA for 3 consecutive months. Therefore, based on the limited duration and magnitude of predicted noise increases, construction noise associated with the proposed actions at 26-33 2nd Street would not rise to the level of significant adverse impact.

26-18 3rd Street

A total of 4 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 69.1 dBA, with the maximum noise increment of 13.8 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would not experience noise increase of 15 dBA for 12 consecutive months or 20 dBA for 3 consecutive months. Therefore, based on the limited duration and magnitude of predicted noise increases, construction noise associated with the proposed actions at 26-18 3rd Street would not rise to the level of significant adverse impact.

26-24 3rd Street

A total of 8 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 68.4 dBA, with the maximum noise increment of 13.1 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would not experience noise increase of 15 dBA for 12 consecutive months or 20 dBA for 3 consecutive months. Therefore, based on the limited duration and magnitude of predicted noise increases, construction noise associated with the proposed actions at 26-24 3rd Street would not rise to the level of significant adverse impact.

2-15 26 Avenue

A total of 4 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 77.6 dBA, with the maximum noise increment of 22.3 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would experience noise increase of at least 15 dBA for 12 consecutive months and noise increase of 20 dBA for 3 consecutive months or more." However, the site is shown as a warehouse in a manufacturing district and is not considered a noise-sensitive receptor, and therefore, no significant adverse construction noise impact is expected at this location.

3-02 26 Avenue

A total of 2 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 76.9 dBA, with the maximum noise increment of 12.2 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would not experience noise increase of 15 dBA for 12 consecutive months or 20 dBA for 3 consecutive months. Therefore, based on the limited duration and magnitude of predicted noise increases, construction noise associated with the proposed actions at 3-02 26 Avenue would not rise to the level of significant adverse impact.

3-04 26th Avenue

A total of 6 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 82.4 dBA, with the maximum noise increment of 19.5 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, while noise increase would not reach 20 dBA for 3 consecutive months, this receptor building would experience noise increase of at least 15 dBA for 12 consecutive months or more. Therefore, based on the predicted magnitude and duration of noise increases, construction noise associated with the proposed actions at 3-04 26th Avenue would have the potential to result in significant adverse construction noise impact. These receptors are discussed further in **Chapter 18 "Mitigation."**

3-06 26th Avenue

A total of 6 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 82.8 dBA, with the maximum noise increment of 19 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, while noise increase would not reach 20 dBA for 3 consecutive months, this receptor building would experience noise increase of at least 15 dBA for 12 consecutive months or more. Therefore, based on the predicted magnitude and duration of noise increases, construction noise associated with the

proposed actions at 3-06 26th Avenue would have the potential to result in significant adverse construction noise impact. These receptors are discussed further in **Chapter 18 "Mitigation."**

3-08 26th Avenue

A total of 6 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 81.5 dBA, with the maximum noise increment of 22.9 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would experience noise increase of at least 15 dBA for 12 consecutive months and increase of 20 dBA for 3 consecutive months or more. Therefore, based on the predicted magnitude and duration of noise increases, construction noise associated with the proposed actions at 3-08 26th Avenue would have the potential to result in significant adverse construction noise impact. These receptors are discussed further in **Chapter 18 "Mitigation."**

3-10 26th Avenue

A total of 6 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 81.3 dBA, with the maximum noise increment of 22.8 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would experience noise increase of at least 15 dBA for 12 consecutive months and increase of 20 dBA for 3 consecutive months or more. Therefore, based on the predicted magnitude and duration of noise increases, construction noise associated with the proposed actions at 3-10 26th Avenue would have the potential to result in significant adverse construction noise impact. These receptors are discussed further in **Chapter 18 "Mitigation."**

26-02 4th Street

A total of 24 receptors were studied in the analysis for this site. The maximum construction noise (Leq) at this receptor location is expected to be in the 80s dBA with the maximum noise increment of approximately 23 dBA above ambient noise levels. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 80.7 dBA, with the maximum noise increment of 19.6 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would experience noise increase of at least 15 dBA for 12 consecutive months and increase of 20 dBA for 3 consecutive months or more. Therefore, based on the predicted magnitude and duration of noise increases, construction noise associated with the proposed actions at 26-02 4th Street would have the potential to result in significant adverse construction noise impact. These receptors are discussed further in **Chapter 18 "Mitigation."**

26-11 3rd Street

A total of 8 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 70.1 dBA, with the maximum noise increment of 12.1 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would not experience noise increase of 15 dBA for 12 consecutive months or 20 dBA for 3 consecutive months. Therefore, based on the limited duration and magnitude of predicted noise increases, construction noise associated with the proposed actions at 26-11 3rd Street would not rise to the level of significant adverse impact.

