A. INTRODUCTION

This section describes the anticipated construction plan for the Brooklyn Site and assesses the potential for the proposed project to result in significant adverse construction impacts in accordance with the 2014 *City Environmental Quality Review (CEQR) Technical Manual*. As discussed in Chapter 1, "Project Description," the proposed project would result in the development of four new detention facilities at sites located in the Bronx, Brooklyn, Manhattan, and Queens. This analysis focuses on the potential construction impacts of the Brooklyn Site, located at 275 Atlantic Avenue (the project site) in the Downtown Brooklyn neighborhood of Brooklyn. The project site occupies the entire block bounded by Atlantic Avenue, Smith Street, State Street, and Boerum Place. The proposed project would replace the existing Brooklyn Detention Complex with a new 1.19 million gross square feet (gsf) of above-grade floor area detention facility with a maximum zoning height of approximately 395 feet tall.

Construction at the Brooklyn Site is anticipated to commence in 2022, occur over a period of approximately five years, and is expected to be complete by 2027.

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

PRINCIPAL CONCLUSIONS

Construction of the proposed project—as is the case with most construction projects—would have the potential to result in temporary disruptions in the surrounding area. As described in detail below, construction activities at the proposed Brooklyn Site would have the potential to result in temporary significant adverse transportation and noise impacts during peak periods of construction. Additional information for key technical areas is summarized below.

TRANSPORTATION

Traffic, transit, pedestrian and parking conditions during the period where construction worker vehicle and truck trips are anticipated to be highest were evaluated for the 6:00-7:00 AM and the 3:00-4:00 PM midday peak hours. According to the assessment of conditions during peak construction activity, no potential for significant adverse impacts to transit or parking are anticipated.

The traffic analysis analyzed conditions at 15 intersections around the project site. The potential for significant adverse traffic impacts due to traffic associated with construction worker vehicles and trucks were identified for 12 analyzed intersections during the construction AM peak hour

and 11 analyzed intersections during the construction midday peak hour. A total of 18 and 15 lane group impacts were identified at analyzed intersections during the construction AM and midday peak hours, respectively. Although traffic impacts resulting from increases in traffic volumes due to demand generated by construction activity would be temporary, measures to mitigate these temporary impacts were investigated and proposed measures are discussed in Chapter 3.15, "Mitigation-Brooklyn."

The analyzed traffic locations as well as others that may experience temporary construction-related disruptions would be included in a robust Construction Transportation Monitoring Plan that would be initiated at the start of construction. Because detailed plans for the proposed detention facility and detailed construction logistics, including any necessary street or sidewalk closures, are not known at this time, the level of specificity necessary to quantify the extent to which traffic operations would be disrupted as a result of street network access accommodations requested to facilitate the construction effort cannot be made at this time. As the design-build process is initiated, an updated assessment of traffic conditions would be made in coordination with the New York City Office of Construction Mitigation and Coordination (OCMC) and the New York City Department of Transportation (DOT) as necessary in order to identify feasible measures that could mitigate any potential disruptions.

According to a preliminary assessment of construction generated pedestrian activity, seventeen pedestrian elements were identified as potential impact locations. Because detailed plans for the proposed detention facility and detailed construction logistics, including any necessary street or sidewalk closures, are not known at this time, the level of specificity necessary to quantify the extent to which pedestrian operations would be disrupted as a result of construction activity (construction worker related and due to potential public infrastructure access accommodations requested to facilitate the construction effort) cannot be made at this time. However, as the City is committed to a robust Construction Transportation Monitoring Plan during construction, an assessment of pedestrian conditions would be made in coordination with OCMC and DOT as necessary in order to identify feasible measures that could mitigate these potential disruptions. Mitigation measures to address potential impacts to pedestrian elements (sidewalks, corners, and crosswalks) typically include signal timing changes, sidewalk and crosswalk widenings or the relocation of street furniture and obstructions. In the event it is found that measures fully mitigating such temporary impacts are infeasible, then unmitigable significant adverse impacts could occur at the identified pedestrian elements.

AIR QUALITY

While construction would have the potential to cause temporary disruptions on the adjacent community, it is expected that such disruptions in any given area would be temporary and would not be ongoing for the full duration of the construction period, due to the phasing of construction activities. Measures would be taken to reduce pollutant emissions during construction as required by laws, regulations, and building codes. These measures would include, to the extent practicable, dust suppression measures, idling restrictions, use of ultra-low sulfur diesel (ULSD) fuel, and best available technologies (BAT), and to the extent practicable the use of newer equipment that meets the United States Environmental Protection Agency (USEPA)'s Tier 4 emission standards and electrification of equipment. With these measures in place, construction activities at the Brooklyn Site would not have the potential to result in any significant adverse air quality impacts.

NOISE AND VIBRATION

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. However, noise from construction would be intermittent and of limited duration, and total noise levels would be in the "marginally acceptable" or "marginally unacceptable" range. Based on the prediction of construction noise level increments and the duration of CEQR screening threshold exceedances, construction noise associated with the proposed project would have the potential to result in a temporary significant adverse impact at the south and west façades of 239 State Street and the south and east façades of the Kings County Criminal Court. Noise associated with the construction of the proposed project would not have the potential to result in a significant adverse noise impact at all other locations within the project area.

In terms of vibration, the Applicant and/or its contractors would incorporate vibration monitoring for all historic structures located within 90 feet of the project site. Vibration levels during construction would not be permitted to exceed the 0.50 inches/second threshold considered acceptable for historic structures. Vibration-producing equipment would not operate in proximity to non-historic structures such that they could potentially result in damage to these structures. Furthermore, construction would not result in extended periods of perceptible or annoying vibrations at surrounding receptors. Therefore, construction activities would not have the potential to result in significant adverse vibration impacts.

B. GOVERNMENTAL COORDINATION AND OVERSIGHT

As shown in **Table 3.14-1**, construction oversight involves several City, state, and federal agencies. For projects in New York City, primary construction oversight lies with the New York City Department of Building (DOB), which oversees compliance with the New York City Building Code. The areas of oversight include installation and operation of equipment such as cranes, sidewalk bridges, safety netting, and scaffolding. DOB also enforces safety regulations to protect workers and the general public during construction. The New York City Department of Parks and Recreation (NYC Parks) has oversight on street tree protection and removal during construction. The New York City Department of Environmental Protection (DEP) enforces the *New York City Noise Code* and regulates water disposal into the sewer system. DEP will review and approve any needed Remedial Action Plans (RAPs) and associated Construction Health and Safety Plans (CHASPs) for the abatement of hazardous materials. The New York City Fire Department (FDNY) has primary oversight of compliance with the *New York City Fire Code* and the installation of tanks containing flammable materials. DOT's OCMC reviews and approves any traffic lane and sidewalk closures. In addition, any over dimensional vehicle used for construction will require a permit approved by DOT Bridges. The Landmarks Preservation Commission (LPC) approves Construction Protection Plans (CPPs) and monitoring measures established to prevent damage to historic structures.

Table 3.14-1
Summary of Primary Agency Construction Oversight

Agency	Areas of Responsibility
New York City	
Department of Building	Building Code, site safety, and public protection
Department of Parks & Recreation	Tree protection and removal
Department of Environmental Protection	Noise Code, RAPs/CHASPs, water and sewer connections, hazardous materials
Fire Department	Compliance with Fire Code, fuel tank installation
Department of Transportation	Lane and sidewalk closures, over dimensional vehicle
Landmarks Preservation Commission	Archaeological and architectural protection
New York State	
Department of Labor	Asbestos Workers
Department of Environmental Conservation	Hazardous materials and fuel/chemical storage tanks
United States	
Environmental Protection Agency	Air emissions, noise, hazardous materials, poisons (for rodent control)
Occupational Safety and Health Administration	Worker safety

At the state level, the New York State Department of Labor (DOL) licenses asbestos workers. The New York State Department of Environmental Conservation (NYSDEC) regulates disposal of hazardous materials, and construction and operation of bulk petroleum and chemical storage tanks. At the federal level, although USEPA has wide-ranging authority over environmental matters, including air emissions, noise, and hazardous materials, much of its responsibility is delegated to the state and City levels. The Occupational Safety and Health Administration (OSHA) sets standards for work site safety and construction equipment.

C. CONSTRUCTION SCHEDULE

Construction at the Brooklyn Site is anticipated to commence in 2022 and occur over a period of approximately five years, with construction expected to be complete by 2027. The anticipated construction schedule for the Brooklyn Site is presented in **Table 3.14-2**.

Table 3.14-2
Anticipated Construction Schedule
Brooklyn Site

Construction Task	Approximate Start Date	Approximate Finish Date	Approximate Duration (months)
Detention Facility			
Demolition/Site Clearing[1]	May 2022	January 2024	21
Excavation	February 2024	January 2025	12
Foundation	September 2024	June 2025	10
Superstructure Construction	June 2025	July 2026	14
Enclosure	October 2025	December 2026	15
Interior Buildout	August 2025	June 2027	23

Note: [1]Includes site preparation, temporary sallyport construction, abatement, interior demolition, and exterior demolition activities
Source: Gilbane Building Company, 2018

Construction of the proposed building at the Brooklyn Site would generally consist of the following primary construction stages, which may overlap at certain times: demolition/site clearing (prior to the construction of the proposed detention facility); excavation; foundation; superstructure construction; enclosure; and interior buildout. These construction stages are described in detail under "General Construction Tasks."

D. DESCRIPTION OF CONSTRUCTION ACTIVITIES

GENERAL CONSTRUCTION PRACTICES

HOURS OF WORK

Construction at the Brooklyn Site 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, the workday may occasionally be extended beyond normal work hours. Any extended workdays would generally last until approximately 6:00 PM and would not include all construction workers on-site, but only those involved in the specific task requiring additional work time.

Weekend or night work may also be occasionally required for certain construction activities, such as the erection of the tower crane or finishing a concrete pour for a floor deck. 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.

ACCESS, DELIVERIES, AND STAGING AREAS

Access to the project site during construction would be fully controlled. The work areas would be fenced off and limited access points for workers and construction-related trucks would be provided. Construction workers are generally prohibited from parking their vehicles on-site during the construction period.

Based on preliminary construction logistics, construction staging for the proposed detention facility would be located on the perimeter of the project site, with truck staging anticipated to be primarily located along Atlantic Avenue Temporary parking lane closures on the east, south, and west side of the project site are anticipated to be needed to accommodate construction activities. A sidewalk bridge would be provided and would facilitate pedestrian access immediately north of the project site along State Street.

Maintenance and Protection of Traffic (MPT) plans would be developed for any required temporary sidewalk, lane, and/or street closures to ensure the safety of the public passing through the area and construction workers. Approval of these plans and implementation of the closures would be coordinated with DOT's OCMC. Measures specified in the MPT plans that are anticipated to be implemented would include parking lane closures, safety signs, safety barriers, and construction fencing.

During construction of the proposed detention facility, a temporary sallyport to allow for delivery of persons who are detained to the courthouse would be located on State Street. This sallyport is expected to occupy a portion of State Street but the remainder of the street would remain open for traffic during most times of construction. The location of the temporary sallyport and any

temporary closure of State Street would be subject to MPT plans and approval and coordination by OCMC and its effects on traffic conditions will be subject to the New York City Department of Design and Construction (DDC) construction transportation monitoring program.

PUBLIC SAFETY

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

RODENT CONTROL

Construction contracts at the Brooklyn Site would include provisions for a rodent control program. Before the start of construction, the contractor would survey and bait the appropriate areas and provide for proper site sanitation. During construction, the contractor would carry out a maintenance program, as necessary. Measures that may be implemented during construction may include baiting the project site within fenced construction areas and providing covered trash receptacles that would be emptied daily to discourage rodents from nesting in them.

GENERAL CONSTRUCTION STAGES

Prior to the commencement of construction, the project site would be prepared for construction. Preparation of the construction work area would include the installation of public safety measures such as fencing, netting, and signs. The fencing would typically be a solid construction fence to minimize interference between passersby and the construction work. Worker and truck access points would be established and portable toilets, construction trailers, and dumpsters for trash would be brought on site and installed. Existing street trees would be protected and all work would be performed in compliance with Local Law 3 of 2010 and the NYC Parks Tree Protection Protocol approved by the NYC Parks Bronx Borough Forester, to minimize potential adverse impacts to existing trees that will remain in place.

