Chapter 20: Construction Impacts

A. INTRODUCTION

This chapter assesses the potential impacts of the construction expected under the proposed actions and reasonable worst-case development scenario (RWCDS) as presented in Chapter 1, "Project Description." As described in the *City Environmental Quality Review (CEQR) Technical Manual*, construction impacts, although temporary, can create disruptive and noticeable effects in an area. Construction impacts are usually examined with respect to traffic conditions, archaeological resources, historic resources, community noise patterns, and air quality conditions.

Elements of the proposed actions include zoning map and text amendments and the disposition of City-owned property. The proposed actions would result in the construction of new residential and commercial uses throughout the primary study area, allowing for increased density of residential and commercial use—with building heights ranging from up to 120 feet—along this study area's major transportation corridors: East Houston Street, Delancey Street, Chrystie Street, Second Avenue, and Avenue D. Development in the remainder of the study area would be similar to what is allowed currently but would be more restricted to be contextual with existing uses. The new development that is projected to result from the proposed actions would occur on underutilized sites.

The RWCDS has identified 205 projected development sites—including 25 enlargement sites—that are considered most likely to be developed by 2017 in the future with the proposed actions. In addition, there are 565 potential development sites—including 422 enlargement sites—that are considered less likely than the projected sites to be developed over the same 10-year analysis period.

The assessment concludes that, for the most part, construction impacts of the development associated with the proposed actions could occur at various locations throughout the primary study area.

Based on the *CEQR Technical Manual* and the final scope of work, this analysis focuses on the following technical areas:

- Historic Resources (both archaeological and architectural);
- Hazardous Materials;
- Air Quality (fugitive and mobile source emissions);
- Noise; and
- Vibration.

Because there are no site-specific plans for development on the projected or potential sites, this assessment would be largely qualitative, focusing on technical areas where construction activities may pose specific environmental problems.

This analysis examines site-associated impacts for both projected and potential development sites. Other impacts, such as traffic and parking, are examined more generally based on full development of the RWCDS. In addition, the analysis assumes full development at each site, not the incremental increase between the conditions in the future with and without the proposed actions. As such, this analysis is conservative since much of this development is expected to occur as-of-right and the incremental additional development would technically add only to the construction duration at these sites (Tables 1-3 and 1-4 in Chapter 1, "Project Description," identify the incremental changes in development at each site in the primary study area).

B. CONSTRUCTION PROGRAM UNDER FUTURE NO BUILD AND BUILD CONDITIONS

THE FUTURE WITHOUT THE PROPOSED ACTIONS

In the future without the proposed actions (No Build), given the existing zoning and residential and commercial trends in the area, it is anticipated that the primary study area would experience rapid residential growth and modest commercial growth. It is anticipated that, in the future without the proposed actions, there would be approximately 2,290 residential units and 450,928 square feet of commercial space on the projected development sites. This represents a net increase of approximately 2,234 residential units and an increase of 1,809,780 square feet of total floor area over the existing conditions.

In addition to development on the projected development sites noted above, development of new residential and commercial uses is expected to continue in both the primary and secondary study areas in the future without the proposed actions (see Table 2-3 and Figure 2-5 in Chapter 2, "Land Use, Zoning, and Public Policy"). Within the primary study area, new development comprised of residential, commercial, and hotel uses would be concentrated south of East Houston Street and east of Allen Street. Most of the planned projects in the secondary study area, consisting of residential, commercial, hotel, and community facility uses, would be located to the west and south of the primary study area.

THE FUTURE WITH THE PROPOSED ACTIONS

DCP has identified 180 projected development sites and 25 enlargement sites that are considered most likely to be developed in the future with the proposed actions (see Chapter 1, "Project Description," for a detailed description of this RWCDS). As described in Chapter 1, it is anticipated that new development occurring as a result of the proposed actions would consist of 3,650 residential units, including 348 affordable units and 23 residential units on the enlargement sites, and 376,489 square feet of commercial space. The projected incremental change over No Build conditions is 1,383 residential units (including 348 affordable units) and a 74,439-square-foot reduction in the total amount of commercial space.

Table 20-1 illustrates a summary of the amount and types of development projected in the future with the proposed actions by proposed zoning district. As shown in this table, construction that are expected to occur as a result of the proposed actions would include new mid-rise residential buildings up to 120 feet tall with street-level retail uses where permitted by zoning and one- to two-story residential additions to existing buildings up to a maximum building height of 60 feet.