26-12 4th Street

A total of 2 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 64.4 dBA, with the maximum noise increment of 3.8 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would not experience noise increase of 15 dBA for 12 consecutive months or 20 dBA for 3 consecutive months. Therefore, based on the limited duration and magnitude of predicted noise increases, construction noise associated with the proposed actions at 26-12 4th Street would not rise to the level of significant adverse impact.

26-18 4th Street

A total of 12 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 65.7 dBA, with the maximum noise increment of 8.8 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would not experience noise increase of 15 dBA for 12 consecutive months or 20 dBA for 3 consecutive months. Therefore, based on the limited duration and magnitude of predicted noise increases, construction noise associated with the proposed actions at 26-18 4th Street would not rise to the level of significant adverse impact.

26-24 4th Street

A total of 2 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 68.7 dBA, with the maximum noise increment of 7.6 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would not experience noise increase of 15 dBA for 12 consecutive months or 20 dBA for 3 consecutive months. Therefore, based on the limited duration and magnitude of predicted noise increases, construction noise associated with the proposed actions at 26-24 4th Street would not rise to the level of significant adverse impact.

26-15 3rd Street

A total of 12 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 71.4 dBA, with the maximum noise increment of 12.5 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would not experience noise increase of 15 dBA for 12 consecutive months or 20 dBA for 3 consecutive months. Therefore, based on the limited duration and magnitude of predicted noise increases, construction noise associated with the proposed actions at 26-15 3rd Street would not rise to the level of significant adverse impact.

26-19 3rd Street

A total of 12 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 67.1 dBA, with the maximum noise increment of 11 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would not experience noise increase of 15 dBA for 12 consecutive months or 20 dBA for 3 consecutive months. Therefore, based on the limited duration and magnitude of predicted noise increases, construction noise associated with the proposed actions at 26-19 3rd Street would not rise to the level of significant adverse impact.

26-31 3rd Street

A total of 6 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 65 dBA, with the maximum noise increment of 7.5 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would not experience noise increase of 15 dBA for 12 consecutive months or 20 dBA for 3 consecutive months. Therefore, based on the limited duration and magnitude of predicted noise increases, construction noise associated with the proposed actions at 26-31 3rd Street would not rise to the level of significant adverse impact.

26-34 3rd Street

A total of 1 receptor was studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 60.7 dBA, with the maximum noise increment of 5.4 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would not experience noise increase of 15 dBA for 12 consecutive months or 20 dBA for 3 consecutive months. Therefore, based on the limited duration and magnitude of predicted noise increases, construction noise associated with the proposed actions at 26-34 3rd Street would not rise to the level of significant adverse impact.

26-25 4 th Street

A total of 2 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 65.7 dBA, with the maximum noise increment of 3.8 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would not experience noise increase of 15 dBA for 12 consecutive months or 20 dBA for 3 consecutive months. Therefore, based on the limited duration and magnitude of predicted noise increases, construction noise associated with the proposed actions at 26-25 4th Street would not rise to the level of significant adverse impact.

2-20 26th Avenue

A total of 1 receptor was studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 71.9 dBA, with the maximum noise increment of 15.4 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would not experience noise increase of 15 dBA for 12 consecutive months or 20 dBA for 3 consecutive months. Therefore, based on the limited duration and magnitude of predicted noise increases, construction noise associated with the proposed actions at 2-20 26th Avenue would not rise to the level of significant adverse impact.