Construction of the proposed building would consist of the following primary construction stages: demolition/site clearing (prior to the construction of the proposed detention facility); excavation; foundation; superstructure construction; enclosure; and interior buildout. These construction stages are discussed in further detail below.

DEMOLITION/SITE CLEARING

Prior to the construction of the proposed detention facility, the existing uses at Brooklyn Detention Complex would relocated off-site to Rikers Island. Construction would then proceed with the demolition of the Brooklyn Detention Complex on the project site. Demolition scaffolds would be erected around these buildings and the building would be abated of any hazardous materials. Testing identified ACM (e.g., in floor tiles, insulation materials and roofing elements) and LBP, but samples of caulk are considered PCB-free. A New York City-certified asbestos investigator would inspect the building for asbestos-containing materials (ACM), and those materials would be removed by a DOL-licensed asbestos abatement contractor prior to interior demolition. Asbestos abatement is strictly regulated by DEP, DOL, USEPA, 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, 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 applicable OSHA regulations (including federal OSHA regulation 29 CFR 1926.62—*Lead Exposure in Construction*). In addition, any suspected poly-chlorinated biphenyls (PCB)-containing equipment (such as fluorescent light ballasts) that would be disturbed 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 interior of the building would be deconstructed to the floor plates and columns before the structural elements of the building are demolished and removed. Netting around the exterior of the building would be used to prevent falling materials. Hand tools and demolition excavators would be used for the demolition of the existing structures and bobcats would be used to load the debris into dump trucks. Demolition debris would typically be sorted prior to being disposed at landfills to maximize recycling opportunities.

EXCAVATION/FOUNDATION

During these stages of construction, a Support of Excavation (SOE) system would be installed to hold back soil around the excavation area. After the SOE is constructed, soil excavation activities would proceed with the use of excavators. The soil would be loaded onto dump trucks for transport to a licensed disposal facility or for reuse on any portion of the project site that needs fill. As the excavation becomes deeper, a temporary ramp may be built to provide access for the dump trucks to the excavation area. No blasting is anticipated for the construction at the Brooklyn Site. Concrete trucks and pumps would be used to pour the foundation and the below-grade structures including walls and columns. Excavation and foundation activities may also involve the use of, drill rigs, mobile cranes, a boom truck, generators, hand tools, and rebar benders.

SUPERSTRUCTURE CONSTRUCTION

The superstructure work would include the proposed building' framework, such as beams, slabs, and columns. Construction of the interior structure—or core—of the building would include elevator shafts; vertical risers for mechanical, electrical, and plumbing systems; electrical and mechanical equipment rooms; core stairs; and restroom areas. The shell is the exterior of the building. Cranes would be brought onto the construction area and would be used to lift structural components, façade elements, and other large materials. Superstructure activities would also require the use of rebar benders, a post tension jacking rig, concrete power float and buggy, a mobile concrete boom pump, a boom truck, a fork lift, a garbage packer truck, compressors, and generators. In addition, temporary construction elevators (hoists) would be used for the vertical movement of workers and materials during this stage of construction.

ENCLOSURE

The exterior façades of the proposed building would be installed during this stage of construction. The facade elements would arrive on trucks and be lifted into place for attachment by the crane or loaded and lifted by hoist for installation from each floor. Enclosure activities may also involve the use of boom lifts, welders, and hand tools.

INTERIOR BUILDOUT

Interior buildout activities would include the construction of interior partitions, installation of lighting fixtures, and interior finishes (e.g., flooring, painting, etc.), and mechanical and electrical work, such as the installation of elevators and lobby finishes. Final cleanup and touchup of the building and final building system (e.g., electrical system, fire alarm, security system for the proposed detention facility etc.) testing and inspections would be part of this stage of construction. Equipment used during this stage of construction would include hoists, welders, scissor lifts, a boom truck and fork lift, pallet jacks, a roustabout, and a variety of small handheld tools. Interior buildout 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 building enclosed.

NUMBER OF CONSTRUCTION WORKERS AND MATERIAL DELIVERIES

Table 3.14-3 shows the estimated average daily numbers of workers and deliveries by calendar quarter for the construction period, during which the proposed building would be completed. The average number of workers throughout this construction period would be approximately 575 per day, while the peak number of workers by calendar quarter would be approximately 1,719 per day.

Table 3.14-3
Average Number of Daily Worker Vehicles 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[1]	-	19	28	28	28	28	28	28	39	45	92	188	158	316	1,216	1,719
Trucks[1]	-	2	2	2	2	2	2	2	14	19	22	27	14	16	29	33
Autos[2]	-	8	11	11	11	11	11	11	16	18	37	77	64	129	495	700
Year	2026				2027											
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	Average				Peak			
Workers[1]	1,719	1,719	1,374	1,202	1,049	1,049	-	-	575				1,719			
Trucks[1]	33	33	16	8	5	5	-	-	14				33			
Autos[2]	700	700	560	490	427	427	-	-	234				700			

Sources:
1. Worker and Truck projections provided by Gilbane Building Company, 2018.
2. Number of work auto vehicles are based on worker projections; modal splits and auto occupancy rates are based on 2000 Reverse-Journey-to-Work Census data for construction workers for Kings County Census Tract 9, 37, 41, 43, 45, 69, and 71.

The average number of truck trips throughout the construction period would be approximately 14 per day, and the peak number of deliveries by calendar quarter would be approximately 33 truck trips per day. As shown in **Table 3.14-3**, the peak level of construction workers and truck trips would not persist throughout the entire construction period. During non-peak periods, the number of construction workers and truck trips would be less, and sometimes much less, than the levels estimated for the peak period.

E. THE FUTURE WITHOUT THE PROPOSED PROJECT

As described in Chapter 1, “Project Description,” absent the proposed project, it is assumed that the project site would continue to be utilized as the Brooklyn Detention Complex.

F. THE FUTURE WITH THE PROPOSED PROJECT

Construction at the Brooklyn Site—as is the case with most large construction projects—would have the potential to result in some temporary disruptions in the surrounding area. The following analysis describes the potential for overall temporary effects on transportation, air quality, noise, and vibration, as well as consideration of other technical areas including land use and neighborhood character, socioeconomic conditions, community facilities and services, open space, historic and cultural resources, natural resources, and hazardous materials.

TRANSPORTATION

The construction transportation analysis assesses the potential for construction activities to result in significant adverse impacts to traffic, transit, pedestrians, and parking. The analysis is based on the peak worker and truck trips during construction of the proposed projects; these are developed based on several factors including worker modal splits, vehicle occupancy and trip distribution, truck passenger car equivalents (PCEs), and arrival/departure patterns.

The following sections evaluate the potential for the proposed projects' peak construction worker and truck trips to result in significant adverse impacts to traffic, transit, pedestrians, and parking. While any potential impacts due to construction activity would be temporary, the following identifies locations where interim mitigation measures could be implemented to improve future conditions prior to completion of the proposed project.

An evaluation of construction sequencing and worker/truck projections was undertaken to assess potential transportation impacts. The average worker and truck trip projections were developed based on worker modal splits and vehicle occupancy, arrival and departure distributions, and truck PCEs.

CONSTRUCTION WORKER MODAL SPLITS AND VEHICLE OCCUPANCY

Construction worker modal splits and vehicle occupancy rates were based on the latest available U.S. Census data for workers in the construction industry (2000 Census data); based on the data it is anticipated that approximately 49.3 percent of construction workers would commute to the project site using private autos and at an average occupancy of approximately 1.21 persons per vehicle. Similarly, it is expected that approximately 49.8 percent of construction workers would commute to the project site via transit and the remaining 0.9 percent would walk to the project site.

DAILY WORKFORCE AND TRUCK DELIVERIES

To assess a reasonable worst-case analysis of potential transportation-related impacts during construction, the daily combined workforce and truck trip projections in the peak quarter were used as the basis for estimating peak-hour construction trips. It is expected that construction of the proposed projects would generate a peak of approximately 1,719 workers and 33 truck deliveries per day during the fourth quarter of 2025. These estimates of construction activities are discussed further below.

TRAFFIC

Similar to other construction projects in New York City, most of the construction activities at the project site are expected to take place in the early morning and late midday periods, from 7:00 AM to 3:30 PM. While construction truck trips would occur throughout the day, most trucks would remain in the area for short durations, and construction workers would commute during the hours before and after the work shift. For analysis purposes, each truck delivery was assumed to result

in two truck trips (one "in" and one "out") and would start arriving to the project site during the hour before each work shift. Construction truck deliveries typically peak during the hour before each shift (25 percent), overlapping with construction worker arrival traffic. For construction workers, the majority (approximately 80 percent) of the arrival and departure trips would generally occur during the hour before and after each work shift. In accordance with the *CEQR Technical Manual*, the traffic analysis assumed that each truck has a PCE of two while other vehicles have a PCE of one.

As shown in **Table 3.14-4**, the maximum construction-related traffic increments would be approximately 594 PCEs during the midday period (6:00-7:00 AM) and 564 PCEs during the midday period (3:00-4:00 PM). These incremental construction PCEs would exceed the CEQR threshold of 50 vehicle-trips.

Table 3.14-4
Peak Construction Vehicle Trip Projections

Time	Worker Trips[1]		Auto Trips[2]		Truck Trips[3]		Total Construction Vehicle Trips		
	In	Out	In	Out	In	Out	In	Out	Total
6AM - 7AM	1375	0	560	0	17	17	**577**	**17**	**594**
7AM - 8AM	344	0	140	0	7	7	147	7	154
8AM - 9AM	0	0	0	0	7	7	7	7	14
9AM - 10AM	0	0	0	0	7	7	7	7	14
10AM - 11AM	0	0	0	0	7	7	7	7	14
11AM - 12PM	0	0	0	0	7	7	7	7	14
12PM - 1PM	0	0	0	0	6	6	6	6	12
1PM - 2PM	0	0	0	0	3	3	3	3	6
2PM - 3PM	0	86	0	35	2	2	2	37	39
3PM - 4PM	0	1375	0	560	2	2	**2**	**562**	**564**
4PM - 5PM	0	258	0	105	1	1	1	106	107
Total	**1719**	**1719**	**700**	**700**	**66**	**66**	**766**	**766**	**1532**

Notes:
[1] Hourly worker trips are based on daily worker projections and an assumption that 80 percent of workers would arrive/depart in the same one hour in the morning arrival and evening departure periods.
[2] Auto trip forecasts are based on the hourly worker trip forecast. Modal splits and auto occupancy rates are based on 2000 Reverse-Journey-to-Work Census data for construction workers for Kings County Census Tract 9, 37, 41, 43, 45, 69, and 71.
[3] Truck Trips are in shown in passenger car equivalents (1 truck = 2 PCEs).

While the potential traffic impacts during peak construction are expected to be within the envelope of significant adverse traffic impacts identified for the future with the proposed actions condition in Section 3.9, "Transportation-Brooklyn." a detailed construction traffic analysis was prepared to identify specific temporary traffic impacts that may occur due to increases in vehicular traffic as construction workers and trucks drive to and from the project site. Although these potential impacts would be temporary, measures to mitigate these impacts were investigated and proposed measures are discussed in Section 3.15, "Mitigation-Brooklyn."