Table 20-1
Summary of the Development on Projected Sites in the Future With the Proposed Actions

Proposed Zoning District	Commercial Floor Area[1]	Total Dwelling Units[2]	Number of Projected Sites	Projected Building Height[3]	Type of Construction
New Development					
C4-4A	70,090	260	28	80	New mid-rise residential buildings with street-level retail
C6-2A	125,797	940	30	120	New mid-rise residential buildings with street-level retail
R7A	111,223	839	51	80	New mid-rise residential buildings; street-level retail use where permitted by commercial overlay
R8B	12,086	811	44	60	New mid-rise residential buildings; street-level retail use where permitted by commercial overlay
R8A	57,293	800	27	120	New mid-rise residential buildings; street-level retail use where permitted by commercial overlay
Total (New Development)	**376,489**	**3,650**	**180**		
Enlargements					
R7A	N/A	5	13	50 or 60	One- or two-story residential addition to existing building
R8B	N/A	18	12	50 or 60	One- or two-story residential addition to existing building
Total (Enlargements)	**N/A**	**23**	**25**		

Notes:
[1] In square feet.
[2] For new development sites, total dwelling units is equal to total dwelling units, including those constructed in the future without the proposed actions (see Table 1-5 in Chapter 1, "Project Description," for net increment development). For enlargements, total dwelling units is equal to the number of dwelling units as a result of the proposed actions only—no changes are anticipated on the enlargement sites between existing conditions and the future without the proposed actions.
[3] In feet.
Source: DCP, October 2007.

C. CONSTRUCTION SCHEDULE AND ACTIVITIES

CONSTRUCTION PROGRAM AND MANAGEMENT

The proposed actions are not intended to facilitate specific projects proposed by developers. As such, the RWCDS does not describe which of the sites would be developed first or assume a particular sequence of development. However, it is assumed that the construction of all projected development sites would be completed by 2017. While market considerations will determine the development demand over time, it is reasonable to assume that a number of the projected development sites may be under construction simultaneously.

Construction activities typically occur Monday through Friday, although the delivery and installation of certain critical equipment could occur on weekend days. Construction staging would most likely occur on the projected and potential development sites and may, in some cases, extend onto portions of the adjoining sidewalks, parking, and travel lanes of the public

streets adjacent to the construction sites. Any sidewalk or street closures require the approval of the New York City Department of Transportation's Office of Construction Management and Coordination (DOT-OCMC), the entity that ensures critical arteries are not interrupted—especially in peak travel periods, that traffic will continue to flow during periods of construction, and that pedestrian movements are disrupted to the least extent possible.

In accordance with local law, developers and their contractors would be required to plan and implement traffic and pedestrian management, noise, and dust control measures during construction. This would include any DOT-OCMC requirements for street crossing and entrance barriers, protective scaffolding, and strict compliance with all applicable City construction safety measures.

Provided below is a general outline of typical scheduling for the projected development sites. It should be noted however that the duration and extent of new construction actives would vary based on which site is being developed and the size of that development. A typical site construction schedule for a mid-rise building with an overall duration of 12 to 16 months is described below.

CONSTRUCTION SEQUENCING

Provided below is a typical construction program for a typical mid-rise building as envisioned in the RWCDS. Development on the enlargement sites would typically be of less duration and intensity and would involve less street obstruction and different types of equipment. If a site requires mitigation for hazardous materials, that work would be performed prior to demolition or construction. Certain projects may undertake any remediation as part of the proposed excavation.

SITE CLEARANCE, FOUNDATIONS, AND BELOW-GRADE CONSTRUCTION

This stage of construction, which typically lasts approximately three to four months, would entail site clearance; digging, pile-driving, pile capping, and excavation for the foundation; dewatering (to the extent required); and reinforcing and pouring of the foundation. Typical equipment used for these activities includes excavators, backhoes, tractors, pile-drivers, hammers, and cranes. Trucks would arrive at the site with pre-mixed concrete and other building materials, and would remove any excavated material and construction debris.

Foundation work would include the use of bobcats, rockbreakers, loaders, pumps, motorized concrete buggies, concrete pumps, jack hammers, pneumatic compressors, and a variety of small, mostly hand-held tools, as well as dump trucks and concrete trucks.