Astoria Cove Projected Site #1 Podium

A total of 76 receptors were studied in the analysis for this site. The maximum construction noise (Leq) at this receptor location is expected to be in the 80s dBA with the maximum noise increment of approximately 27.5 dBA above ambient noise levels. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 69.5 dBA, with the maximum noise increment of 14.2 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would experience noise increase of at least 15 dBA for 12 consecutive months and increase of 20 dBA for 3 consecutive months or more. Therefore, based on the predicted magnitude and duration of noise increases, construction noise associated with the proposed actions at Astoria Cove

Projected Site #1 Podium would have the potential to result in significant adverse construction noise impact. These receptors are discussed further in **Chapter 18 "Mitigation."**

Astoria Cove Projected Site #1 North Tower

A total of 84 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 77 dBA, with the maximum noise increment of 20.1 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would experience noise increase of at least 15 dBA for 12 consecutive months and increase of 20 dBA for 3 consecutive months or more. Therefore, based on the predicted magnitude and duration of noise increases, construction noise associated with the proposed actions at Astoria Cove Projected Site #1 North Tower would have the potential to result in significant adverse construction noise impact. These receptors are discussed further in **Chapter 18 "Mitigation."**

Astoria Cove Projected Site #1 South Tower

A total of 59 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 77 dBA, with the maximum noise increment of 21.7 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would experience noise increase of at least 15 dBA for 12 consecutive months and increase of 20 dBA for 3 consecutive months or more. Therefore, based on the predicted magnitude and duration of noise increases, construction noise associated with the proposed actions at Astoria Cove Projected Site #1 South Tower would have the potential to result in significant adverse construction noise impact. These receptors are discussed further in **Chapter 18 "Mitigation."**

Astoria Cove Projected Site #2 Podium

A total of 37 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 67.2 dBA, with the maximum noise increment of 10.8 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would not experience noise increase of 15 dBA for 12 consecutive months or 20 dBA for 3 consecutive months. Therefore, based on the limited duration and magnitude of predicted noise increases, construction noise associated with the proposed actions at Astoria Cove Projected Site #2 Podium would not rise to the level of significant adverse impact.

Future development at 26-01 4th Street

A total of 12 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 70.2 dBA, with the maximum noise increment of 13 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would not experience noise increase of 15 dBA for 12 consecutive months or 20 dBA for 3 consecutive months. Therefore, based on the limited duration and magnitude of predicted noise increases, construction noise associated with the proposed actions at Future development at 26-01 4th Street would not rise to the level of significant adverse impact.

Astoria Cove Projected Site #4

A total of 37 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 72.3 dBA, with the maximum noise increment of 17 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed

results, this receptor building would not experience noise increase of 15 dBA for 12 consecutive months or 20 dBA for 3 consecutive months. Therefore, based on the limited duration and magnitude of predicted noise increases, construction noise associated with the proposed actions at Astoria Cove Projected Site #4 would not rise to the level of significant adverse impact.

Astoria Cove Projected Site #2 North Tower

A total of 86 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 71.6 dBA, with the maximum noise increment of 16.3 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would not experience noise increase of 15 dBA for 12 consecutive months or 20 dBA for 3 consecutive months. Therefore, based on the limited duration and magnitude of predicted noise increases, construction noise associated with the proposed actions at Astoria Cove Projected Site #2 North Tower would not rise to the level of significant adverse impact.

Astoria Cove Projected Site #2 South Tower 1

A total of 12 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 73.1 dBA, with the maximum noise increment of 17.8 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would not experience noise increase of 15 dBA for 12 consecutive months or 20 dBA for 3 consecutive months. Therefore, based on the limited duration and magnitude of predicted noise increases, construction noise associated with the proposed actions at Astoria Cove Projected Site #2 South Tower 1 would not rise to the level of significant adverse impact.

Astoria Cove Projected Site #2 South Tower 2

A total of 23 receptors were studied in the analysis for this site. The maximum construction noise (Leq) during the modeled analysis period at this location is expected to be 73.6 dBA, with the maximum noise increment of 18.3 dBA above ambient level. Based on the modeling analysis and extrapolation of analyzed results, this receptor building would not experience noise increase of 15 dBA for 12 consecutive months or 20 dBA for 3 consecutive months. Therefore, based on the limited duration and magnitude of predicted noise increases, construction noise associated with the proposed actions at Astoria Cove Projected Site #2 South Tower 2 would not rise to the level of significant adverse impact.

