A. INTRODUCTION

This chapter summarizes the construction program for the proposed project and considers the potential for adverse impacts to occur during construction of the project. The construction phasing and schedule for the proposed project are described, followed by the types of activities likely to occur during construction. An assessment of potential impacts of construction activity and the methods that may be employed to avoid or minimize the potential for significant adverse impacts are then presented.

As described below, the analysis concludes that the proposed project would not result in extensive construction-related effects for an extended period of time with respect to any of the technical areas of concern. Therefore, no significant adverse impacts are expected to occur as a result of construction.

B. OVERVIEW OF CONSTRUCTION ACTIVITIES

Construction of the proposed project is expected to begin in 2012 and last approximately 16 months. **Table 13-1** shows the preliminary construction schedule for the project. It would proceed in several stages, some of which would overlap: abatement and demolition; excavation and grading; site preparation; infrastructure improvements; building construction; Timber Shed and Building B reconstruction and/or rehabilitation; interior construction; and site finishes and improvements. These stages are described in greater detail below.

Table 13-1
Preliminary Construction Schedule

Task	Month															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Abatement and Demolition																
Excavation and Grading																
Site Preparation																
Infrastructure Improvements																
Building Construction																
Building Reconstruction and/or Rehabilitation																
Interior Construction																
Site Finishes and Improvements																

Sources: BNYDC and AKRF, Inc.

ABATEMENT AND DEMOLITION

As discussed in Chapter 7, "Hazardous Materials," the proposed project would include appropriate health and safety and investigative/remedial measures—including, as necessary, abatement of asbestos, lead-based paint, and polychlorinated biphenyls (PCBs) in existing buildings, and removal of any petroleum storage tanks—that would precede or govern demolition, reconstruction and/or rehabilitation, and soil disturbance activities on the project

site. Building 198 and the electrical transformer which it formerly housed were removed from the project site in Spring 2011 by the United States Army-National Guard Bureau (NGB), which ~~will~~ conducted ~~further~~ remediation ~~on the site~~ for PCBs. ~~if deemed warranted by ongoing investigations. In addition, where soil contamination is suspected, the soils would be removed prior to general excavation.~~ In the event that additional soil contamination is encountered at or near the site of Building 198 or elsewhere on the project site, the soils would be removed and properly disposed of prior to or during general excavation.

Prior to demolition or renovation, a New York City-certified asbestos investigator would inspect the existing buildings on the project site for asbestos-containing materials (ACMs) that would be disturbed by the proposed demolition or renovation activities. The ACMs would be removed by a New York State Department of Labor (DOL)-licensed asbestos abatement contractor prior to building demolition or renovation. Asbestos abatement is strictly regulated by the New York City Department of Environmental Protection (DEP), DOL, United States Environmental Protection Agency (EPA), and the United States Occupational Safety and Health Administration (OSHA) to protect the health and safety of construction workers and nearby residents and workers. Depending on the extent and type of ACMs, these agencies would be notified of the asbestos removal project and may inspect the abatement site to ensure that work is being performed in accordance with applicable regulations. After the abatement is completed, and the work areas have passed a visual inspection and monitoring, if applicable, the general demolition work would begin. In addition, the demolition of buildings with the potential to disturb lead-based paint would be carried out in accordance with the applicable regulations.

Suspected PCB-containing equipment (such as transformers and other electrical equipment including fluorescent light ballasts) that would be disturbed by building renovation or demolition would be evaluated prior to disturbance. Unless labeling or test data indicate that the suspected PCB-containing equipment does not contain PCBs, it would be assumed to contain PCBs and removed and disposed of at properly licensed facilities in accordance with all applicable regulatory requirements. As discussed in Chapter 7, "Hazardous Materials," Building 198 and the electrical transformer it housed have been removed from the project site by NGB, which also remediated the site~~; the NGB will determine additional remediation measures~~.

Although the Phase II site investigation did not reveal contaminated soil or groundwater beneath the site (with the exception of the area around the former PCB-containing transformer in Building 198, remediation of which ~~is currently being~~ was recently conducted by the NGB ~~as part of an ongoing federal cleanup~~), as a contingency measure soil disturbance activities would be conducted under a DEP-approved Remedial Action Plan (RAP) and Construction Health and Safety Plan (CHASP). The RAP would include procedures for managing wastes including excavated soil. These would include procedures for handling, stockpiling, reuse or transportation and disposal of excavated material, and contingency measures should contamination or petroleum storage tanks be encountered. The CHASP would include measures to protect workers, the public, and the environment, including detailed procedures, such as monitoring, for managing both known contamination issues and any unexpectedly encountered contamination. Any portions of the proposed project site that would not be capped with structures or paved surfaces would be covered with a layer of imported clean fill.