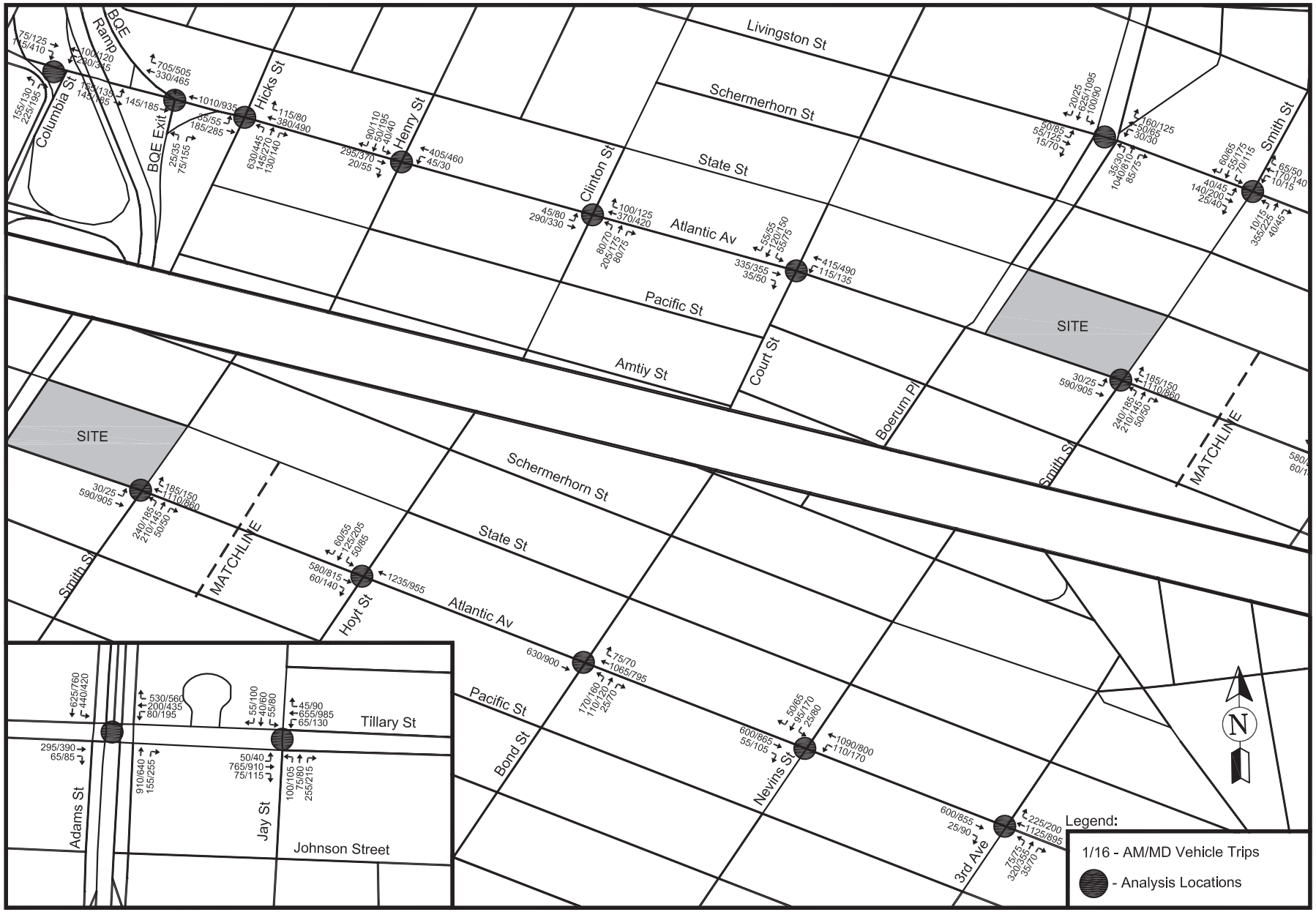
The analyzed traffic locations as well as others that may experience temporary construction-related disruptions would be included in a robust Construction Transportation Monitoring Plan that would be initiated at the start of construction. Because detailed plans for the proposed detention facility and detailed construction logistics, including any necessary street or sidewalk closures, are not known at this time, the level of specificity necessary to quantify the extent to which traffic operations would be disrupted as a result of street network access accommodations

requested to facilitate the construction effort cannot be made at this time. As the design-build process is initiated, an updated assessment of traffic conditions would be made in coordination with OCMC and DOT as necessary in order to identify feasible measures that could mitigate any potential disruptions.

The projected AM and midday peak construction traffic were assigned to the surrounding roadway network, with trucks assigned to DOT-designated truck routes. Construction worker vehicles were assigned to nearby public parking garages and trucks were assigned to/from site frontages. In addition, as construction would result in the demolition of the existing jail facility on site, existing traffic generated by the facility would be displaced and would no longer be a part of the future network during construction. A study area similar to that established in the traffic analysis of the future with the proposed actions action was identified for the analysis of conditions during peak construction. Intersections within the study area that would incur 50 or more net incremental trips (construction worker/truck vehicle trips minus existing site traffic) during peak construction were identified for analysis. In consultation with DOT, additional intersections beyond this study area were also included in the analysis. In total, the detailed construction traffic analyses encompassed a study area of fifteen intersections, as summarized below:

1. Columbia Street and Atlantic Avenue
2. BQE Exit and Entrance Ramps and Atlantic Avenue
3. Hicks Street and Atlantic Avenue
4. Henry Street and Atlantic Avenue
5. Clinton Street and Atlantic Avenue
6. Court Street and Atlantic Avenue
7. Smith Street and Atlantic Avenue
8. Hoyt Street and Atlantic Avenue
9. Bond Street and Atlantic Avenue
10. Nevins Street and Atlantic Avenue
11. Third Avenue and Atlantic Avenue
12. Smith Street and Livingston Street
13. Boerum Place and Livingston Street
14. Adams Street and Tillary Street
15. Jay Street and Tillary Street

To establish a No Action construction condition from which the potential for construction traffic impacts is measured against, for conservative purposes, the analysis was based on the same existing condition as that described in Section 3.9. The AM existing conditions analysis included in Section 3.9 is based on traffic data for the 7:00-8:00 AM peak hour, which according to Automatic Traffic Recorder data collected in the study area, exhibits approximately 9.5 percent higher traffic volumes than the 6:00-7:00 AM peak hour (when peak construction vehicle trip arrivals are expected). In addition, the construction midday peak period analysis assumes the same existing condition as that described in Section 3.9. The existing conditions analysis in Section 3.9 utilized data for the 3:00-4:00 PM hour, which is the same period where departing construction related traffic is expected to be highest. Existing peak hour traffic volumes for each analyzed intersection are shown in **Figure 3.14-1**. The base future No Action traffic network was established by conservatively applying the same level of background growth as that included in the future 2027 No Action condition analysis described in Section 3.9. In addition, all No Action developments considered for the operational analysis were conservatively assumed to be completed and operational during the construction analysis periods as well. Therefore, for all



Brooklyn Site - 275 Atlantic Avenue
Existing Peak Hour Traffic Volumes

Figure 3.14-1

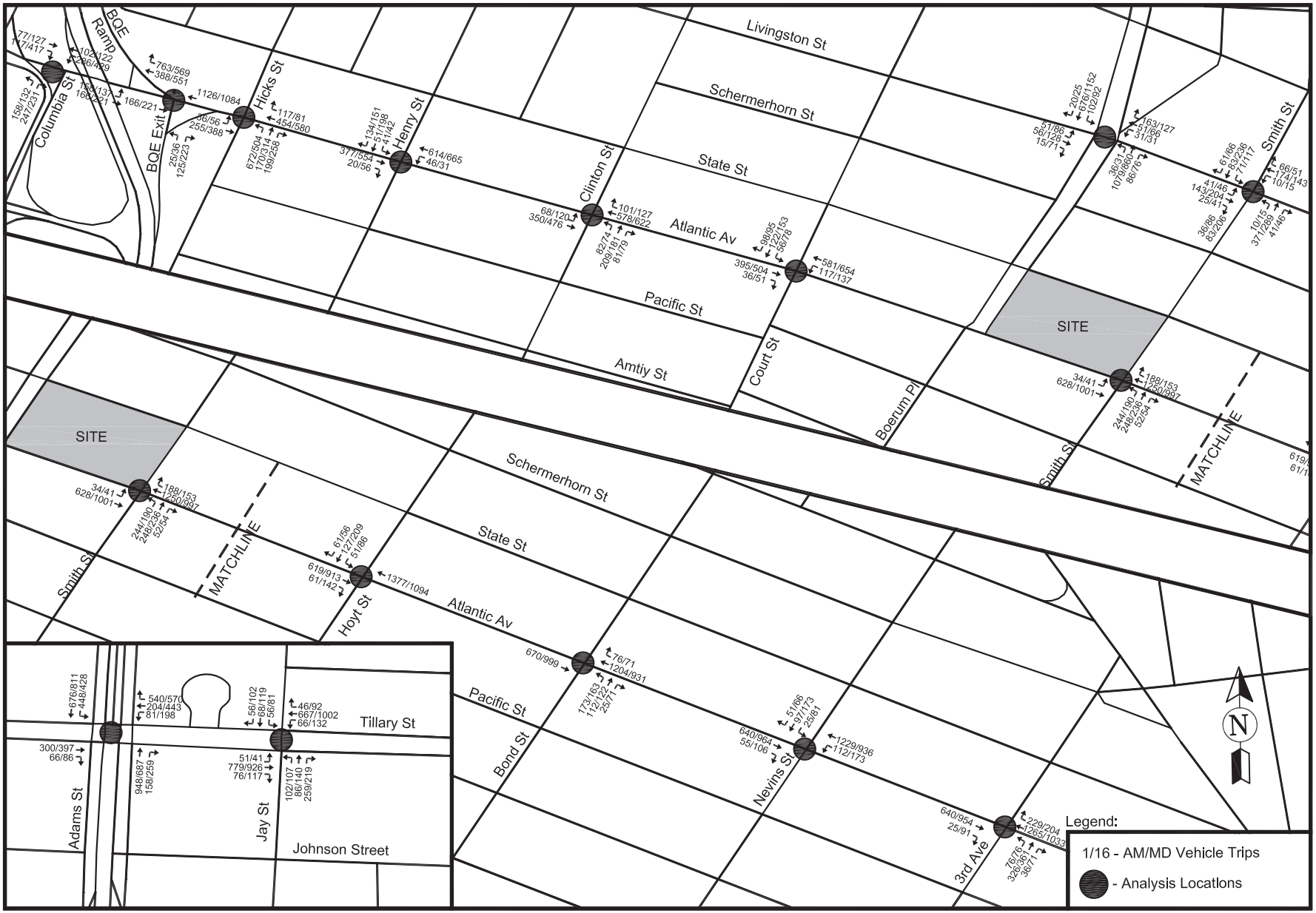
intents and purposes, the construction With Action traffic analysis described below and the operational With Action traffic analysis described in Section 3.9 compared back to the same No Action condition. No Action condition and Construction With Action condition peak hour traffic volumes are shown in **Figures 3.14-2** and **3.14-3**, respectively. Analysis methodologies in accordance with guidance prescribed in the *CEQR Technical Manual*, and as detailed in Section 3.9, were followed to assess the potential for construction traffic impacts.