Project on Project Impacts

Projected Development Site 1 is expected to be completed in 2028 and Projected Development Site 2 is expected to be completed in 2031. Tower 1 of Projected Development Site 1 is assumed to be completed and occupied in 2024 as Tower 2 construction is underway. Tower 2 will be completed and occupied in 2026 as Tower 3 construction is underway. Towers 1, 2, and 3 will be completed and occupied in 2029 as Projected Development Site 2 construction is underway. The results of the detailed project on project construction noise analysis are summarized in **Table 17-15** and **Table 17-16**. **Table 17-15** summarizes the extent of the noise impact. **Table 17-16** summarizes the significant adverse noise determination based on the above impact criteria.

TABLE 17-15:
Project on Project Construction Noise Levels Results (dBA)

Address / Receptor ID	Land Use	Background Noise Range	Total Projected Noise Range[14]	Highest Noise Increments[15]
Phase 1 - Building 1	Mixed Use	55.3 - 62.7	55.3 – 66 (75.1)	10.7 (19.8)
Phase 1 - Building 2	Mixed Use	55.3 - 63.4	55.3 - 67.6 (82.8)	12.3 (22.9)
Phase 1 - Building 3	Mixed Use	55.3 - 56.4	55.3 - 65.1 (75.1)	9.8 (19.8)
Phase 1 - Building 4	Mixed Use	55.3 - 56.9	55.3 – 75 (82.8)	19.7 (25.9)
Phase 2 - Building 1	Mixed Use	55.3	55.3 – 68 (75.1)	12.7 (19.8)
Phase 2 - Building 2	Mixed Use	55.3 - 55.4	55.3 - 75.1	19.8
Phase 2 - Building 3	Mixed Use	55.3	55.3 - 75.1	19.8
Phase 2 - Building 4	Mixed Use	55.3	55.3 - 79.4	24.1
Phase 2 - Building 5	Mixed Use	55.3	55.3 - 74.7 (82.8)	19.4 (27.5)

TABLE 17-16[16]
Construction Noise Impact Determination

Address / Receptor ID	Land Use	Consecutive Months with 15 dBA Increment Exceeding Impact Criteria	Consecutive Months with 20 dBA Increment Exceeding Impact Criteria	Significant Adverse Impact
Phase 1 - Building 1[17]	Mixed Use	**Yes**	No	**Yes**
Phase 1 - Building 2[18]	Mixed Use	**Yes**	**Yes**	**Yes**
Phase 1 - Building 3[19]	Mixed Use	**Yes**	No	**Yes**
Phase 1 - Building 4[20]	Mixed Use	**Yes**	**Yes**	**Yes**
Phase 2 - Building 1[21]	Mixed Use	**Yes**	No	**Yes**
Phase 2 - Building 2	Mixed Use	**Yes**	No	**Yes**
Phase 2 - Building 3	Mixed Use	**Yes**	No	**Yes**
Phase 2 - Building 4	Mixed Use	**Yes**	**Yes**	**Yes**
Phase 2 - Building 5[22]	Mixed Use	**Yes**	**Yes**	**Yes**

[14] The value in Bracket "( )" refers to the highest projected noise impact expected for a construction period that is not directly modeled by CadnaA. The value is derived based on extrapolation of modeled noise results for some similar receptors.
[15] The value in Bracket "( )" refers to the highest projected noise impact expected for a construction period that is not directly modeled by CadnaA. The increment is based on the highest total projected noise, either directly modeled or extrapolated.
[16] All increment durations that is considered significant adverse impact are in **bold**
[17] Determination of impact criteria exceedance and determination of significant adverse impact at this receptor includes extrapolation of analyzed results to represent noise impacts at construction periods that were not directly modeled.
[18] Determination of impact criteria exceedance and determination of significant adverse impact at this receptor includes extrapolation of analyzed results to represent noise impacts at construction periods that were not directly modeled.
[19] Determination of impact criteria exceedance and determination of significant adverse impact at this receptor includes extrapolation of analyzed results to represent noise impacts at construction periods that were not directly modeled.
[20] Determination of impact criteria exceedance and determination of significant adverse impact at this receptor includes extrapolation of analyzed results to represent noise impacts at construction periods that were not directly modeled.
[21] Determination of impact criteria exceedance and determination of significant adverse impact at this receptor includes extrapolation of analyzed results to represent noise impacts at construction periods that were not directly modeled.
[22] Determination of impact criteria exceedance and determination of significant adverse impact at this receptor includes extrapolation of analyzed results to represent noise impacts at construction periods that were not directly modeled.