Any unregistered petroleum storage tanks unexpectedly encountered would be registered with the New York State Department of Environmental Conservation (DEC) and/or the New York City Fire Department, if required, and properly assessed and removed along with any

contaminated soil, in accordance with all applicable regulatory requirements including DEC requirements for spill reporting and cleanup.

The abatement and demolition stage is expected to last approximately 3 months.

EXCAVATION AND GRADING

This phase of the proposed project would involve excavation and grading for conventional site improvements, and excavation for grade beams. It is not expected that blasting or rock excavation would be necessary. The excavation and grading phase of work would require approximately 2 months.

SITE PREPARATION

Site preparation would include all utility runs, curbing, and sidewalks. It would also involve site cleanup, vegetation, and tree removal, excluding (to the extent practicable) four large, mature trees along Nassau Street, which would be preserved. The measures recommended for the protection of these trees provided in the site's 2009 tree survey report would be followed during construction activities to limit the potential effects of the proposed project on these trees to the maximum extent practicable. Specifically, the critical root zone of the trees would be protected through the placing of construction fencing around this zone.

This phase of work would require approximately 3 months and would proceed concurrent with the excavation and grading phase, described above.

INFRASTRUCTURE IMPROVEMENTS

Utility improvements at the site would include utility connections to existing water, sewer, electric, gas, and telecommunication lines. This phase of work would take approximately 3 months on-site, extending for an additional month for residual connections off-site, for a total of about 4 months.

BUILDING CONSTRUCTION

Following excavation and grading, piles would be driven for all of the proposed new buildings. Pile driving would be followed by construction of grade-beams and the structural slabs. The structural steel would then be erected, followed by the roof systems, exterior building envelopes, and storefronts. Building construction would take approximately 9 months. This phase would be concurrent with the building reconstruction or rehabilitation of the Timber Shed and Building B, described below.

BUILDING RECONSTRUCTION AND/OR REHABILITATION

The Timber Shed and Building B would be retained on the site and reutilized for retail and community facility/non-profit office uses. The work required to reconstruct and/or rehabilitate these buildings would include stabilization, cleaning, and repair or reconstruction, where needed. Work on Building B would meet the Secretary of the Interior's Standards for the Treatment of Historic Properties and work on the Timber Shed would seek to meet those standards. The Brooklyn Navy Yard Development Corporation (BNYDC) and the developer to be designated by BNYDC pursuant to a Request for Proposals would develop and implement a Construction Protection Plan (CPP) to protect Building B and the Timber Shed during their rehabilitation

and/or reconstruction, demolition of the other existing structures on the site, and construction of the new buildings on the site.

The work required for reconstruction and/or rehabilitation of the Timber Shed and Building B would take approximately 9 months and would occur concurrently with the construction of the proposed new buildings.

INTERIOR CONSTRUCTION

This phase of work would include the construction of interior partitions, installation of lighting fixtures, interior finishing (flooring, painting, etc.), and mechanical and electrical work for all of the proposed new buildings. Interior construction would overlap with building construction and building reconstruction and/or rehabilitation for 3 months, extending for about an additional 4 months, for a total of about 7 months. This stage of construction is the quietest and does not generate fugitive dust.

SITE FINISHES AND IMPROVEMENTS

This phase of building construction would involve final finishing details on the new buildings' facades, construction of the interior tenant improvements, construction of the new parking lot and driveways, and all landscaping improvements to the project site, including the green roof on Building C, plantings, decorative pavers, lighting, and signage. The site finishes and improvements phase of work would require approximately 4 months.

WORKERS AND TRUCK TRIP ESTIMATES BY CONSTRUCTION PHASE

For the abatement and demolition phase (Months 1 through 3), the project would employ an average of 30 workers per day. During this phase, on a typical day approximately 5 truck trips would be generated. The excavation and grading phase of work would generate approximately 5-10 truck trips on a typical day. The site preparation and building construction phases would begin in Month 4 and would continue through Month 12 and would generate, on a typical day, approximately 10-15 truck trips. The infrastructure improvements phase would begin in Month 6 and would continue through Month 9, generating approximately 3 truck trips on a typical day. The number of workers on the project site during the excavation and grading, site preparation and building construction, reconstruction and adaptive reuse, and infrastructure improvements phases—Months 4 through 12—would increase from approximately 30 to 180. Interior construction would occur during Months 10 through 16 and would employ approximately 125 workers per day and generate approximately 10 truck trips on a typical day. The site finishes and improvements phase would take place during Months 13 through 16 and would employ 100 workers per day. This phase would also generate 10 truck trips on a typical day.

A month-by-month assessment of workers and delivery trucks expected during the construction of the proposed project is presented in **Table 13-2**. In this conceptual construction schedule, the number of workers and truck deliveries would peak from January 2013 to April 2013 with 225 workers per day and 20 trucks per day.