CORE AND SHELL

For mid-rise buildings, this stage of construction typically lasts approximately six to eight months and would include construction of the building's frame (installation of beams and columns), floor decks, façade (exterior walls and cladding), and roof construction. These activities typically require the use of tower cranes, compressors, personnel and material hoists, front-end loaders, concrete pumps, on-site bending jigs, welding machines, and a variety of hand-held tools, in addition to the delivery trucks bringing construction materials to the site. In some cases, the core and shell phase would overlap with the interior construction and finishing phase discussed below.

INTERIOR CONSTRUCTION AND FINISHING

Interior construction of a mid-rise building typically lasts approximately six to eight months. This stage includes the construction of interior walls, installation of lighting fixtures, and interior finishes (flooring, painting, etc.), as well as mechanical and electrical work, such as the installation of elevators. Equipment used during interior construction would include exterior hoists, pneumatic equipment, delivery trucks, and a variety of small hand-held tools.

TYPICAL CONSTRUCTION ACTIVITIES

Typical equipment used for excavation and pouring a foundation includes excavators, bulldozers, rockbreakers, backhoes, tractors, hammers, and concrete pumping trucks. Excavation is the first step. Bulldozers and front-end loaders excavate the soil and load it onto trucks for transport and disposal. The trucks transport excavated material and construction debris. Then, concrete trucks arrive at the site with pre-mixed concrete and pump it into the site to form the foundations and building walls. At the same time, infrastructure connections are built. These include lines for water, sewer, stormwater, electricity, and telecommunications.

The construction equipment likely to be used during erection of the core and shell would include cranes, compressors, derricks, hoists, bending jigs, and welding machines. During façade and roof construction, hoists and cranes would continue to be used. Trucks would remain in use for material supply and construction waste removal.

During construction of the core and shell and interior work, the greatest number of construction workers would be employed on site, and a wide variety of supplies are delivered. It is anticipated that the bulk of construction activities related to the new construction would take place Monday through Friday. The permitted hours of construction regulated by the New York City Noise Code and the New York City Department of Buildings (DOB) apply in all areas of the City, and are reflected in the collective bargaining agreements with major construction trade unions. In the event that overtime work is required, appropriate work permits from the DOB must be obtained. In accordance with City regulations, work cannot begin before 7 AM on weekdays, although workers may arrive to the site between 6 and 7 AM. Normally, work would end at 3:30 PM, unless overtime is required and appropriately permitted. On occasion, overtime may be required to complete some time-sensitive tasks beyond the normal work day on weekdays and possibly on weekends.

D. POTENTIAL IMPACTS DURING CONSTRUCTION

HISTORIC RESOURCES

ARCHAEOLOGICAL RESOURCES

Twenty-three potential development sites, which have been determined to be archaeologically sensitive and would not be developed in the future without the proposed actions, could be developed as a result of the proposed actions. Construction on these twenty-three sites could result in significant adverse impacts on potential archaeological resources due to excavation for foundations and footings of new buildings. Given that these sites have been identified as potentially archaeologically sensitive, and they could be developed pursuant to the proposed actions without any additional discretionary approvals, there are no measures available in connection with the proposed actions to require further archaeological investigations or

mitigation. Therefore, development on Potential Development Sites 199, 209, 210, 211, 212, 237, 240, 242, 243, 244, 247, 248, 250, 258, 269, 271, 272, 273, 275, 283, 294, 298, and 299 would result in unavoidable adverse impacts (see Chapter 24, "Unavoidable Adverse Impacts").

ARCHITECTURAL RESOURCES

Projected Development Sites

As also discussed in more detail in Chapter 7, "Historic Resources," two known architectural resources are located on projected development sites. Both of these resources are assumed to be removed in the future without the proposed actions, as is the case with seven potential architectural resources also located on projected development sites. Since redevelopment of these sites would also occur in the future without the proposed actions, redevelopment of them under the proposed actions would not result in significant adverse impacts to the potential historic districts.

As also discussed in more detail in Chapter 7, projected development pursuant to the proposed actions could have adverse physical impacts on sixty-three architectural resources, including twenty-four known architectural resources and thirty-nine potential architectural resources, that are located within 90 feet of proposed construction activities, close enough to potentially experience adverse construction-related impacts from ground-borne construction-period vibrations, falling debris, and collapse. Although these resources could potentially experience adverse direct impacts, they would be provided some protection from accidental damage through DOB controls that govern the protection of any adjacent properties from construction activities. In addition, numerous contributing buildings within the Lower East Side Historic District could experience accidental construction damage in the future without the proposed actions from anticipated development on twenty-two adjacent projected development sites (listed in Chapter 7).