As shown in **Table 3.14-5**, significant adverse traffic impacts were identified for 12 analyzed intersections during the construction AM peak hour and 11 analyzed intersections during the construction midday peak hour. A total of 18 and 15 lane group impacts were identified at analyzed intersections during the construction AM and midday peak hours, respectively. The analysis results (v/c ratios, delays, and LOS) for all lane groups at all analyzed intersections in both peak periods under peak construction With Action conditions are provided in **Appendix F.**

Table 3.14-5
Potential Construction Traffic Impacts

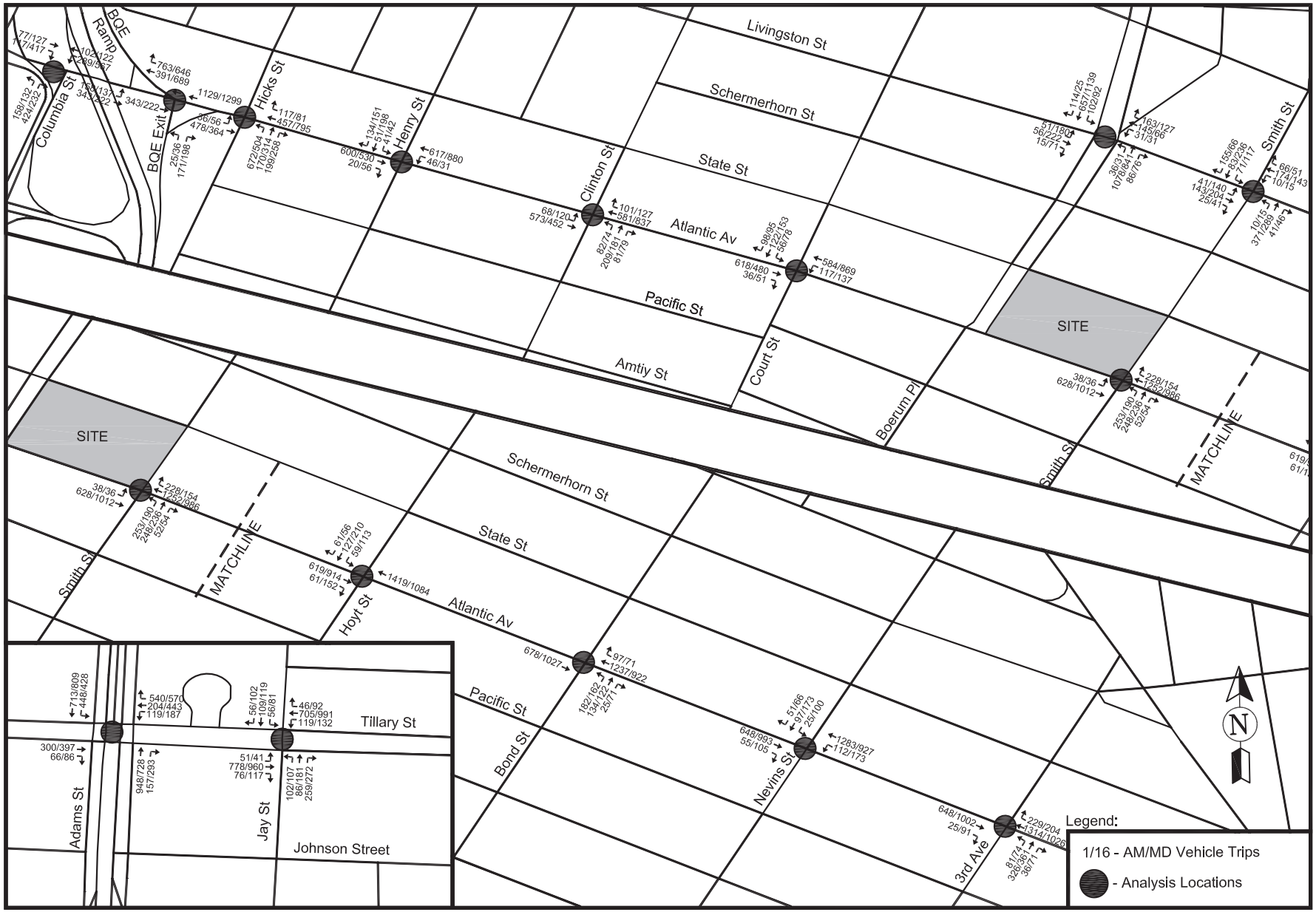
		No Action				Construction With Action			
Intersection	Approach	Lane Group	V/C Ratio	Delay (sec/veh)	LOS	Lane Group	V/C Ratio	Delay (sec/veh)	LOS
AM Peak Hour									
Columbia Street & Atlantic Avenue	NB	LR	0.60	35.8	D	LR	0.78	46.0	D
	NB	R	0.52	33.9	C	R	0.88	59.2	E
Hicks Street & Atlantic Avenue	EB	LT	0.56	33.2	C	LT	0.94	58.0	E
Clinton Street & Atlantic Avenue	EB	LT	0.78	34.2	C	LT	1.13	106.1	F
Smith Street & Atlantic Avenue	EB	LT	0.92	39.4	D	LT	0.98	50.5	D
	WB	TR	1.19	123.4	F	TR	1.25	149.0	F
	NB	TR	1.22	165.3	F	TR	1.23	168.6	F
Hoyt Street & Atlantic Avenue	WB	T	1.05	69.5	E	T	1.09	80.9	F
Bond Street & Atlantic Avenue	WB	TR	1.05	70.6	E	TR	1.10	88.1	F
Nevins Street & Atlantic Avenue	WB	LT	1.20	122.6	F	LT	1.24	141.8	F
Third Avenue & Atlantic Avenue	WB	T	1.19	127.6	F	T	1.24	146.9	F
Smith Street & Livingston Street	SB	TR	0.45	24.0	C	TR	1.03	91.1	F
Boerum Place & Livingston Street	EB	LTR	0.59	48.8	D	LTR	0.82	73.2	E
	WB	LT	0.32	38.8	D	LT	0.65	48.9	D
Adams Street & Tillary Street	WB	L	0.58	52.0	D	L	0.86	81.5	F
Jay Street & Tillary Street	WB	L	0.29	44.5	D	L	0.53	51.3	D
	NB	L	0.66	56.1	E	L	0.74	66.2	E
	SB	TR	0.67	53.4	D	TR	0.84	70.1	E
Midday Peak Hour									
Columbia Street & Atlantic Avenue	WB	L	1.39	232.1	F	L	1.86	435.9	F
BQE NB Off-Ramp & Atlantic Avenue	EB	L	0.48	40.0	D	L	0.60	54.2	D
Clinton Street & Atlantic Avenue	EB	LT	1.17	128.3	F	LT	(a)	137.0	F
	WB	TR	0.84	39.5	D	TR	1.06	80.2	F
Court Street & Atlantic Avenue	WB	T	1.42	297.3	F	T	1.88	500.7	F
Smith Street & Atlantic Avenue	NB	L	1.16	162.1	F	L	1.18	169.6	F
Hoyt Street & Atlantic Avenue	SB	LTR	1.11	121.2	F	LTR	1.23	164.1	F
Nevins Street & Atlantic Avenue	SB	LTR	1.10	121.3	F	LTR	1.17	148.4	F
Smith Street & Livingston Street	EB	LTR	0.98	68.1	E	LTR	1.64	329.8	F
Boerum Place & Livingston Street	EB	L	0.70	64.0	E	L	1.46	283.1	F
	EB	TR	0.86	70.0	E	TR	1.26	187.1	F
	WB	LT	0.39	40.3	D	LT	0.56	48.9	D
Adams Street & Tillary Street	NB	TR	0.96	60.4	E	TR	1.04	81.3	F
Jay Street & Tillary Street	NB	R	0.78	41.3	D	R	0.97	71.0	E
	SB	L	0.89	102.1	F	L	1.01	137.2	F

Notes: - Approach: EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound.
- Lane Group: L-Left, T-Through, R-Right, DefL-Defacto left.
- (a) Under Construction With Action conditions, EB approach would consist of a defacto left (DefL) and a through (T) lane group. Results for the combined left-through (LT) lane group are shown in order to compare back to the No Action condition.



Brooklyn Site - 275 Atlantic Avenue
No-Action Peak Hour Traffic Volumes

Figure 3.14-2



Brooklyn Site - 275 Atlantic Avenue
Construction With-Action Peak Hour Traffic Volumes

Figure 3.14-3

TRANSIT

As presented above in **Table 3.14-3**, during the fourth quarter of 2025, it is estimated that approximately 1,719 daily construction workers would travel to and from the construction site each day. During anticipated peak arrival and departure periods (when 80 percent of workers are assumed to be traveling), approximately 1,375 construction workers would be traveling to and from the site. According to the census data, it is anticipated that approximately 49.8 percent of construction workers would commute to the project site using public transit. More specifically, 38 percent would ride the subway, 8.2 percent would utilize public bus and 3.6 percent would ride commuter rail. Based on these modal splits, it is estimated that approximately 523 construction workers would take the subway, 113 would ride the bus and 50 would take commuter rail during the peak hours in the AM and midday periods.

In addition, as the existing detention center located on the site would be demolished as part of the proposed project, existing transit trips generated by the site would no longer occur during the construction period. To determine the number of displaced transit trips during the 6:00 to 7:00 AM and 3:00 to 4:00 PM midday peak hours, an estimate of existing trips was made in a similar manner as was done for the forecast of incremental project trips described in Section 3.9. According to this estimate, approximately 30 and 59 subway trips would no longer occur in the AM and midday peak hours. In addition, approximately six and 13 bus trips would no longer occur in the AM and midday peak hours. In total, there would be a net increment of 493 subway trips and 107 bus trips during the AM peak hour during peak construction. During the midday peak hour, there would be a net increment of 464 subway trips and 100 bus trips. In total, 650 and 614 net incremental transit trips (net subway and bus plus 50 construction worker rail trips) are anticipated during the AM and midday peak hours during peak construction.

As described in Section 3.9, the project site is served by multiple subway lines and transit bus routes. In addition, the Long Island Railroad Atlantic Terminal station is located an approximately 15-minute walk from the site. Transit analyses typically focus on the AM and PM commuter peak periods as it is during these periods that overall demand on the subway and bus systems is usually highest. Considering construction worker transit trips would take place outside the typical commuter peak hours of 8:00 to 9:00 AM and 5:00 to 6:00 PM, there would not be a potential for significant adverse transit impacts attributable to construction worker generated transit trips.

PEDESTRIANS

As presented above in **Table 3.14-3**, during the fourth quarter of 2025, it is estimated that approximately 1,719 daily construction workers would travel to and from the construction site each day. During anticipated peak arrival and departure periods (when 80 percent of workers are assumed to be traveling), approximately 1,375 construction workers would be traveling to and from the site. According to the census data, it is anticipated that approximately 0.9 percent of construction workers would just walk to the project site. As a result, it is estimated that approximately 12 walk-only trips would be generated by construction workers in each the AM and midday peak periods. In comparison, it is estimated that six and 10 walk-only pedestrian trips would be displaced from the existing street network during the same periods. Overall, there would be a net increment of six and two walk-only trips during the AM and midday peak hours during peak construction.

However, total pedestrian trips include not just walk-only trips but, trips from subway and rail stations, bus stops and off-street parking facilities as well. As described above, during peak construction, a net increment of 650 and 614 transit trips is anticipated during the AM and midday

peak hours, respectively. In addition, as it is assumed construction workers driving to the site would utilize off-street parking facilities, additional pedestrian trips would be generated from workers walking between these facilities and the project site. Based on the estimate of peak construction auto trips and the vehicle occupancy rate of 1.21 described above, it is anticipated that approximately 678 construction workers would walk to and from these facilities during the peak hours during peak construction. With the inclusion of net transit trips and construction worker walk trips from parking facilities, it is anticipated that there would be a net increment of 1,335 and 1,294 pedestrian trips during the AM and midday peak periods, respectively.

Although any potential impacts associated with construction worker trips and construction-related activity would be temporary, a preliminary assignment of these pedestrian trips was performed to identify where these trips would likely be concentrated. Based on likely travel patterns, it is anticipated, pedestrian trips would likely exceed the CEQR threshold of 200 or more trips during one or more peak hours at the following 17 locations:

1. The north sidewalk on Schermerhorn Street between Court Street and Boerum Place
2. The east sidewalk on Boerum Place between Atlantic Avenue and State Street
3. The south sidewalk on State Street between Boerum Place and Smith Street
4. The west sidewalk on Smith Street between Atlantic Avenue and State Street
5. The east sidewalk on Smith Street between State Street and Schermerhorn Street
6. The northwest corner of the intersection of Boerum Place and Schermerhorn Street
7. The northwest corner of the intersection of Boerum Place and State Street
8. The southwest corner of the intersection of Boerum Place and State Street
9. The northeast corner of the intersection of Boerum Place and State Street
10. The southeast corner of the intersection of Boerum Place and State Street
11. The northwest corner of the intersection of Smith Street and State Street
12. The southwest corner of the intersection of Smith Street and State Street
13. The northeast corner of the intersection of Smith Street and State Street
14. The southeast corner of the intersection of Smith Street and Schermerhorn Street
15. The south crosswalk at the intersection of Boerum Place and State Street
16. The east crosswalk at the intersection of Boerum Place and State Street
17. The west crosswalk at the intersection of Smith Street and State Street

Increases in pedestrian activity along the sidewalk and corner elements identified above could potentially result in a degradation in level of service large enough to be deemed significant per CEQR impact criteria. Because detailed plans for the proposed detention facility and detailed construction logistics, including any necessary street or sidewalk closures, are not known at this time, the level of specificity necessary to quantify the extent to which pedestrian operations would be disrupted as a result of construction activity (construction worker related and due to potential public infrastructure access accommodations requested to facilitate the construction effort) cannot be made at this time. However, as the City is committed to a robust Construction Transportation Monitoring Plan during construction, an assessment of pedestrian conditions would be made in coordination with OCMC and DOT as necessary in order to identify feasible measures that could mitigate these potential disruptions. Mitigation measures to address potential impacts to pedestrian elements (sidewalks, corners and crosswalks) typically include signal timing changes, sidewalk and crosswalk widenings or the relocation of street furniture and obstructions. In the event it is found that measures fully mitigating such temporary impacts are infeasible, then unmitigable significant adverse impacts could potentially occur at the identified pedestrian elements.