Table 13-2
Daily Number of Construction Workers and Delivery Trucks

2012	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Workers	30	30	30	30	60	90	120	150	180	225	225	225
Trucks	5	5	5	20	20	16	11	11	11	18	18	18
2013	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Workers	225	225	225	225	-	-	-	-	-	-	-	-
Trucks	20	20	20	20	-	-	-	-	-	-	-	-

Source: BNYDC and AKRF, Inc.

C. GENERAL CONSTRUCTION PRACTICES

CONSTRUCTION EQUIPMENT

Typical equipment used for demolition, excavation and grading, and site preparation for the project would include bulldozers, backhoes, compaction equipment, tractors, pile-drivers, concrete pumping trucks, and steel erection equipment (mobile cranes). Other types of equipment that would be used include hoist complexes, dump trucks and loaders. Trucks would deliver concrete and other building materials, and remove excavated material as well as demolition and construction debris. The construction equipment likely to be used during the building construction and building reconstruction or adaptive reuse phases would include compressors, cranes, hoists, bending jigs, and welding machines. Trucks would remain in use during building construction and building reconstruction or adaptive reuse phases for material supply and construction waste removal. Interior construction and site finishes and improvements work would employ a large number of construction workers, and a wide variety of fixtures and supplies would be delivered to the site.

DELIVERIES, ACCESS, AND PARKING

It is expected that access to the construction site for delivery of materials would be controlled, scheduled, and managed to minimize impacts on street traffic. Worker parking is expected to be available on-site. Flaggers would be posted, as necessary, throughout the duration of the construction to manage and maintain traffic flows throughout the construction period. Unscheduled deliveries would be minimized to avoid traffic impacts.

HOURS OF WORK

Construction activities would take place in accordance with all relevant New York City laws and regulations, which allow construction activities to take place between 7:00 AM and 6:00 PM. Construction work would begin at 7:00 AM on weekdays, with most workers arriving between 6:00 AM and 7:00 AM. Typically, work would end at 3:30 PM, but it could be extended until 6:00 PM for such tasks as finishing a concrete pour. Limited extended workdays could occur during some tasks over the course of construction, but are expected to be minimal. Extended workday activities would not include all construction workers on-site, but only those involved in the specific task.

At limited times over the course of constructing a building, weekend work may be required. Weekend work requires a permit from the New York City Department of Buildings (DOB) and, in certain instances, approval of a noise mitigation plan from DEP under the City's Noise Code. The Noise Control Code (Local Law 113 of 2005), effective July 1, 2007, limits construction

(absent special circumstances as described below) to weekdays between the hours of 7:00 AM and 6:00 PM, and sets noise limits for certain specific pieces of construction equipment. Construction activities occurring after hours (weekdays between 6:00 PM and 7:00 AM and on weekends) may be permitted only to accommodate: (i) emergency conditions; (ii) public safety; (iii) construction projects by or on behalf of City agencies; (iv) construction activities with minimal noise impacts; and (v) undue hardship resulting from unique site characteristics, unforeseen conditions, scheduling conflicts, and/or financial considerations. In such cases, the numbers of workers and pieces of equipment in operation would be limited to those needed to complete the particular authorized task. Therefore, the level of activity for any weekend work would be less than a normal workday. To the extent required, the typical weekend workday would be on Saturday, beginning with worker arrival and site preparation at 7:00 AM, and ending with site cleanup at 5:00 PM.

SIDEWALK AND LANE CLOSURES

As is typical with construction projects in the city, parking lane closures would be required during construction. Parking lane closures would be expected along the east side of Navy Street adjacent to the project site. Construction of the proposed project would also require temporarily either narrowing or relocating portions of the bicycle lane on the north side of Nassau Street. In addition, some portions of the northern sidewalk of Nassau Street and the eastern sidewalk of Navy Street adjacent to the project site would be narrowed temporarily during construction. No other substantial parking lane or sidewalk closures would be expected to occur on streets bordering the project site during construction.

Other roadway closures and temporary sidewalk narrowings could occur along the west and south sides of the project site for short periods of time during the infrastructure improvements phase. All lane and sidewalk closures during construction would be coordinated with the New York City Department of Transportation's Office of Construction Mitigation and Coordination (OCMC). The project's maintenance and protection of traffic (MPT) plans would be developed and reviewed with the New York City Department of Transportation (DOT).

STAGING AND LAYDOWN AREAS

Staging and laydown areas are expected to be located within the project site, with the occasional use of the lane and sidewalk closure areas that are anticipated as part of the project. Materials that are needed during the day, such as reinforcing bars and prefabricated pieces, are usually delivered early in the day and are stored until needed. In certain cases, several days' worth of construction materials would be stored.