There are no individual architectural resources located on projected enlargement sites. However, the tenement at 327 East 10th Street, which is within the boundaries of the potential Tompkins Square Park Historic District (F), is located on Projected Enlargement Site E-11. Under the proposed actions, this potential historic district building would be enlarged with an additional story. An incompatible addition could have adverse impacts on the building and the historic district blockfront along East 10th Street.

Projected enlargements pursuant to the proposed actions could have adverse physical impacts on six known architectural resources and fourteen potential architectural resources that are located within 90 feet of proposed construction activities, close enough to potentially experience adverse construction-related impacts from ground-borne construction-period vibrations, falling debris, collapse, or damage from construction machinery. Although the twenty resources could potentially experience adverse direct impacts, they would be provided some protection from accidental damage through DOB controls that govern the protection of any adjacent properties from construction activities.

There are two mechanisms to protect buildings in New York City from potential damage caused by adjacent construction. All buildings are provided some protection from accidental damage through DOB controls that govern the protection of any adjacent properties from construction activities, under Building Code Section 27-166 (C26-112.4). For all construction work, Building Code Section 27-166 (C26-112.4) serves to protect buildings by requiring that all lots, buildings, and service facilities adjacent to foundation and earthwork areas be protected and supported in accordance with the requirements of Building Construction Subchapter 7 and Building Code

Subchapters 11 and 19. The second protective measure applies to New York City Landmarks, properties within New York City Historic Districts, and National Register-listed properties. For these structures (all of which are detailed in Chapter 7), *TPPN #10/88* applies. *TPPN #10/88* supplements the standard building protections afforded by Building Code C26-112.4 by requiring a monitoring program to reduce the likelihood of construction damage to adjacent New York City Landmarks and National Register-listed properties (within 90 feet) and to detect at an early stage the beginnings of damage so that construction procedures can be changed. With the required measures of *TPPN #10/88* in place, there would be no significant adverse construction-related impacts on New York City Landmarks or properties listed on the National Register that are located within 90 feet of development resulting from the proposed actions. However, construction under the proposed actions could potentially result in impacts to non-designated or listed resources, because they would not be afforded special protections under *TPPN #10/88*.

Potential Development and Enlargement Sites

Thirteen known architectural resources (described in Chapter 7, "Historic Resources") are located on potential development sites. Although development of more than a few of the potential development sites is unlikely, up to eight of these thirteen architectural resources could be removed under the reasonable worst-case development scenario for the proposed actions. Therefore, redevelopment of the eight potential development sites would result in significant adverse impacts under the proposed actions. It is assumed that five of the thirteen known resources located on potential development sites would be removed in the future without the proposed actions and, therefore, redevelopment of these five sites under the proposed actions would not be significant adverse impacts under the proposed actions.

Fourteen potential architectural resources (described in Chapter 7) are also located on potential development sites and up to five of them could be removed under the reasonable worst-case development scenario for the proposed actions. Therefore, redevelopment of the five potential development sites would result in significant adverse impacts under the proposed actions. It is assumed that nine of the fourteen resources located on potential development sites would be removed in the future without the proposed actions and, therefore, redevelopment of these nine sites under the proposed actions would be not result in significant adverse impacts.

There are also five potential development sites located within the potential Tompkins Square Park Historic District (F). Since redevelopment of these sites would occur in the future without the proposed actions, redevelopment of them under the proposed actions would not result in significant adverse impacts.

There are seven potential development sites located within the Lower East Side Historic District (E, S/NR), of which six contain contributing buildings to the historic district. However, since it is assumed that the contributing buildings on five of these six sites would be removed in the future without the proposed actions (see the discussion above), any redevelopment of these five sites under the proposed actions would not result in a significant adverse impact. Of the six potential development sites that contain contributing historic district buildings, the one site that is not assumed to be redeveloped in the future without the proposed actions is Potential Development Site 191. Therefore, redevelopment of this site under the proposed actions would result in a significant adverse impact to the Lower East Side Historic District.