Considering the modeling analysis and extrapolation of analyzed results, project-on-project analysis concluded that construction associated with the proposed actions could increase noise level by 15 dBA for 12 consecutive months and 20 dBA for 3 consecutive months for completed and occupied Phase 1 development and Phase 2 development. Therefore, based on the predicted magnitude and duration of noise increases, construction noise associated with the proposed actions at completed and occupied Phase 1 and Phase 2 project buildings would have the potential to result in significant adverse construction noise impact. These receptors are discussed further in **Chapter 18 "Mitigation."**

Conclusion

The detailed analysis concluded that construction as a result of the Proposed Actions could result in noise levels exceeding impact criteria relating to an increase of 15 dBA or more for 12 consecutive months or more and an increase of 20 dBA or more for 3 consecutive months or more. The residential units in 3-04 26 Avenue, 3-06 26 Avenue, 3-08 26 Avenue, 3-10 26 Avenue, 26-02 4 Street, and Astoria Cove Projected Site #1 Astoria Cove Projected Site #1 North Tower and Astoria Cove Projected Site #1 South Tower would experience exterior noise levels from mid-70s dBA to low 80s dBA, which represent increases in noise levels from approximately 19 dBA to 27.5 dBA compared with existing levels during construction. Phase 1 and Phase 2 of the development will experience exterior noise levels from the mid-70s to low-80s dBA, which represent an increase in noise levels from approximately 19 dBA to 27.5 dBA. Construction noise levels of this magnitude would constitute a significant adverse impact at these locations. In addition, noise resulting from construction may be noticeable at other receptors near the project site, including open space, residential, and commercial receptors. Still, it would be temporary and would not exceed the noise impact criteria, and would not rise to the level of significant adverse noise impacts.

Vibration

Introduction

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 depends on 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 material. Construction equipment operation causes ground vibrations, spreading through the ground and decreasing strength with distance. Even in locations close to major roadways, vehicular traffic typically does not result in perceptible vibration levels. 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. An assessment has been prepared to quantify the potential vibration impacts of construction activities on structures and residences near the project site.

Analysis Methodology

Quantitative vibration assessment methodology was not available from the *CEQR Technical Manual*. Therefore, the construction vibration impact and annoyance methodology from the 2018 Federal Transit Administration Transit Noise and Vibration Impact Assessment Manual (FTA Manual) was referenced to determine the construction vibration impacts. In addition, equation 7-2 from the FTA Manual was used to access potential structural or architectural damage:

$$PPV_{equip} = PPV_{ref} \times \left(\frac{25}{D}\right)^{1.5}$$

where:

PPV_{equip} = the peak particle velocity of the equipment adjusted for distance, in/sec

PPV_{ref} = the source reference vibration level at 25 ft, in/sec

D = distance from the equipment to the receiver, ft

Equation 7-3 from the FTA Manual was used for purposes of assessing potential annoyance or interference with vibration sensitive activities:

$$L_{v.distance} = L_{vref} - 30\ log\left(\frac{D}{25}\right)$$

where:

$L_{v.distance}$ = the rms velocity level adjusted for distance, VdB

L_{vref} = the source reference vibration level at 25 ft, VdB

D = distance from the equipment to the receiver, ft

Table 17-17 shows vibration source levels for typical construction equipment as described in Table 7-4 of the FTA Manual. The source vibration levels shown in **Table 17-17** were projected to nearby receptors to estimate the levels of construction vibration that would occur in the study area.