D. PROBABLE IMPACTS OF THE PROPOSED CONSTRUCTION

LAND USE, ZONING AND PUBLIC POLICY

Construction activities would affect land use on the project site but would not alter surrounding land uses. As is typical with construction projects, during periods of peak construction activity there would be some disruption, predominantly noise, to the nearby area. There would be construction trucks and construction workers coming to the site. There would also be noise, sometimes intrusive, from building construction as well as trucks and other vehicles backing up, loading, and unloading. These disruptions would be temporary in nature and would have limited effects on land uses within the study area, particularly as most construction activities would take

place within the project site or within portions of sidewalks, curbs, and travel lanes of public streets immediately adjacent to the project site. Overall, while the construction at the site would be evident to the local community, the limited duration of construction should not result in significant or long-term adverse impacts on local land use patterns or the character of the nearby area.

SOCIOECONOMIC CONDITIONS

Construction of the proposed project would have direct, positive socioeconomic benefits resulting from expenditures on labor, materials, and services, and indirect socioeconomic benefits created by expenditures by material suppliers, construction workers, and others involved in the project. An example of these indirect benefits would be the construction workers' purchases of food and other items from local convenience good retailers over the course of the construction period. Construction of the proposed project also would contribute to increased tax revenues for the city and state, including those from personal income taxes.

COMMUNITY FACILITIES

There are two institutional facilities located in the area surrounding the project site: the P.S. 287 Dr. Bailey K. Ashford School and the Khalil Gibran International Academy. Both facilities are located on the west side of Navy Street, between Nassau and Concord Streets, southwest of the project site across Nassau Street. While construction of the proposed project would result in temporary increases in traffic during the construction period, access to and from these facilities would not be affected during the construction period. Construction fences around the project site would shield these facilities from the construction activities. As discussed below (see "Noise"), potential increases in noise levels on the nearby schools as a result of construction-related activities would be expected to be of limited duration. Therefore, construction of the proposed project would not have a significant adverse impact on community facilities.

OPEN SPACE

There are no publicly accessible open spaces within the project site, and no open space resources would be used for staging or other construction activities. The nearest open space is the 10.75-acre Commodore Barry Park, which is located directly across Nassau Street from the project site. At limited times, activities such as excavation and foundation construction may generate noise that could impair the enjoyment of nearby open space users, but such noise effects would be temporary. Construction fences around the project site would shield the park from construction activities. Construction of the proposed project would not limit access to the park or other open space resources in the vicinity of the project site. Therefore, construction of the proposed project would not result in significant adverse impacts on open space.

HISTORIC AND CULTURAL RESOURCES

As described in Chapter 5, "Historic and Cultural Resources," archaeological studies indicate that areas around the Admirals Row Officers' Quarters are sensitive for domestic features such as privies and cisterns, and that additional archaeological investigation is warranted. Additional archaeological investigations would be undertaken in the front and rear yards of the Officers' Quarters by BNYDC and the developer to be designated by BNYDC following the demolition of the buildings on the project site. These investigations would be incorporated into the overall construction schedule and would not be expected to add to the schedule discussed in this

chapter. In addition, archaeological monitoring would be undertaken during ground disturbing activities on the site, including demolition and new construction, to allow for the identification of potentially significant features and human remains, if encountered.

The project site has been determined eligible for listing on the State and National Registers as a historic district. The proposed project would demolish all of the structures on the site except for Building B and the Timber Shed, which would be rehabilitated and/or reconstructed and adaptively reused as part of the proposed project. Measures identified to partially mitigate this adverse impact include the retention and reuse of Building B and the Timber Shed; preservation of existing, mature trees on the project site along Nassau Street; updating of photo-documentation; architectural salvage; and a site commemoration plan.

As described above, Building B and the Timber Shed would be rehabilitated and/or reconstructed and reused as part of the proposed project, thereby returning these substantially deteriorated buildings to productive use. BNYDC and the developer to be designated by BNYDC would develop and implement a CPP to protect Building B and the Timber Shed during their rehabilitation as well as during demolition of existing structures and construction of the new buildings on the site. Further, Building B would be rehabilitated as per the Secretary of the Interior's Standards for the Treatment of Historic Properties. The rehabilitation or reconstruction of the Timber Shed would seek to meet the Secretary of the Interior's Standards.

Buildings that are located in the broader S/NR-eligible Brooklyn Navy Yard historic district and are within 90 feet of proposed construction activities would be included in the project's CPP to avoid potential inadvertent construction-related impacts on these resources, including ground-borne vibration, falling debris, and accidental damage from heavy machinery. Brooklyn Navy Yard historic district buildings within 90 feet of the project site include Building 275 to the east, and Buildings 74, 121, and the Sands Street gatehouse structures to the north. The CPP would comply with the procedures set forth in DOB's *Technical Policy and Procedure Notice (TPPN) #10/88*, concerning procedures for the avoidance of damage to adjacent historic structures from nearby construction. It would also follow the guidelines set forth in Section 523 of the *CEQR Technical Manual*, including conforming to the New York City Landmarks Preservation Commission's (LPC) *New York City Landmarks Preservation Commission Guidelines for Construction Adjacent to a Historic Landmark* and *Protection Programs for Landmark Buildings*.