While development of more than a few of the potential development sites is unlikely, up to fifty-five architectural resources could potentially experience construction-related physical impacts from ground-borne construction-period vibrations, falling debris, collapse, or other accidental

damage from adjacent potential development, including twenty-seven known architectural resources and twenty-eight potential architectural resources. This is also the case with potential enlargements pursuant to the proposed actions that could also have adverse physical impacts on eighty-two architectural resources (detailed in Chapter 7) located within 90 feet of proposed construction activities.

As noted earlier, buildings would be protected from damage during construction on adjacent properties by DOB controls and, for New York City Landmarks, properties within New York City Historic Districts, and National Register-listed properties, by *TPPN #10/88.* With the required measures of *TPPN #10/88* in place, there would be no significant adverse construction-related impacts on New York City Landmarks or properties listed on the National Register that are located within 90 feet of development resulting from the proposed actions (these resources are detailed in Chapter 7). However, construction under the proposed actions could potentially result in impacts to non-designated or listed resources, because they would not be afforded special protections under *TPPN #10/88.*

Although development of more than a few of the potential enlargement sites is unlikely, up to twenty-two architectural resources (detailed in Chapter 7) that are located on potential enlargement sites could experience significant adverse impacts from being altered. In addition, there are numerous potential enlargement sites located within the boundaries of the potential Tompkins Square Park and East 6th Street Historic Districts, as described in Chapter 7. The enlargement of district buildings located on these sites could result in significant adverse impacts.

HAZARDOUS MATERIALS

As described in Chapter 11, "Hazardous Materials," a number of projected and potential development sites are recommended for E-designation as part of the proposed actions (see Table 11-1), which would mitigate the potential for impacts associated with hazardous materials.

Sites with E-designations require that the developer conduct a testing and sampling protocol, and develop a remediation plan, where appropriate, to the satisfaction of the New York City Department of Environmental Protection (DEP) before issuance of construction-related DOB permits (pursuant to Section 11-15 of the *Zoning Resolution*—Environmental Requirements). The E-designation also requires mandatory construction-related health and safety plans, which must also be approved by DEP. If required, the scope of any Phase II Site Investigation is dependent on the nature of the recognized environmental concerns at the site with the E-designation and any recognized environmental condition must be adequately addressed with development of a site.

Demolition of interiors, portions of buildings, or entire buildings are regulated by City laws and enforced by DOB requiring abatement of asbestos prior to any intrusive construction activities including demolition. The Occupational Health and Safety Administration (OSHA) also regulates construction activities to prevent excessive exposure of workers to contaminants in the building materials, including lead in paint. New York State waste regulations control handling and disposal of demolition debris and contaminated materials associated with construction. Adherence to these regulations would prevent impacts from development activities at any of the projected and potential development sites.

An E-designation would not be placed on the one City-owned development site where ground disturbance is proposed (Projected Development Site 167, see Chapter 1, "Project Description").

Instead, since development of this site would occur through disposition to a private entity, a similar mechanism would be required under the City's contract of sale with the private entity selected to develop the site. This mechanism will to ensure that further investigative and/or remedial activities, as well as health and safety measures, are conducted prior to and/or during construction.

With the above measures in place, there would be no significant adverse impacts from the potential presence of contaminated materials during construction.

TRAFFIC AND PARKING

TRAFFIC

The proposed actions would result in a mix of office, retail, residential, community facility, and industrial space over a 10-year period in primarily newly constructed buildings.

Construction of the development anticipated under the RWCDS would generate trips resulting from arriving and departing construction workers, excavation of materials, delivery of materials and equipment, and removal of construction waste. Construction typically occurs between 7 AM and 3:30 PM. Construction workers therefore typically arrive before the AM peak commuter period and depart before the PM peak hour, and therefore do not represent a substantial increment during the area's peak travel periods. Trucks movements are also typically distributed throughout the day during and prior to normal work hours, and diminished towards the later afternoon hours. When possible, contractors also schedule deliveries and other construction activities during off-peak travel hours to avoid delays.

Construction activities are expected to result in the short-term disruption of both traffic and pedestrian movements at the development sites. This would occur primarily due to the temporary loss of curbside lanes that would be occupied by the staging of equipment and the movement of materials to and from the site. Additionally, construction would at times result in temporary closing of sidewalks adjacent to the sites.

These impacts would be temporary and intermittent at each site, dispersed over the large rezoning area, and not result in significant adverse impacts on local traffic conditions. DOT-OCMC must issue permits for all street/lane closures after evaluation of traffic conditions. These permits would be issued only if it can be demonstrated that these impacts have been minimized.