PARKING

As presented above in **Table 3.14-3**, during the fourth quarter of 2025, it is estimated that approximately 1,719 daily construction workers would travel to and from the construction site each day. According to the census data, it is anticipated that approximately 49.3 percent of construction workers would commute to the project site using private autos. With an average vehicle occupancy rate of 1.21 persons per vehicle, construction workers are projected to generate a maximum parking demand of 700 spaces. As the existing detention center would be demolished as part of the proposed project, existing parking demand generated by the project site would no longer be present in the study area during construction. During the early AM (6:00-7:00 AM) and midday (3:00-4:00) periods, existing demand is estimated to be 96 and 94 spaces, respectively. Therefore, it is anticipated net incremental parking demand during peak construction would total 604 and 606 spaces during the early morning and midday periods, respectively.

Based on the parking analysis presented in Section 3.9, "Transportation-Brooklyn," it is anticipated there would be 2,437 available public parking spaces (off-street plus on-street) under the No Action condition during the weekday early morning period. During the weekday midday period, there would 753 available public parking spaces. Conservatively assuming the parking utilization under the No Action condition in Section 3.9, net parking demand associated with construction activity would not exceed the number of available spaces within the study area. During peak construction, there would be a surplus of 1,833 and 147 total public parking spaces available (available No-Action spaces minus net incremental parking demand due to construction). Therefore, parking demand associated with construction workers commuting to the site via auto is anticipated to be fully accommodated by future available off-street and on-street public parking capacity within the study area and the potential for a significant adverse parking impact is unlikely.

AIR QUALITY

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, cranes, and loaders. On-road vehicles include construction delivery trucks, dump trucks, and construction worker vehicles arriving to and departing from the project 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. The *CEQR Technical Manual* lists several factors for consideration in determining whether a quantified on-site and/or off-site construction impact assessment for air quality is appropriate. These factors include the use of emission control measures, the duration and intensity of construction activities, the location of nearby sensitive receptors, and project-generated, construction-related vehicle trips.

EMISSION CONTROL MEASURES

Measures would be taken to reduce pollutant emissions during construction of the proposed project in accordance with all applicable laws, regulations, and building codes. These include the following dust suppression measures and idling restrictions:

- *Dust Control.* To minimize dust emissions from construction activities, a dust control plan including a robust watering program would be required as part of contract specifications. For example, all trucks hauling loose material would be equipped with tight-fitting tailgates and their loads securely covered prior to leaving the project site; and water sprays would be used for all demolition, excavation, and transfer of soils to ensure that materials would be

dampened as necessary to avoid the suspension of dust into the air. Loose materials would be watered, stabilized with a chemical suppressing agent, or covered. All measures required by the DEP's *Construction Dust Rules* regulating construction-related dust emissions would be implemented.

- *Idling Restriction.* As required by local law, all stationary vehicles on roadways adjacent to the project site would be prohibited from idling for more than three minutes. The idling restriction excludes vehicles that are using their engines to operate a loading, unloading, or processing device (e.g., concrete-mixing trucks) or otherwise required for the proper operation of the engine.

Construction of the proposed project is subject to New York City Local Law 77, which requires the use of ULSD fuel and BAT for equipment at the time of construction.

- *Clean Fuel*. ULSD fuel would be used exclusively for all diesel engines throughout the project site.
- *Best Available Tailpipe Reduction Technologies*. Nonroad diesel engines with a power rating of 50 horsepower (hp) or greater and controlled truck fleets (i.e., truck fleets under long-term contract with the project) including but not limited to concrete mixing and pumping trucks would utilize the BAT for reducing particulate emissions. Diesel particulate filters (DPFs) have been identified as being the tailpipe technology currently proven to have the highest reduction capability. Construction contracts would specify that all diesel nonroad engines rated at 50 hp or greater would utilize DPFs, either installed by the original equipment manufacturer or retrofitted. Retrofitted DPFs must be verified by USEPA or the California Air Resources Board. Active DPFs or other technologies proven to achieve an equivalent reduction may also be used.

In addition, the following measures would be implemented to the extent practicable to further reduce air pollutant emissions during construction:

- *Utilization of Newer Equipment.* EPA's Tier 1 through 4 standards for non-road diesel engines regulate the emission of criteria pollutants from new engines, including PM, CO, NO_x, and hydrocarbons (HC). All diesel-powered non-road construction equipment with a power rating of 50 hp or greater would meet the Tier 4[1] emissions standard.
- *Diesel Equipment Reduction.* Construction would minimize the use of diesel engines and utilize electric engines to the extent practicable. Equipment that could use electric engines in lieu of diesel engines includes, but may not be limited to, welders and rebar benders.

Overall, this emissions control program that is above and beyond local law requirements is expected to substantially reduce air pollutant emissions during construction of the proposed project.

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

DURATION AND INTENSITY OF CONSTRUCTION ACTIVITIES

Construction of the proposed project, as is usually the case in New York City, would have the potential to result in temporary disruption to the surrounding area. The overall construction duration at the Brooklyn Site is anticipated to be approximately five years. However, the most intense construction activities in terms of potential for air pollutant emissions is anticipated to occur over a much shorter period of time. These peak periods of construction for air pollutant emissions for the proposed detention center would include exterior demolition activities which is anticipated to take approximately 6 months, and excavation and foundation activities which is anticipated to take approximately 16 months. Even during these peak periods of construction, construction activity levels typically fluctuate throughout the day and from day to day during each construction stage. Furthermore, construction sources would move around the project site over the construction period such that the potential air pollutant concentration increments would not persist in any single location and that the sources would not be immediately adjacent to a sensitive receptor location over the entire construction duration.

In addition to exterior demolitions, the demolition stage of construction would include abatement and interior demolition activities. Abatement and interior demolition activities would involve the use of hand tools and small nonroad equipment such as mini-excavators and are expected to result in much lower air emissions. Furthermore, these activities would occur within an enclosure building, thereby shielding sensitive receptors from construction activities. The other stages of construction, including superstructure construction, enclosure, and interior buildout would result in lower air emissions since they would require fewer pieces of heavy-duty diesel equipment and would not involve soil disturbance that generates dust emissions. Similar to abatement and interior demolition, interior buildout activities would also generally occur within an enclosed building, thereby shielding nearby sensitive receptors from construction activities.

Overall, the potential for emissions associated with the construction of the proposed project would likely be lower than a typical project due to the emission control measures to be implemented during construction (see “Emission Control Measures”).

LOCATION OF NEARBY SENSITIVE RECEPTORS

The area near the project site is characterized by the medium-density residential neighborhoods of Cobble Hill and Boerum Hill to the south of the project site, along with the higher-density commercial neighborhood of Downtown Brooklyn to the north of the project site. In addition to the residential and commercial uses, the block immediately to the north of the project site contains the 11-story Kings County Criminal Court and Brooklyn Frontiers High School. The nearby sensitive receptor locations in the area are generally separated by State Street to the north, Smith Street to the east, Atlantic Avenue to the south, and Boerum Place to the west. Such distances between the construction sources and nearby sensitive locations would result in enhanced dispersion of pollutants and therefore, potential concentration increments from on-site construction sources at these locations would be reduced.

Although there are sensitive receptors locations in proximity of the project site, as discussed under “Emission Control Measures,” measures would be taken to reduce the potential for pollutant emissions during construction. For example, a watering program would be implemented to minimize potential dust emissions from construction activities and all measures required by the portion of DEP’s *Construction Dust Rules* regulating construction-related dust emissions would be strictly followed. In addition, to further minimize air pollutant emissions during construction, emissions reduction measures including the use of BAT and the use of newer and cleaner

equipment would be implemented. Furthermore, the construction areas would be fenced off, which would serve as a buffer between the potential emission sources and nearby sensitive receptor locations.

ON-ROAD SOURCES

Based on the predicted traffic increments presented above under "Transportation," the highest overall construction trip increment was predicted for the last quarter of 2025. These construction-generated traffic increments would exceed the CEQR CO screening threshold of 170 peak-hour trips at intersections in the area, or the fine particulate matter ($PM_{2.5}$) emissions screening thresholds discussed in Chapter 17, Sections 210 and 311 of the *CEQR Technical Manual*, and therefore, a mobile source analysis is conducted for CO and PM. The general methodology for mobile source PM modeling presented in Section 3.10, "Air Quality-Brooklyn," was followed for intersection modeling during the construction period. The following methodology was used for the analysis conducted for CO.

Engine Emissions

Vehicular CO engine emission factors were computed using the USEPA mobile source emissions model, MOVES2014a.[2] This emissions model is capable of calculating engine, brake wear, and tire wear emission factors for various vehicle types, based on the fuel type (e.g., gasoline, diesel, or natural gas), meteorological conditions, vehicle speeds, vehicle age, roadway type and grade, number of starts per day, engine soak time, and various other factors that influence emissions, such as inspection maintenance programs. The inputs and use of MOVES incorporate the most current guidance available from the NYSDEC.

Vehicle classification data were based on field studies. Appropriate credits were used to accurately reflect the inspection and maintenance program.[3] County-specific hourly temperature and relative humidity data obtained from NYSDEC were used.

Dispersion Models for Microscale Analyses

Maximum CO concentrations resulting from vehicle emissions were predicted using the CAL3QHC model Version 2.0.[4] The CAL3QHC model employs a Gaussian (normal distribution) dispersion assumption and includes an algorithm for estimating vehicular queue lengths at signalized intersections. CAL3QHC predicts emissions and dispersion of pollutants from idling and moving vehicles. The queuing algorithm includes site-specific traffic parameters, such as signal timing and delay calculations (from the 2000 *Highway Capacity Manual* traffic forecasting model), saturation flow rate, vehicle arrival type, and signal actuation (i.e., pre-timed or actuated signal) characteristics to accurately predict the number of idling vehicles. The CAL3QHC model has been updated with an extended module, CAL3QCHR, which allows for the incorporation of hourly meteorological data into the modeling, instead of worst-case assumptions regarding

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

[3] The inspection and maintenance programs require inspections of automobiles and light trucks to determine if pollutant emissions from each vehicle's exhaust system are lower than emission standards. Vehicles failing the emissions test must undergo maintenance and pass a repeat test to be registered in New York State.

[4] USEPA, User's Guide to CAL3QHC, A Modeling Methodology for Predicted Pollutant Concentrations Near Roadway Intersections, Office of Air Quality, Planning Standards, Research Triangle Park, North Carolina, EPA-454/R-92-006.

meteorological parameters. This refined version of the model, CAL3QHCR, is employed if maximum predicted future CO concentrations are greater than the applicable ambient air quality standards or when *de minimis* thresholds are exceeded using the first level of CAL3QHC modeling.

Tier I CO Analysis—CAL3QHC

In applying the CAL3QHC model, the wind angle was varied to determine the wind direction resulting in the maximum concentrations at each receptor. Following the USEPA guidelines,[5] CAL3QHC computations were performed using a wind speed of 1 meter per second, and the neutral stability class D. The 8-hour average CO concentrations were estimated by multiplying the predicted 1-hour average CO concentrations by a factor of 0.7 to account for persistence of meteorological conditions and fluctuations in traffic volumes. A surface roughness of 3.21 meters was chosen. At each receptor location, concentrations were calculated for all wind directions, and the highest predicted concentration was reported, regardless of frequency of occurrence. These assumptions ensured that worst-case meteorology was used to estimate impacts.