HAZARDOUS MATERIALS

Measures to address potential construction-period hazardous materials impacts of the proposed project are described above in "Abatement and Demolition." With implementation of the measures noted above and discussed in Chapter 7, "Hazardous Materials," no significant adverse impacts related to hazardous materials would be expected to result from construction of the proposed project.

NATURAL RESOURCES

As with all development on vegetated land, the vegetation within the limit of disturbance would be removed for the proposed project. While this would not result in a significant impact to the habitats present in the area, the vegetation and associated on-site habitat would be lost. However, plantings to be incorporated into the landscaping of the proposed project would offset some of the loss of vegetation and habitat disturbed during construction. The selection of plant species would take into consideration habitat value for wildlife such as birds and butterflies.

The existing vegetation to remain upon completion of construction (to the extent practicable) would be four large trees: one scarlet oak and three American elms located in the southern portion of the project site along Nassau Street. These trees may benefit from the clearing of competing vegetation in the surrounding area. The measures recommended for the protection of these trees provided in the 2009 tree survey report (see **Appendix B**) would be followed during demolition and construction activities to limit the potential effects of the proposed project on these trees to the maximum extent practicable. As described above, the remaining trees on the site were identified in the 2009 tree survey as strong candidates for removal.

New plantings would include street trees along Nassau Street and Navy Street to beautify the proposed development and keep the "wooded" look of the site. Native plantings proposed throughout the project site could include both flowering and fruiting species chosen to provide habitat and food resources for wildlife such as birds and butterflies. ~~BNYDC and t~~The developer to be designated by BNYDC would consult with the New York City Department of Parks and Recreation (DPR) to establish a list of desirable trees to be used on the project site and along the bordering streets. Therefore, construction on the site would not have a significant adverse impact on natural resources.

TRANSPORTATION

During construction, trips would be generated by the workers traveling to and from the site, as well as from construction-related truck trips.

DAILY WORKFORCE

The estimated average number of construction workers on site at any one time would vary, depending on the stage of construction, as detailed below:

- Abatement and demolition would require approximately 30 workers on-site;
- Excavation and grading, site preparation, building construction, building reconstruction or adaptive reuse, and infrastructure improvements would require the labor of 30 to 180 workers per day, depending on the exact tasks being performed;
- Interior construction would employ approximately 125 workers per day; and
- The site finishes and improvements phase would require approximately 100 workers per day.

These activities would not necessarily occur simultaneously. It is estimated that at the peak of construction, 225 workers could be employed at the project site during a given day as shown above in **Table 13-2**.

CONSTRUCTION WORKER TEMPORAL DISTRIBUTIONS AND MODAL SPLITS

Given typical construction hours, worker trips would not be concentrated in the peak traffic analysis hours and would not represent a substantial increment during those peak traffic analysis hours. As described above, construction work shifts would typically begin by 7:00 AM and finish around 3:00 or 3:30 PM. Most construction worker arrivals would occur before the typical 8 to 9 AM traffic peak period, and construction worker departures would generally occur just before the 5 to 6 PM evening commuter peak period. As presented in the *Atlantic Yards Arena and Redevelopment Project FEIS (2006)*, commuting to work via auto for construction occupations in the study area is approximately 55 percent, with an average auto occupancy rate of 1.9. Therefore, it is expected that roughly half of the construction workers for the proposed

project would commute to and from the project site via auto. Since the study area is well served by mass transit—including the F subway line and several bus routes including the B57, B62, and B69—it is expected that a substantial number of construction workers also would use mass transit to commute to and from the project site.

TRUCK DELIVERIES

Truck deliveries would be spread throughout the day, depending on the construction phase. The breakdown of the number of trucks (for materials delivery and removal of debris/scrap from construction operations) that are anticipated during the various construction activities is as follows:

- Abatement, and demolition: approximately 5 trucks per day;
- Excavation and grading: approximately 5-10 trucks per day;
- Site preparation, building construction, and building reconstruction and/or rehabilitation: approximately 10-15 trucks per day;
- Infrastructure improvements: approximately 3 trucks per day;
- Interior construction: approximately 10 trucks per day; and
- Site finishes and improvements: approximately 10 trucks per day.

The trucks would arrive at and depart from the project site via DOT-designated truck routes, which include Flushing Avenue, Nassau Street, Navy Street, and Sands Street. To minimize traffic disruptions, oversized equipment would be delivered at night.