PARKING

Construction workers are expected to use both public transportation and private automobiles with respect to their work related trips. Worker parking would typically be off-site for the larger development sites and at curbside in the vicinity of the smaller ones. While workers who drive to a project site would increase the demands for on and off-street parking, they would be temporary, intermittent, and dispersed over the larger rezoning area.

TRANSIT AND PEDESTRIANS

As discussed in Chapter 17, "Transit and Pedestrians," projected trips generated by components of the proposed rezoning would be dispersed among numerous transit services and pedestrian elements and not result in any significant adverse transit and pedestrian impacts. Similarly, those trips associated with construction activities, which would be relatively lower in magnitude, would also not result in significant adverse transit and pedestrian impacts. Where necessary,

coordination with New York City Transit (NYCT) would be conducted for temporary bus stop relocations and with DOT-OCMC for temporary sidewalk disruptions and closures.

AIR QUALITY

Possible impacts on local air quality during construction of the projected development sites include: fugitive dust (particulate) emissions from land clearing operations; and mobile source emissions, including hydrocarbons, nitrogen oxide, and carbon monoxide.

FUGITIVE EMISSIONS

Fugitive dust emissions during urban construction typically occur from land clearing, excavation, hauling, filling, spreading, and grading. The quantities of emissions depend on the extent and nature of the land-clearing operations, the type of equipment employed, the physical characteristics of the underlying soil, the speed at which construction vehicles are operated, and the type of fugitive dust control methods employed. The U.S. Environmental Protection Agency (EPA) has suggested, in general, an overall emission rate of about 1.2 tons of particulate matter per acre per month of active construction from all phases of land clearing operations with no fugitive dust control measures. However, this is a national estimate and actual emissions vary widely depending on many factors, including the intensity and type of land clearing operations. Much of the fugitive dust generated by construction activities consists of relatively large-size particles, which typically settle within a short distance from the construction site and do not significantly impact nearby buildings or people. Because fugitive dust is a common impact of construction, it is regulated under the City's code. During construction, all appropriate fugitive dust control measures—including watering exposed areas and using dust covers for trucks—must be used to satisfy Section 1402.2-9.11 of the New York City Air Pollution Code. To prevent fugitive dust from becoming airborne, the measures include:

- Use of water to control dust in the construction operations and during the clearing and grading of land;
- Application of water to dirt paths, materials, stockpiles, and other surfaces that can generate airborne dust over extended period;
- Construction of temporary roads would be built with properly sized stone or concrete equivalent over filling material;
- Covering of open-body trucks transporting materials likely to generate airborne dust at all times when in motion; and
- Prompt removal of earth or other materials from paved streets where earth or other material has been deposited by trucking or earth-moving equipment, erosion by water, or other means.

MOBILE SOURCE EMISSIONS

Mobile source emissions may result from the operation of construction equipment, trucks delivering materials and removing debris, workers' private vehicles, or occasional disruptions in traffic near the construction site. While these increases are also temporary, localized increases in mobile source emissions can be minimized by following standard traffic maintenance requirements, such as:

- Construction requiring temporary street closings would be performed during off-peak hours wherever possible;

- The existing number of traffic lanes would be maintained to the maximum extent possible (see also "Traffic and Parking," above); and
- Idling of delivery trucks or other equipment would not be permitted during unloading or other inactive times in accordance with local law.

NOISE

Impacts on the noise levels during construction of the projected and potential development sites would include noise and vibration from the operation of construction equipment. The severity of impacts from these noise sources would depend on the noise characteristics of the equipment and activities, the construction schedule, and the distance to potentially sensitive noise receptors. Noise and vibration levels at a given location are dependent on the kind and number of pieces of construction equipment being operated, as well as the distance from the construction site (see Table 20-2). Noise caused by construction activities varies widely depending on the phase of construction—land clearing and excavations, foundations and capping, erection of structural steel, construction of exterior walls, etc. and the specific task being undertaken during that phase of construction.

Increased noise levels caused by construction activities can be expected to be most significant during the early phases of construction. The most significant noise source associated with the construction equipment would be the use of pile-drivers, which would be intrusive and would be heard by the employees at surrounding business and the residents that live within several blocks of such construction activities. The use of pile-drivers is dependent upon the competence—the ability to support weight—of on-site soil conditions (the East Village and Lower East Side neighborhoods are known to contain soils with low competence). Increases in noise levels caused by delivery trucks and other construction vehicles would not be significant. Small increases in noise levels are expected to be found near a few defined truck routes and the streets in the immediate vicinity of the projected and potential development sites.