Consistent with the operational air quality analysis presented in Section 3.10, "Air Quality-Brooklyn," the intersection of Atlantic Avenue and Clinton Street was selected for analysis because it is a location in the study area projected to have the highest level of equivalent truck traffic and road dust, and, therefore, where the greatest air quality impacts and maximum changes in concentrations would be expected.

Table 3.14-6 shows the future maximum predicted 8-hour average CO concentrations at the intersection studied. The results indicate that the construction of the proposed detention facility in Brooklyn would not result in any exceedances of the 8-hour CO standard at the analyzed intersection. In addition, the incremental increases in 8-hour average CO concentrations are very small, and consequently would not result in an exceedance of the CEQR *de minimis* CO criteria. Therefore, mobile source CO emissions from construction activities at the Brooklyn site would not result in a significant adverse impact on air quality.

Table 3.14-6
Maximum Predicted 8-Hour CO Concentration from Mobile Sources (ppm)

Analysis Site	Location	Time Period	No Action	With Action	Maximum Allowable With Action
1	Atlantic Avenue and Clinton Street	MD	1.7	1.7	5.3

Notes:
8-hour NAAQS is 9 ppm.
No Action and With Action concentrations includes a background concentration of 1.4 ppm.
The *maximum allowable* With Action CO concentration represents the value above which the *de minimis* CO criteria would be violated.

Table 3.14-7 presents the predicted PM_{10} 24-hour concentrations at the analyzed intersection in the With Action condition. The value shown is the highest predicted concentration for the modeled receptor locations and includes background concentration.

[5] *Guidelines for Modeling Carbon Monoxide from Roadway Intersections*, USEPA Office of Air Quality Planning and Standards, Publication EPA-454/R-92-005.

Table 3.14-7
Maximum Predicted 24-Hour Average PM_{10} Concentration from Mobile Sources (µg/m³)

Analysis Site	Location	No Action	With Action
1	Atlantic Avenue and Clinton Street	59.8	60.6

Notes:
NAAQS—24-hour average 150 µg/m³.
Concentrations presented include a background concentration of 44.0 µg/m³.

Maximum predicted 24-hour and annual average $PM_{2.5}$ concentration increments were calculated so that they could be compared with the *de minimis* criteria. Based on this analysis, the maximum predicted localized 24-hour average and neighborhood-scale annual average incremental $PM_{2.5}$ concentrations are presented in **Tables 3.14-8 and 3.14-9**, respectively. Note that $PM_{2.5}$ concentrations in the No Action condition are not presented, since impacts are assessed on an incremental basis.

Table 3.14-8
Maximum Predicted 24-Hour Average $PM_{2.5}$ Incremental Concentration (µg/m³)

Analysis Site	Location	Increment	*De Minimis* Criterion
1	Atlantic Avenue and Clinton Street	0.5	8.2

Note:
$PM_{2.5}$ *de minimis* criterion—24-hour average, not to exceed more than half the difference between the background concentration (19.6 µg/m³) and the 24-hour standard of 35 µg/m³.

Table 3.14-9
Maximum Predicted Annual Average $PM_{2.5}$ Incremental Concentration (µg/m³)

Analysis Site	Location	Increment	*De Minimis* Criterion
1	Atlantic Avenue and Clinton Street	0.04	0.1

Note: $PM_{2.5}$ *de minimis* criterion—annual (neighborhood scale), 0.1 µg/m³.

CONCLUSION

Based on the analyses provided and implementation of the emissions reduction program described above, construction at the Brooklyn Site would not result in the potential for significant adverse construction air quality impacts, and no further analysis is required.

NOISE

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

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

SOUND LEVEL DESCRIPTORS

Section 2.12, "Noise," defines the sound level descriptors. The $L_{eq(1)}$ is the noise descriptor recommended for use in the *CEQR Technical Manual* for vehicular traffic and construction noise impact evaluation, and is used to provide an indication of highest expected sound levels. The 1-hour L_{10} is the noise descriptor used in the *CEQR Technical Manual* noise exposure guidelines. The maximum 1-hour equivalent sound level ($L_{eq(1)}$) was selected as the noise descriptor used in the construction noise impact evaluation.

CONSTRUCTION NOISE ANALYSIS FUNDAMENTALS

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

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

- The noise emission level of the equipment (see **Table 3.14-10** for the noise levels for typical construction equipment);
- A usage factor, which accounts for the percentage of time the equipment is operating at full power;
- The distance between the piece of equipment and the receptor;
- Topography and ground effects; and
- Shielding.

Table 3.14-10
Typical Construction Equipment Noise Emission Levels (dBA)

Equipment List	Typical L_{max} Noise Level at 50 feet[1]	Project-Specific L_{max} Noise Level at 50 feet[2]
Auger Drill Rig	85	
Backhoe/Loader	80	
Compressor	80	
Concrete Pump	82	
Concrete Trowel	67[3]	
Concrete Vibrator	80	
Cranes	85	75
Dozer	85	
Excavator	85	
Forklift	85	
Generators	82	
Circular Saw	59	
Hoist	75	65
Man Lift	85	
Pump	77	
Rebar Bender	80	
Saw	76	
Welding Machines	73	

Notes:
[1] Based on Citywide Construction Noise Mitigation, Chapter 28, DEP, 2007.
[2] Based on use of path controls, including portable noise barriers, enclosures, acoustical panels, and/or curtains, whichever are feasible and practical.
[3] Based on noise certifications for Columbia Manhattanville construction project.

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

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

CONSTRUCTION NOISE IMPACT CRITERIA

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

The noise impact criteria described in Chapter 19, Section 410 of the *CEQR Technical Manual* serve as a screening-level threshold for potential construction noise impacts. If construction of the proposed project would not result in any exceedances of these criteria at a given receptor, then that receptor would not have the potential to experience a construction noise impact. However, if

construction of the proposed project 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 10PM and 7AM), the threshold requiring further consideration would be a 3 dBA $L_{eq(1)}$ or greater increase.

CONSTRUCTION NOISE ANALYSIS METHODOLOGY

The construction noise analysis consists of the following:

- Identification of sensitive noise receptor locations[6] near and on the project site.
- Determination of existing baseline noise levels at each noise receptor by measurements at each location during construction hours.
- Identification of noise reduction measures that would be employed during construction of the proposed project.
- Consideration of potential noise impacts from mobile sources.
- Analysis of potential noise impacts from operation of construction equipment at the project site over the course of the construction of the proposed project. Consistent with the noise impact criteria discussed above, the analysis looks first at the intensity of potential noise levels during construction, then assesses the potential duration of those noise levels, and finally makes a determination of the potential for impact.
    - Intensity of construction noise is assessed based on the assumption that with the construction noise control measures described above, maximum $L_{eq(1)}$ noise levels at a reference distance of approximately 50 feet from the construction site boundary would be approximately in the mid-70s dBA during excavation and foundation construction (given that the project would use drilled piles); mid-70s dBA during concrete work; and low 60s dBA during façade installation or interior fit-out (given that the project is committed to using quieter crane, hoist, and other key pieces of equipment) .[7] The reference noise levels at 50 feet are then projected to the actual distances of the surrounding receptor areas from the construction site boundary.
    - Duration of construction noise is assessed based on the preliminary construction schedule (see **Table 3.14-11**).

[6] A sensitive receptor location is an area where human activity may be adversely affected by elevated noise levels, including residences, parks, churches, etc.

[7] Based on detailed noise analyses prepared for several large-scale construction projects with comparable noise-control measure commitments, including East New York Rezoning (CEQR No. 15DC102K) and Halletts Point Rezoning (CEQR No. 09DCP084Q).

Table 3.14-11
Construction Noise Receptor Areas

Receptor(s)	Land Use(s)	Approximate Distance and Direction from the Proposed Construction Work Area
233 Pacific Street	Commercial / Residential	160 feet west of Construction Work Area
66 Boerum Place	Residential	130 feet west of Construction Work Area
68 Boerum Place	Institution	130 feet west of Construction Work Area
205 State Street	Residential	135 feet northwest of Construction Work Area
239 State Street	Residential	50 feet north of Construction Work Area
Kings County Criminal Court	Institution	50 feet north of Construction Work Area
The Boerum - 265 State Street	Residential	90 feet northeast of Construction Work Area
267 State Street	Residential	190 feet northeast of Construction Work Area
85 Smith Street	Commercial / Residential	75 feet east of Construction Work Area
310 Atlantic Avenue	Residential	200 feet southeast of Construction Work Area
296 Atlantic Avenue	Residential	100 feet southeast of Construction Work Area
284 Atlantic Avenue	Residential	90 feet south of Construction Work Area
278 Atlantic Avenue	Residential	90 feet south of Construction Work Area

NOISE RECEPTOR LOCATIONS

The project site is bounded by Southern Boulevard to the East, East 142 Street to the north, Concord Avenue to the west, and East 141st Street to the south. The area surrounding the project site is a mix of predominantly commercial uses with residential buildings to the west.

The noise receptors closest to the proposed construction activities are listed in **Table 3.14-11**. The receptor areas and their distances from the proposed construction site are shown in **Appendix H**.

NOISE MEASUREMENT RESULTS

Noise levels were measured at locations surrounding the project site as described in Section 2.12, "Noise-Brooklyn." Minimum baseline noise levels for each of the construction receptors were determined by taking the minimum measured noise level during construction hours (i.e., the AM or MD time period) from the nearest measurement location. The minimum baseline noise levels are shown below in **Table 3.14-12**.

NOISE REDUCTION MEASURES

Construction of the proposed project would be required to follow the requirements of the New York City Noise Control Code (also known as Chapter 24 of the Administrative Code of the City of New York, or Local Law 113) for construction noise control measures. Additionally, the project sponsor has committed to additional noise control measures beyond the minimum required by code in order to reduce potential noise effects on the surrounding receptors. Specific noise control measures would be incorporated in noise mitigation plan(s) required under the New York City Noise Code. These measures would include a variety of source and path controls.

Table 3.14-12
Baseline Noise Levels in dBA

Receptor	L_{eq}	L_{10}
233 Pacific Street	70.7	73.5
66 Boerum Place	69.0	70.3
68 Boerum Place	69.0	70.3
205 State Street	69.0	70.3
239 State Street	61.5	63.4
Kings County Criminal Court	61.5	63.4
The Boerum - 265 State Street	67.9	70.4
267 State Street	61.5	63.4
85 Smith Street	67.9	70.4
310 Atlantic Avenue	70.7	73.5
296 Atlantic Avenue	70.7	73.5
284 Atlantic Avenue	70.7	73.5
278 Atlantic Avenue	70.7	73.5

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

- Equipment that meets the sound level standards specified in Subchapter 5 of the New York City Noise Control Code and Table 22-1 of the *CEQR Technical Manual* would be utilized from the start of construction. **Table 3.14-12** shows the noise levels for typical construction equipment and the mandated noise levels lower than the sound level standards for the equipment that would be used for construction of the proposed project;
- Since electric power is expected to be available throughout the project site, electrically powered equipment such as welders and saws would be used over diesel-powered versions of that equipment, to the extent feasible and practicable;
- Where feasible and practicable, the construction site would be configured to minimize back-up alarm noise. In addition, trucks would not be allowed to idle more than 3 minutes at the construction site based upon Title 24, Chapter 1, Subchapter 7, Section 24-163 of the New York City Administrative Code; and
- Contractors and subcontractors would be required to properly maintain their equipment and mufflers.

In terms of path controls (e.g., placement of equipment, implementation of barriers or enclosures between equipment and sensitive receptors), the following measures for construction would be implemented to the extent feasible and practicable:

- Where logistics allow, noisy equipment, such as cranes, concrete pumps, concrete trucks, and delivery trucks, would be located away from and shielded from sensitive receptor locations;
- Noise barriers constructed from plywood or other materials surrounding the construction site would be utilized to provide shielding. The barriers would be at least 8 feet tall. Where logistics allow, truck deliveries would take place behind these barriers; and
- Path noise control measures (i.e., portable noise barriers, panels, enclosures, and acoustical tents, where feasible) would be required for certain dominant noise equipment to the extent feasible and practical (i.e., generators, compressors, and pumps).