PEAK HOUR CONSTRUCTION WORKER VEHICLE AND TRUCK TRIPS

Site activities would mostly take place during the typical construction shift of 7 AM to 3:30 PM. While construction truck trips would be made throughout the day (with more trips made during the early morning) and most trucks would remain in the area for short durations, construction worker travel would typically take place during the hours immediately before and after the work shift. For analysis purposes, each worker vehicle was assumed to arrive in the morning and depart in the afternoon or early evening, whereas each truck delivery was assumed to result in two truck trips during the same hour (one "in" and one "out").

The estimated daily vehicle trips were distributed throughout the workday based on projected work shift allocations and conventional arrival/departure patterns of construction workers and trucks. For construction workers, the majority (80 percent) of the arrival and departure trips would take place during the hour before and after each shift (6-7 AM for arrival and 3-4 PM for departure on a normal day shift). For construction trucks, deliveries would occur throughout the day when the construction site is active and would vary depending on the phase of construction. Construction truck deliveries would peak during the hour before the normal work day (25 percent of daily total), overlapping with construction worker arrival traffic.

Based on these assumptions, peak hour construction traffic was estimated for the entire construction period. The construction hourly trip projections for the first quarter of 2013, when the number of workers and truck deliveries is expected to peak, are summarized in **Table 13-3**.

As shown in **Table 13-3**, construction activities would result in a maximum combined auto and truck traffic of 63 and 53 vehicle trips during the 6-7 AM and 3-4 PM peak hours, respectively, in the first quarter of 2013. As described above, construction worker commuting trips would occur during off-peak hours and would not represent a substantial increment during peak travel periods.

Distributed to various roadways near the project site, these incremental construction vehicle trips would not result in more than 50 vehicle-trips (the *CEQR Technical Manual's* threshold for a detailed analysis) at any intersection. Therefore, the traffic increase due to construction activities for the proposed project is not expected to result in significant adverse impacts.

Table 13-3
Peak Construction Vehicle Trip Projections

Hour	Auto Trips			Truck Trips			Total		
	In	Out	Total	In	Out	Total	In	Out	Total
5 AM - 6 AM	3	0	3	0	0	0	3	0	3
6 AM - 7 AM	51	2	53	5	5	10	59	4	63
7 AM - 8 AM	10	0	10	2	1	3	12	1	13
8 AM - 9 AM	0	0	0	1	1	3	2	1	3
9 AM - 10 AM	0	0	0	1	1	2	1	1	2
10 AM - 11 AM	0	0	0	1	1	2	1	1	2
11 AM - 12 PM	0	0	0	1	1	2	1	1	2
12 PM - 1 PM	0	0	0	1	1	2	1	1	2
1 PM - 2 PM	0	0	0	1	2	2	1	1	2
2 PM - 3 PM	0	4	4	5	5	10	1	13	14
3 PM - 4 PM	0	51	51	1	1	2	1	52	53
4 PM - 5 PM	2	6	8	0	0	0	2	6	8
5 PM - 6 PM	0	3	3	0	0	0	0	3	3
6 PM - 7 PM	0	0	0	0	0	0	0	0	0

Notes: Hourly construction worker and truck trips were derived from projected estimates of 225 workers and 20 trucks making two daily trips each (arrival and departure) in the first quarter of 2013. Numbers of construction worker vehicles were calculated using a 55-percent auto split with an average auto-occupancy of 1.9.

PARKING

Construction activities would generate an estimated maximum daily parking demand of up to 64 spaces during the peak construction phase. As described above, it is expected that the construction workers would be able to park their vehicles on-site.

TRANSIT AND PEDESTRIANS

As discussed above and presented in **Table 13-3**, construction of the proposed project would result in the need for 225 construction workers per day during peak construction. With approximately 55 percent of these construction workers assumed to commute by auto, the remaining 45 percent, approximately 101 workers, are assumed to commute to and from the project site via mass transit. This level of increased transit usage, especially during hours that are outside of the commuter peak periods, would not result in the potential for any significant adverse transit impacts. Similarly, the incremental pedestrian trips would also not result in the potential for any significant adverse pedestrian impacts.

AIR QUALITY

Construction activities have the potential to impact air quality as a consequence of engine emissions from on-site construction equipment, as well as dust generating activities. In general, much of the heavy equipment used in construction has diesel-powered engines and produces relatively high levels of nitrogen oxides and particulate matter. Gasoline engines produce relatively high levels of carbon monoxide. Fugitive dust is composed of particulate matter. As a result, the primary air pollutants of concern for construction activities include nitrogen dioxide

(NO_2), particulate matter with an aerodynamic diameter of less than or equal to 10 micrometers (PM_{10}), particulate matter with an aerodynamic diameter of less than or equal to 2.5 micrometers ($PM_{2.5}$), and carbon monoxide (CO).