Noise from construction activities and some construction equipment is regulated by the New York City Noise Control Code and by EPA. The New York City Noise Control Code, as amended December 2005 and effective July 1, 2007, requires the adoption and implementation of a noise mitigation plan for each construction site, limits construction (absent special circumstances as described below) to weekdays between the hours of 7 AM and 6 PM, and sets noise limits for certain specific pieces of construction equipment (see also DEP Report # CON-79-0001). Construction activities occurring after hours (weekdays between 6 PM and 7 AM and on weekends) may be authorized by the DEP Commissioner in the following circumstances: (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) where there is a claim of undue hardship resulting from unique site characteristics, unforeseen conditions, scheduling conflicts and/or financial considerations. EPA requirements mandate that certain classifications of construction equipment meet specified noise emissions standards.

Table 20-2
Construction Equipment Noise Emission Levels

Equipment	Typical Noise Level (dBA) at 50 feet
Arc Welder	73
Asphalt Pavers	85
Asphalt laying equipment	85
Backhoe	80
Bulldozer	85
Compactor	77*
Compressors	75*
Cement Mixer	85
Concrete Pumps	82
Concrete Trucks	85
Delivery Trucks	84
Dual Hoist	85
Crane (Crawler Crane)	85
Crane (Hydraulic Crane)	85
Crane (Tower Crane)	85
Crane (Rubber Tire Crane)	83
Drill Rigs	85
Dump Trucks	84
Excavators	85
Forklift	85
Generators	82
Impact Wrenches	85
Jack Hammers	71*
Pavers Cutter	85
Pile driving rig	95
Rebar Bender	80
Roller	85
Saw (Chain Saw)	85
Saw (Circular Saw)	76
Saw (Table Saw)	76
Scissor Lift	85
Slurry supply system	85
Tamper	85
Trailers	85
Toweling Machine	85
Water Pumps	77

Note: * NYC Noise Code, effective on July 1, 2007.
Sources: Transit Noise and Vibration Impact Assessment, FTA, May 2006, and FHWA Roadway Construction Noise Model (FHWA RCNM), 2006.

VIBRATION

Construction activities have the potential for resulting in vibration levels that may result in structural or architectural damage, and/or annoyance or interference with vibration sensitive activities. In general, vibratory levels at a receiver are a function of the source strength (which, in turn 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, typically historically significant structures or buildings, generally construction activities do not reach the levels that can cause architectural or structural damage, but they can achieve levels that

may be perceptible and annoying in building very close to a construction site. Table 20-3 shows vibration source levels for construction equipment.

For limited periods of time due to infrequently occurring construction activities, vibratory levels will be perceptible in the vicinity of the construction site but would not be considered significant adverse impacts.

However, given DOB protection measures that are in place and the limited duration of impacts at each development site, no significant vibration impacts are expected as a result of the proposed actions.

Table 20-3
Vibration Source Levels for Construction Equipment

Equipment	PPV_{ref} (in/sec)[1]	Approximate L_v (ref)[2] (VdB)
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

Notes:
[1] PPV_{ref} (in/sec): Peak Particle Velocity
[2] L_v(ref): Reference emission levels for each piece of construction equipment
[3] VdB: Vibration Level
Source: *Transit Noise and Vibration Impact Assessment*, FTA-VA-90-1003-06, May 2006.

E. CONCLUSION

Construction-related activities resulting from the proposed actions are not expected to have any long-term significant adverse impacts other than those described above relating to archaeological and architectural resources. However, as discussed previously in Chapter 7, "Historic Resources," such impacts cannot be mitigated because the projected and potential development sites are privately owned and could be redeveloped as of right under the proposed actions (see also Chapter 24, "Unavoidable Adverse Impacts"). The construction process in New York City is regulated to ensure that construction period impacts are eliminated or minimized. The construction process requires consultation and coordination with a number of City and/or State agencies, including DOB, DOT, DEP, and the New York State Department of Environmental Conservation (NYSDEC) (where applicable), among others. For these reasons, with the exception of historic resources, no significant adverse impacts are expected to result with respect to construction. ✷