MOBILE SOURCE CONSTRUCTION NOISE ANALYSIS

Throughout the construction period, vehicles (construction-related trucks and worker vehicles) would travel near the project site. Most of these vehicles are expected to use Atlantic Avenue, which is already a heavily trafficked roadway. As described above, the amount of traffic generated by the construction of the proposed project would be low compared with existing traffic volumes on major feeder streets in the neighborhood. Additionally, the construction-related vehicles would be distributed amongst the different routes to and from the project site. Accordingly, construction-generated traffic on roadways to and from the project site would not have the potential to result in significant adverse construction noise impacts at locations away from the construction work area (i.e., at locations other than the areas specified above as receptors).

ON-SITE CONSTRUCTION NOISE ANALYSIS RESULTS

As discussed above, the on-site construction noise analysis looks at the potential intensity of noise levels during construction, assesses the potential duration of those noise levels, and then makes a determination of the potential for impact.

As described above, noise levels from each type of construction activity were projected at receptors throughout the study area based on distance and shielding provided by existing buildings or project elements already constructed. Receptors further from the construction work area than those identified in **Table 3.14-12** would experience construction noise levels no higher than the low to mid-60s dBA, which is considered "acceptable" according to *CEQR Technical Manual* noise evaluation criteria, and lower than measured noise levels throughout much of the study area. Consequently, receptors outside of these distances would not have the potential to experience significant adverse construction noise impacts. Noise receptors closer to the construction site are discussed further below.

The projected maximum potential noise levels during construction at each façade of the receptors described above are summarized in **Table 3.14-13**. The construction noise estimates for the full construction period are shown in **Appendix H**.

233 Pacific Street

As shown in **Table 3.14-13**, construction of the proposed project would not result in exceedances of the *CEQR Technical Manual* construction noise screening thresholds at 233 Pacific Street. Total noise levels at this receptor would be in the "marginally unacceptable" category (as are existing conditions). Consequently, this receptor would not have the potential to experience a significant adverse construction noise impact.

66 Boerum Place

As shown in **Table 3.14-13**, construction of the proposed project would not result in exceedances of the *CEQR Technical Manual* construction noise screening thresholds at 66 Boerum Place. Total noise levels at this receptor would be in the "marginally unacceptable" category (as are existing conditions). Consequently, this receptor would not have the potential to experience a significant adverse construction noise impact.

Table 3.14-13
Estimated Construction Noise Summary (in dBA)

Receptor Area	Existing		Worst-Case Construction Noise Levels		
	L_{eq}	L_{10}	L_{eq}	Increase	L_{10}
233 Pacific Street	70.7	73.5	64.9	1.0	74.5
66 Boerum Place	69.0	70.3	60.0	0.5	70.8
68 Boerum Place	69.0	70.3	60.0	0.5	70.8
205 State Street	69.0	70.3	69.7	3.4	73.7
239 State Street (south and west facades)	61.5	63.4	78.0	16.6	81.1
239 State Street (north and east facades)	61.5	63.4	68.0	7.4	71.9
Kings County Criminal Court (south and east facades)	61.5	63.4	78.0	16.6	81.1
Kings County Criminal Court (north and west facades)	61.5	63.4	68.0	7.4	71.9
The Boerum - 265 State Street	67.9	70.4	71.7	5.3	76.2
267 State Street	61.5	63.4	63.4	4.1	67.5
85 Smith Street	67.9	70.4	65.1	1.8	72.2
310 Atlantic Avenue	70.7	73.5	56.0	0.1	73.6
296 Atlantic Avenue	70.7	73.5	69.0	2.2	75.7
284 Atlantic Avenue	70.7	73.5	62.9	0.7	74.2
278 Atlantic Avenue	70.7	73.5	69.9	2.6	76.1

68 Boerum Place

As shown in **Table 3.14-13**, construction of the proposed project would not result in exceedances of the *CEQR Technical Manual* construction noise screening thresholds at 68 Boerum Place. Total noise levels at this receptor would be in the "marginally unacceptable" category (as are existing conditions). Consequently, this receptor would not have the potential to experience a significant adverse construction noise impact.

205 State Street

Intensity of Construction Noise

As shown in **Table 3.14-13**, the residences at 205 State Street would experience minimal levels of construction noise and readily noticeable increases in noise level at times during the most noise-intensive construction activities. With the construction noise control measures described above, maximum $L_{EQ\,(1)}$ noise levels at this receptor would be in approximately the high 60s dBA at the façade. Consequently, the maximum noise levels predicted to be generated by on-site construction activities at this receptor would be expected to result in marginal exceedances of the *CEQR Technical Manual* construction noise screening thresholds at times during the construction period. Total noise levels at this receptor would be in the "marginally unacceptable" range.

Duration of Construction Noise from On-Site Sources

The maximum construction noise levels at this receptor, expected to be in the high 60s dBA and result in a noise level increase of less than 4 dBA, would occur during the approximately 6 months of exterior and slab demolition,. For the remaining months of construction of the proposed project, construction noise levels would not exceed the *CEQR Technical Manual* construction noise screening thresholds. While these residences are immediately adjacent to the proposed construction work area and are predicted to experience exceedances of the CEQR construction noise screening thresholds

intermittently during construction, the duration of the exceedances would be limited. Specifically, noise level increases due to construction of the proposed project would exceed the *CEQR Technical Manual* construction noise screening thresholds for an estimated eight non-consecutive months.

Determination of Construction Noise Impacts

The maximum estimated levels of construction noise would result in increases of less than 4 dBA and would occur for a relatively short period of time (i.e., 6 months), and during other portions of the construction period noise level increments would be within the acceptable range. Consequently, noise resulting from construction of the proposed project would not have the potential to result in significant adverse impact at this receptor.

239 State Street (South and West Façades)

Intensity of Construction Noise

As shown in **Table 3.14-13**, the residences at 239 State Street would potentially experience high levels of construction noise and readily noticeable increases in noise level at times during the most noise-intensive construction activities. With the construction noise control measures described above, maximum $L_{EQ\,(1)}$ noise levels at this receptor would be in approximately the high 70s dBA at the façade. Consequently, the maximum noise levels predicted to be generated by on-site construction activities at this receptor would be expected to result in exceedances of the *CEQR Technical Manual* construction noise screening thresholds at times during the construction period. Total noise levels at this receptor would be in the "acceptable" to "clearly unacceptable" range.

Duration of Construction Noise from On-Site Sources

The maximum construction noise levels at this receptor, expected to be in the high 70s dBA and result in noise level increases of up to approximately 17 dBA, would occur during the approximately 6 months of exterior and slab demolition. Additionally, construction would result in noise level increments up to approximately 10 dBA during excavation and foundation construction (approximately 17 months) and up to approximately 8 dBA during superstructure construction (approximately 14 months). For the remaining months of construction of the proposed project, construction noise levels would not have the potential to exceed the *CEQR Technical Manual* construction noise screening thresholds.

Determination of Construction Noise Impacts

Based on the prediction of construction noise level increments of up to approximately 17 dBA and a duration of CEQR screening threshold exceedances occurring for approximately 37 months over the course of four years, construction noise associated with the proposed project would have the potential to result in a temporary significant adverse impact at residences along the south and west façades of 239 State Street. These receptors are discussed further in Section 3.15, "Mitigation-Brooklyn."

239 State Street (North and East Façades)

As shown in **Table 3.14-13**, construction of the proposed project would not result in exceedances of the *CEQR Technical Manual* construction noise screening thresholds at the north and east façades of 239 State Street. Total noise levels at this receptor would be in the "marginally unacceptable" category (as are existing conditions). Consequently, this receptor would not have the potential to experience a significant adverse construction noise impact.

Kings County Criminal Court (South and East Façades)

Intensity of Construction Noise

As shown in **Table 3.14-13**, the King County Criminal Court where windows face south and east only would potentially experience high levels of construction noise and readily noticeable

increases in noise level at times during the most noise-intensive construction activities. With the construction noise control measures described above, maximum $L_{EQ(1)}$ noise levels at this receptor would be in approximately the high 70s dBA at the façade. Consequently, the maximum noise levels predicted to be generated by on-site construction activities at this receptor would be expected to result in exceedances of the *CEQR Technical Manual* construction noise screening thresholds at times during the construction period. Total noise levels at this receptor would be in the "acceptable" to "clearly unacceptable" range.

Duration of Construction Noise from On-Site Sources

The maximum construction noise levels at this receptor, expected to be in the high 70s dBA and result in noise level increases of up to approximately 17 dBA, would occur during the approximately 6 months of exterior and slab demolition. Additionally, construction would result in noise level increments up to approximately 10 dBA during excavation and foundation construction (approximately 17 months) and up to approximately 8 dBA during superstructure construction (approximately 14 months). For the remaining months of construction of the proposed project, construction noise levels would not have the potential to exceed the *CEQR Technical Manual* construction noise screening thresholds.

Determination of Construction Noise Impacts

Based on the prediction of construction noise level increments up to approximately 17 dBA and a duration of CEQR screening threshold exceedances occurring for approximately 37 months over the course of 4 years, construction noise associated with the proposed actions would have the potential to result in a temporary significant adverse impact at the south and east façades of the Kings County Criminal Court. These receptors are discussed further in Section 3.15, "Mitigation-Brooklyn."

Kings County Criminal Court (North and West Façades)

As shown in **Table 3.14-13**, construction of the proposed project would not result in exceedances of the *CEQR Technical Manual* construction noise screening thresholds at the north and west façades of the Kings County Criminal Court. Total noise levels at this receptor would be in the "marginally unacceptable" category (as are existing conditions). Consequently, this receptor would not have the potential to experience a significant adverse construction noise impact.

The Boerum - 265 State Street

Intensity of Construction Noise

As shown in **Table 3.14-13**, the residences at 265 State Street would potentially experience moderate levels of construction noise and readily noticeable increases in noise level at times during the most noise-intensive construction activities. With the construction noise control measures described above, maximum $L_{EQ(1)}$ noise levels at this receptor would be in approximately the low 70s dBA at the façade. Consequently, the maximum noise levels predicted to be generated by on-site construction activities at this receptor would be expected to result in exceedances of the *CEQR Technical Manual* construction noise screening thresholds at times during the construction period. Total noise levels at this receptor would be in the "marginally unacceptable" range.

Duration of Construction Noise from On-Site Sources

The maximum construction noise levels at this receptor, expected to be in the low 70s dBA and result in noise level increments up to approximately 5 dBA, would occur during the approximately 6 months of exterior and slab demolition. Additionally, construction would result in noise level increments up to approximately 3 dBA during excavation and foundation construction (approximately 10 months in addition to the 6 months of exterior and slab demolition). For the remaining months of construction of the proposed project, construction noise levels would not exceed the *CEQR Technical Manual*

construction noise screening thresholds. While this receptor is immediately adjacent to the proposed construction work area and is predicted to have the potential to experience exceedances of the CEQR construction noise screening thresholds intermittently throughout demolition, excavation, and foundation work, the duration of the exceedances would be limited to short-term periods. Specifically, noise level increases due to construction of the proposed project would exceed the CEQR construction noise screening thresholds for an estimated total of 16 consecutive months.

Determination of Construction Noise Impacts

Construction noise level increments are predicted to be no greater than 6 dBA and the predicted CEQR screening threshold exceedances would occur over a limited duration (approximately 16 months). Additionally, total noise levels at this receptor throughout the duration of construction would remain in the marginally unacceptable category, as are the existing noise levels. Consequently, noise resulting from construction of the proposed project would not have the potential to result in a significant adverse impact at this receptor.

267 State Street

As shown in **Table 3.14-13**, construction of the proposed project would not result in exceedances of the *CEQR Technical Manual* construction noise screening thresholds at 267 State Street. Total noise levels at this receptor would be in the "marginally acceptable" category. Consequently, this receptor would not have the potential to experience a significant adverse construction noise impact.

85 Smith Street

As shown in **Table 3.14-13**, construction of the proposed project would not result in exceedances of the *CEQR Technical Manual* construction noise screening thresholds at 85 Smith Street. Total noise levels at this receptor would be in the "marginally unacceptable" category (as are existing conditions). Consequently, this receptor would not have the potential to experience a significant adverse construction noise impact.