The main component of diesel exhaust that has been identified as having an adverse effect on human health is fine particulate matter ($PM_{2.5}$). As described above, the duration of the proposed project's construction is expected to be short-term (less than two years). Nevertheless, in order to minimize the project's potential to have construction-period impacts on air quality, BNYDC would include in the lease or other legally binding agreement with the developer to be designated pursuant to the RFP a requirement that the following measures be implemented, to the extent commercially feasible:

1. *Clean Fuel*. Ultra-low-sulfur diesel (ULSD) fuel would be used exclusively for all diesel engines throughout construction. This would enable the use of tailpipe reduction technologies (see below) and would directly reduce diesel particulate matter (DPM) and sulfur oxides (SO_x) emissions;

2. *Planning*. Certain emission sources (e.g., concrete trucks and pumps, cranes, large generators) would be located as far as practicable from residential buildings to the west of the project site, public facilities and schools to the southwest of the project site, and public open spaces to the south of the project site;

3. *Idle Time Restrictions.* The construction specifications would include the restriction of on-site vehicle idle time to three minutes for all vehicles that are not using the engine to operate a loading, unloading, or processing device (e.g., concrete mixing trucks);

4. *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, such as concrete mixing and pumping trucks) would utilize the best available tailpipe technology for reducing DPM emissions. Diesel particle 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 and all controlled-fleet trucks would utilize DPFs or other tailpipe reduction technology, either original equipment manufacturer or retrofit technology with add-on controls, verified to reduce DPM emissions by at least 90 percent (when compared with the uncontrolled exhaust of an equivalent engine). Ninety percent reduction has been verified by a study of actual reductions of $PM_{2.5}$ emissions from comparable engines used at a New York City construction site. Controls may include active DPFs,[1] if necessary;

5. *Utilization of Tier 2 or Newer Equipment.* In addition to the tailpipe controls commitments, the construction program would mandate the use of Tier 2[2] (or newer) construction equipment for

[1] Two types of DPFs are currently used: passive and active. Most DPFs currently in use are the "passive" type, which means that the heat from the exhaust is used to regenerate (burn off) the PM to eliminate the buildup of PM in the filter. Some engines do not maintain temperatures high enough for passive regeneration. In such cases, "active" DPFs can be used (i.e., DPFs that are heated either by an electrical connection from the engine, by plugging in during periods of inactivity, or by removal of the filter for external regeneration).

[2] The first federal regulations for new nonroad diesel engines were adopted in 1994, and signed by EPA into regulation in a 1998 Final Rulemaking. The 1998 regulation introduces Tier 1 emissions standards for all equipment 50 hp and greater and phases in the increasingly stringent Tier 2 and Tier 3 standards

nonroad diesel engines greater than 50 hp. The use of newer engines is expected to reduce the likelihood of DPF plugging due to soot loading (i.e., clogging of DPF filters by accumulating particulate matter); and the more recent the Tier, the cleaner the engine for all criteria pollutants, including PM. In addition, because all engines undergo some deterioration over time, newer, as well as better maintained, engines will emit less PM than their older Tier or unregulated counterparts. Therefore, restricting site access to equipment with lower engine-out PM emission values would enhance this emissions reduction program and implementation of DPF systems, as well as reduce maintenance frequency due to soot loading (i.e., less downtime for construction equipment to replace clogged DPF filters).

Construction also has the potential to adversely affect air quality as a result of activities that generate fugitive dust. In order to minimize the project's potential to have construction-period adverse affects on air quality, BNYDC would include in the lease or other legally binding agreement with the developer to be designated pursuant to the RFP a requirement that the following components be implemented as part of the construction program, to the extent feasible:

1. *Planning*. Fugitive dust control plans could be required as part of contract specifications;
2. *Watering*. Truck routes and exposed excavation areas would be watered as needed;
3. *Cleaning*. Truck exit areas would be established for washing off the wheels of all trucks that exit the construction sites, and could include drive off pads;
4. *Stabilization*. In cases where truck routes would remain in the same place for an extended period, the routes could be stabilized, covered with gravel, or temporarily paved to avoid the re-suspension of road dust; and
5. *Truck Covers*. Dust covers for dump trucks would be required.

As described above, the duration of the proposed project's construction is expected to be short-term (less than two years). In addition, an emissions control program would be implemented to minimize potential construction-period effects on air quality. Therefore, no significant adverse air quality impacts would be expected due to the proposed project's construction activities, either near the construction site or along any of the vehicle routes leading to and from the site.