Table 17-17
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
Pile Driver (sonic)	Upper Range	0.734	105
	Typical	0.17	93
Hydromill (slurry wall)	In soil	0.008	66
	In rock	0.017	75
Clam shovel drop (slurry wall)		0.202	94
Vibratory Roller		0.210	94
Hoe Ram		0.089	87
Large bulldozer		0.089	87
Caisson drilling		0.089	87
Loaded trucks		0.076	86
Jackhammer		0.035	79
Small bulldozer		0.003	58

Construction Vibration Criteria

For purposes of assessing potential structural or architectural damage, the determination of a significant impact was based on the vibration impact criterion used by LPC of a peak particle velocity (PPV) of 0.50 inches/second as specified in the NYC DOB TPPN #10/88. For non-fragile buildings, vibration levels below 0.60 inches/second would 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 vibration decibels (VdB) potentially result in significant adverse impacts if they were to occur for a prolonged period of time.

Construction Vibration Results

The building of most concern with regard to the potential for structural or architectural damage due to vibration is the single-family unit at 3-08 26th Avenue, approximately 60 feet south of the Project Area. Based on the distance from the Project Area, the peak particle velocity would not exceed the most stringent 0.5 in/sec threshold at the receptor location mentioned above.

While vibration resulting from impact pile driving may be perceptible and potentially intrusive at the closest sensitive receptor at 3-08 26th Avenue, it would be of limited duration as pile driving activities would only prolong for a limited duration.

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

Other Technical Areas

Land Use and Neighborhood Character

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

Socioeconomic Conditions

Construction activities could temporarily affect pedestrian and vehicular access. However, no lane or sidewalk closures that would obstruct entrances to existing businesses are anticipated, and businesses are not expected to be significantly affected by any temporary reductions in the amount of pedestrian foot traffic or vehicular delays that could occur as a result of construction activities. Overall, construction activities associated with the Proposed Actions would not result in any significant adverse impacts on surrounding businesses.

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

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

Community Facilities

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

Open Space

There are no publicly accessible open spaces within the Project Area and no open space resources would be used for staging or other construction activities. The nearest open space resource is Whitey Ford Field, located more than 300 feet to the west of the Project Area. Access to this open space resource or any other nearby open space resources would be maintained throughout the duration of the construction period. Although construction of the Proposed Project would be expected to have the potential to result in elevated noise levels at nearby receptors, and noise due to construction would at times be noticeable, the site is located more than 300 feet from the nearest existing open space resource, and noise from construction would be intermittent and of limited duration. Therefore, no significant construction impacts to open space are expected.

Historic and Cultural Resources

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

Hazardous Materials

A detailed assessment of potential impacts on hazardous materials is described **in Chapter 9, "Hazardous Materials."** The vast majority of the hazardous materials on Projected Development Site 1 have already been addressed by the Applicant through remediation of the Project Development Site Phase I during participation in the New York State Brownfield Cleanup Program ("BCP") as the Astoria Steel Site BCP Site #C241155 ("BCP Site") under the oversight of the New York State Department of Environmental Conservation ("NYSDEC") and the New York State Department of Health ("NYSDOH"). There is some remaining contamination, defined in the Final Engineering Report ("FER") and summarized in this chapter, which will be managed by the current owner and all future owners pursuant to a Site Management Plan ("SMP") and Environmental Easement ("EE"). With the EE already recorded, which mandates all current and future owners and operators of Projected Development Site 1 to maintain the engineering and institutional controls in the SMP, the Proposed Actions are not expected to result in any significant adverse impacts to hazardous materials.

The hazardous materials assessments identified various potential sources of subsurface contamination on, or in close proximity to, Projected Development Site 2. To avoid the potential for adverse impacts

associated with new construction resulting from the Proposed Actions, a hazardous materials (E) designation would be placed on the tax lot comprising Projected Development Site 2. The (E) designation requires approval by the New York City Office of Environmental Remediation (OER) prior to obtaining NYC Buildings Department (DOB) permits for any new development entailing soil disturbance. The environmental requirements for the (E) designation also include a mandatory Construction Health and Safety Plan (CHASP), which must be approved by OER. In addition, demolition of interiors, portions of buildings, or entire buildings are regulated by DOB and require abatement of asbestos prior to any intrusive construction activities, including demolition. OSHA regulates construction activities to prevent excessive exposure of workers to contaminants in the building materials, including lead paint. New York State Solid Waste regulations control where demolition debris and contaminated materials associated with construction are handled and disposed of. Adherence to these existing regulations would prevent impacts from construction activities at Projected Development Site 2.