310 Atlantic Avenue

As shown in **Table 3.14-13**, construction of the proposed project would not result in exceedances of the *CEQR Technical Manual* construction noise screening thresholds at 310 Atlantic Avenue. Total noise levels at this receptor would be in the "marginally unacceptable" category (as are existing conditions). Consequently, this receptor would not have the potential to experience a significant adverse construction noise impact.

296 Atlantic Avenue

As shown in **Table 3.14-13**, construction of the proposed project would not result in exceedances of the *CEQR Technical Manual* construction noise screening thresholds at 296 Atlantic. Total noise levels at this receptor would be in the "marginally unacceptable" category (as are existing conditions). Consequently, this receptor would not have the potential to experience a significant adverse construction noise impact.

284 Atlantic Avenue

As shown in **Table 3.14-13**, construction of the proposed project would not result in exceedances of the *CEQR Technical Manual* construction noise screening thresholds at 284 Atlantic Avenue. Total noise levels at this receptor would be in the "marginally unacceptable" category (as are existing conditions). Consequently, this receptor would not have the potential to experience a significant adverse construction noise impact.

278 Atlantic Avenue

As shown in **Table 3.14-13**, construction of the proposed project would not result in exceedances of the *CEQR Technical Manual* construction noise screening thresholds at 278 Atlantic Avenue. Total noise levels at this receptor would be in the "marginally unacceptable" category (as are existing conditions). Consequently, this receptor would not have the potential to experience a significant adverse construction noise impact.

CONCLUSIONS

Construction of the proposed project would be expected to potentially result in elevated noise levels at nearby receptors, and noise due to construction would at times be noticeable. However, noise from construction would be intermittent and of limited duration, and total noise levels would be in the "marginally acceptable" or "marginally unacceptable" range. Based on the prediction of construction noise level increments and the duration of CEQR screening threshold exceedances, construction noise associated with the proposed actions would have the potential to result in a temporary significant adverse impact at the south and west façades of 239 State Street and the south and east façades of the Kings County Criminal Court. Noise associated with the construction of the proposed project would not have the potential to result in a significant adverse noise impact at all other locations within the project area.

VIBRATION

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

CONSTRUCTION VIBRATION CRITERIA

For purposes of assessing potential structural or architectural damage, the determination of a significant impact was based on the vibration impact criterion used by the New York City Landmarks Preservation Commission (LPC) of a peak particle velocity (PPV) of 0.50 inches/second as specified in the DOB *Technical Policy and Procedure Notice* (*TPPN) #10/88*. For non-fragile buildings, vibration levels below 2.0 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) would have the potential to result in significant adverse impacts if they were to occur for a prolonged period.

ANALYSIS METHODOLOGY

Table 3.14-14 shows vibration source levels for typical construction equipment. The source vibration levels shown in **Table 3.14-14** were projected to nearby receptors to estimate the potential effects of construction vibration.

Table 3.14-14
Vibration Source Levels for Construction Equipment

8Equipment		PPVref (in/sec)	Approximate Lv (ref) (VdB)
Pile Driver (impact)	Upper range	1.518	112
	Typical	0.644	104
Pile Driver (Sonic)	Upper range	0.734	105
	Typical	0.170	93
Clam Shovel drop (slurry wall)		0.202	94
Hydromill (slurry wall)	In soil	0.008	66
	In rock	0.017	75
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
Source: Transit Noise and Vibration Impact Assessment, FTA-VA-90-1003-06, May 2006.			

CONSTRUCTION VIBRATION ANALYSIS RESULTS

The structures of most concern with regard to the potential for structural or architectural damage due to vibration are 239 State Street, the Kings County Criminal Court, 265 State Street, 85 Smith Street, 284 Atlantic Avenue, 278 Atlantic Avenue to their proximity to rock excavation activity. However, as a result of these structures' distances from the construction site, the potential for vibration levels at these buildings and structures would not be expected to exceed 2.0 in/sec PPV, including during pile/lagging installation, which would be the most vibration intensive activity associated with construction of the proposed project and would occur at least 55 feet from any of the existing structures. Additional receptors farther away from the project site would experience even less vibration than those listed above, which would not be expected to cause structural or architectural damage.

In terms of potential vibration levels that would be perceptible and annoying, the equipment that would have the most potential for producing levels that exceed the 65 VdB limit are vibratory hammers associated with pile/lagging installation. Pile installation would have the potential to produce perceptible vibration levels at receptor locations within a distance of approximately 550 feet depending on soil conditions. However, the operation would only occur for limited periods of time at a particular location and therefore would not have the potential to result in any significant adverse impacts.

CONCLUSIONS

The Applicant and/or its contractors would incorporate vibration monitoring for all historic structures located within 90 feet of the project site. Vibration levels during construction would not be permitted to exceed the 0.50 inches/second threshold considered acceptable for historic structures. Vibration-producing equipment would not operate in proximity to non-historic

structures such that they could potentially result in damage to these structures. Furthermore, construction would not result in extended periods of perceptible or annoying vibrations at surrounding receptors. Therefore, construction activities would not have the potential to result in significant adverse vibration impacts.

OTHER TECHNICAL AREAS

LAND USE AND NEIGHBORHOOD CHARACTER

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

Land Use

Construction activities would affect land use on the project sites, but would not affect land use conditions and patterns outside of this area. As is typical with construction projects, during periods of peak activity there would be some potential for disruption to the nearby area. There would be construction trucks and construction workers coming to the area as well as trucks and other vehicles backing up, loading, and unloading. These potential disruptions would be most pronounced within the immediate vicinity of the project site and would have more limited effects on land uses near the project site, as most construction activities would take place within the project site or within portions of sidewalks and curb lanes immediately adjacent to the project site along State Street, Smith Street, Atlantic Avenue, and Boerum Place. Overall, the temporary and localized nature of construction would not result in the potential for any significant adverse impacts on local land use patterns of the nearby area.

Neighborhood Character

Construction activities would adhere to the provisions of the New York City Building Code and other applicable regulations. In addition, throughout the construction period, measures would be implemented to control noise, vibration, and air emissions including dust. Construction fences would be erected around the perimeter of the project sites to reduce potentially undesirable views of construction areas, to buffer noise emitted from construction activities, and to protect the safety of pedestrians during construction. Access to surrounding residences and businesses would be maintained throughout the duration of the construction period. Overall, construction at the Brooklyn Site is not expected to result in significant adverse neighborhood character impacts in neighborhoods surrounding the project site.

SOCIOECONOMIC CONDITIONS

According to the *CEQR Technical Manual*, construction impacts to socioeconomic conditions are possible if the proposed project would entail construction of a long duration that could affect access to and thereby viability of a number of businesses, and if the failure of those businesses has the potential to affect neighborhood character. Construction at the Brooklyn Site would not affect the operations of any other nearby businesses or obstruct major thoroughfares used by customers or businesses. Sidewalk bridges and sidewalk closures would not front any active businesses, and pedestrians would continue to have access to businesses on surrounding blocks. Construction would have the potential to create direct benefits resulting from expenditures on labor, materials, and services, and indirect benefits near the proposed development site created by expenditures by material suppliers, construction workers, and other employees involved in the construction activity. Construction also would contribute to increased tax revenues for the City and State,

including those from personal income taxes. Construction activities at the Brooklyn Site would not have the potential to result in any significant adverse impacts on socioeconomic conditions.

COMMUNITY FACILITIES

According to the *CEQR Technical Manual*, construction impacts to community facilities are possible if a community facility were directly affected by construction (e.g., if construction would disrupt services provided at the facility or close the facility temporarily, etc.).

The proposed project would replace the existing Brooklyn Detention Complex with a new detention facility but would not physically displace or alter any other existing community facilities (i.e., public schools, child care centers, libraries, health care facilities, or police and fire protection services 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 in the project area. Emergency vehicle access to the project site would be maintained throughout the construction period, and emergency services and response times are not expected to be materially affected by construction. Therefore, construction at the Brooklyn Site would not have the potential to result in any significant adverse impacts on community facilities.

OPEN SPACE

No open space resources would be used for staging or other construction activities. The nearest open spaces resource is 124 Livingston Street approximately 270 feet to the north of the project site. Access to this open space resource and any other nearby open space resources would be maintained throughout the duration of the construction period. In addition, measures would be implemented to control air emissions, dust, noise, and vibration on the project site during construction. Therefore, construction at the Brooklyn Site would not have the potential to result in any significant adverse impacts on open space.

HISTORIC AND CULTURAL RESOURCES

According to the *CEQR Technical Manual*, construction impacts to historical and cultural resources considers the potential for physical damage to archaeological resources and architectural resources, as identified in Section 3.5, "Historic and Cultural Resources."

In a comment letter dated August 8, 2018, LPC determined that the Brooklyn Site is not archaeologically significant. Therefore, additional archaeological analysis of the Brooklyn Site is not warranted and the construction of the proposed project on the Brooklyn Site would not result in significant adverse impacts on archaeological resources.

In the future with the proposed project, the existing Brooklyn Detention Complex would be demolished and redeveloped with an approximately 395-foot-tall detention facility. As there are no architectural resources on the project site, the proposed project would not have the potential for adverse impacts on such resources. There are four known architectural resources and two potential architectural resources in the study area. The Brooklyn Central Courthouse, a known architectural resource, is located within 90 feet of the proposed project. The Brooklyn Central Courthouse may be directly affected through the construction of new pedestrian bridges from 275 Atlantic Street to 120 Schermerhorn Street. Mitigation cannot be fully defined due to the fact that there are no designs or details with respect to the proposed pedestrian bridges. Therefore to minimize or mitigate the potential significant adverse impact to the historic appearance of the State Street façade of the courthouse resulting from construction of potential pedestrian bridges, consultation would be undertaken with LPC regarding their design. Following consultation with LPC, if the significant adverse impact created by the pedestrian bridges is unmitigated, other

options, such as the potential construction of a tunnel from 275 Atlantic Street to 120 Schermerhorn Street, would be explored to avoid the potential significant adverse impact. This potential significant adverse impact is discussed in more detail in Section 3.15, "Mitigation-Brooklyn."

Additionally, construction-related activities to demolish the existing detention facility on the project site and to build the proposed project could potentially result in inadvertent adverse direct impacts to the Brooklyn Central Courthouse. Therefore, to avoid the potential for inadvertent construction-related impacts to this architectural resource, a CPP would be prepared in consultation with LPC and implemented in coordination with a licensed professional engineer. The CPP would follow the guidelines set forth in Section 522 of the *CEQR Technical Manual* and LPC's *New York City Landmarks Preservation Commission Guidelines for Construction Adjacent to a Historic Landmark* and *Protection Programs for Landmark Buildings*. The CPP would also comply with the procedures set forth in DOB's *Technical Policy and Procedure Notice (TPPN) #10/88*. The CPP would include provisions for preconstruction inspections, monitoring the building for cracks and movement, installation of physical protection as appropriate, and provisions for stopping work if monitoring thresholds are exceeded or damage occurs.

HAZARDOUS MATERIALS

The proposed project would result in demolition and site clearing of the Brooklyn Detention Complex on the project site, and construction of the jail facility with residential, and community facility uses. A detailed assessment of the potential risks related to the construction of the proposed project with respect to any hazardous materials is described in Section 3.7, "Hazardous Materials."

Testing identified ACM (e.g., in floor tiles, insulation materials and roofing elements) and LBP, but samples of caulk would be considered PCB-free. There are a variety of federal, state, and local regulatory requirements that would be followed to address disturbing and disposing of these materials.

Construction of the new building would require extensive excavation. The potential for impacts would be avoided by preparing (for DEP review and approval) a RAP and associated CHASP for implementation during the subsurface disturbance associated with construction. Occupancy permits would only be issued once DEP received documentation that the RAP and CHASP were properly implemented.

With the implementation of applicable regulatory requirements for ACM, LBP, etc. related to the demolition of the existing building and the measures required by the RAP/CHASP for subsurface disturbance, the potential for significant adverse hazardous materials impacts from construction at the project sites would be avoided. ✷