NOISE

Impacts on community noise levels during construction can result from noise from construction equipment operation, and from construction and delivery vehicles traveling to and from the site. Noise and vibration levels at a given location are dependent on the type and quantity of construction equipment being operated, the acoustical utilization factor of the equipment (i.e., the percentage of time a piece of equipment is operating), the distance from the construction site, and any shielding effects (from structures such as buildings, walls, or barriers). Noise levels of typical construction equipment are shown in **Table 13-4**. Noise levels caused by construction activities would vary widely, depending on the phase of construction and the location of the construction activities relative to noise sensitive receptor locations. Noise sensitive receptors in the vicinity of the project site include residential uses to the west of the project site, public facilities and schools to the southwest of the project site, and public open space uses to the south of the project site.

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for equipment manufactured in 2000 through 2008. The Tier 1 through 3 standards regulate the EPA criteria pollutants, including particulate matter (PM), hydrocarbons (HC), oxides of nitrogen (NO_x) and carbon monoxide (CO). Prior to 1998, emissions from nonroad diesel engines were unregulated. These engines are typically referred to as Tier 0.

Table 13-4

Typical Noise Emission Levels for Construction Equipment

Equipment Item	Noise Level at 50 ft. (dBA)
All other Equipment > 5HP	85
Auger Drill Rig	85
Backhoe	80
Bar Bender	80
Blasting	94
Boring Jack Power Unit	80
Chain Saw	85
Clam Shovel (dropping)	93
Compactor (ground)	80
Compressor (air, less than or equal to 350 cfm)	53
Compressor (air, greater than 350 cfm)	58
Concrete Batch Plant	83
Concrete Mixer Truck	85
Concrete Pump Truck	82
Concrete Saw	90
Crane	85
Dozer	85
Drill Rig Truck	84
Drum Mixer	80
Dump Truck	84
Dumpster/Rubbish Removal	78
Excavator	85
Flat Bed Truck	84
Front End Loader	80
Generator	82
Generator (<25 KVA, VMS signs)	70
Gradall	85
Grader	85
Grapple (on Backhoe)	85
Horizontal Boring Hydr. Jack	80
Hydra Break Ram	90
Impact Pile Driver	95
Jackhammer	73
Man Lift	85
Mounted Impact Hammer (Hoe Ram)	90
Pavement Scarafier	85
Paver	85
Pickup Truck	55
Pneumatic Tools	85
Pumps	77
Refrigeration Unit	82
Rivet Buster / Chipping Gun	85
Rock Drill	85
Roller	85
Sand Blasting	85
Scraper	85
Shears (on Backhoe)	85
Slurry Plant	78
Slurry Trenching Machine	82
Soil Mix Drill Rig	80
Tractor	84
Vacuum Excavator (Vac-truck)	85
Vacuum Street Sweeper	80
Ventilation Fan	85
Vibrating Hopper	85
Vibratory Concrete Mixer	80
Vibratory Pile Driver	95
Warning Horn	85
Water Jet Deleading	85
Welder / Torch	73

Source: *CEQR Technical Manual*, Chapter 22, section 330, Table 22-1, May 2010

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), the DEP Notice of Adoption of Rules for Citywide Construction Noise Mitigation (also known as Chapter 28), and the EPA's noise emission standards. These local and federal requirements mandate that specific construction equipment and motor vehicles meet specified noise emission standards; that construction activities be limited to weekdays between the hours of 7 AM and 6 PM; and that construction materials be handled and transported in such a manner as not to create unnecessary noise. As described above, if weekend or after hour work is necessary, permits would be required to be obtained, as specified in the New York City Noise Control Code. As part of the New York City Noise Control Code, a site-specific noise mitigation plan would be developed and implemented that may include source controls, path controls, and receiver controls.

Typically, increased noise levels caused by construction activities can be expected to be greatest during the early stages of construction including excavation, grading, and building construction. It is anticipated that the most significant noise source associated with the construction equipment would be pile drivers, bulldozers, excavators, backhoes, compaction equipment, and various types of trucks and earth moving equipment. As required by the New York City Noise Control Code, noise barriers (to a minimum height of 8 feet) would be provided around the perimeter of the construction site. In addition, the duration of the proposed project's construction is expected to be short-term (less than two years), and while noise associated with the proposed construction activities may be considered noisy and intrusive, potential increases in noise levels as a result of construction-related activities would be expected to be of limited duration. Therefore, no long-term, significant adverse noise impacts on adjacent noise sensitive uses are expected from the proposed construction activities.

RODENT CONTROL

The proposed project would not engage in any particular solid waste management practices that could attract vermin and result in an increase in pest populations. Construction contracts would include provisions for a rodent (mouse and rat) control program. Before the start of construction, the contractor would survey and bait the appropriate areas and provide for proper site sanitation. During the construction phase, as necessary, the contractor would carry out an ongoing prevention, inspection, and response program. Coordination would be maintained with appropriate public agencies. Only registered rodenticides would be permitted, and the contractor would be required to perform rodent control programs in a manner that avoids hazards to persons, domestic animals, and non-target wildlife. ✷