Chapter 18: Construction

A. INTRODUCTION

This chapter summarizes a conceptual construction scenario for the Proposed Action and considers the potential for adverse impacts during construction. As described in Chapter 1, "Project Description," the Proposed Action is expected to result in the development of new residential, commercial, and community facility uses on projected and potential development sites in the Rezoning Area. Such development would occur as part of new construction, or the conversion and/or enlargement of existing buildings.

Construction activities, although temporary, can include noticeable and disruptive effects. Determination of the significance of construction impacts and need for mitigation is generally based on the duration and magnitude of the impacts. Construction impacts are usually of concern when construction activity could affect traffic conditions, hazardous materials, archaeological resources, the integrity of historic resources, community noise patterns, and air quality conditions.

To assess the possible short- and long-term effects of the Proposed Action, a reasonable worst-case development scenario (RWCDS) was developed to reflect a range of possible development under the Proposed Action. For analysis purposes, a conceptual construction phasing and schedule for the RWCDS was developed to illustrate how development of the Rezoning Area could occur over the next 10 years. The conceptual construction phasing and schedule for the RWCDS under the Proposed Action is 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.

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

According to the 2012 *CEQR Technical Manual*, construction duration is often broken down into short-term (less than two years) and long-term (two or more years). Where the duration of construction is expected to be short-term, any impacts resulting from such short-term construction generally do not require detailed assessment. As described below, it is estimated that most of the projected development or enlargement sites entailing new construction would generally take 24 months or less to complete construction, and would therefore be considered short-term. Only Projected Development Sites 1 and 3 have anticipated construction durations of greater than 24 months (estimated at 27 and 33 months, respectively). However, as construction

activity associated with the RCWDS would occur on multiple development sites within the same geographic area, such that there is the potential for several construction timelines to overlap, a preliminary screening assessment of potential construction impacts was prepared in accordance with the guidelines of the *CEQR Technical Manual*, and is presented in this chapter.

While the anticipated construction durations have been developed with an experienced New York City construction manager, the discussion is only illustrative as specific means and methods will be chosen at the time of construction. At this time, there are no specific construction programs or designs for any development that is projected to result from the Proposed Action. The construction durations are conservatively chosen to serve as the basis of the analyses in this chapter and are representative of the reasonable worst-case for potential impacts. The conceptual schedule represents a very compressed and conservative potential timeline for construction, which shows overlapping construction activities and simultaneously operating construction equipment for projected development sites in proximity of one another. Thus, the analysis captures the cumulative nature of construction impacts, which would result in the greatest impacts at nearby receptors.

PRINCIPAL CONCLUSIONS

There would be temporary inconvenience and disruption arising from the construction of projected development and/or enlargement sites. Given that the 19 projected development and 3 projected enlargement sites are distributed over approximately 18 blocks, no one location within the Rezoning Area would be under construction for the full nine years. As construction activity associated with the RCWDS would occur on multiple development sites within the same geographic area, such that there is the potential for several construction timelines to overlap, a preliminary screening assessment of potential construction impacts was prepared in accordance with the guidelines of the *CEQR Technical Manual*, and is presented in this chapter. As detailed below, construction of the projected development and enlargement sites identified in the RWCDS for the Proposed Action would result in significant adverse construction impacts related to transportation and historic architectural and archaeological resources. Potential mitigation for these significant adverse impacts is discussed in Chapter 20, "Mitigation."

As discussed in detail in the "Foreword" of the Final Environmental Impact Statement (FEIS), conditions on two development sites within the Rezoning Area—Projected Development Sites 11 and 18—have changed since the issuance of the DEIS. For Projected Development Site 11, these changes would result in less construction activity in the With-Action condition and more activity in the No-Action condition; for Projected Development Site 18, these changes would result in less construction activity in the No-Action condition and the same amount of construction activity as previously assumed in the With-Action condition. These changes would have a negligible effect on the Construction analysis and the analysis of Construction impacts is more conservative absent these changes; thus, the Construction analysis assumes no change to Projected Development Sites 11 and 18. However, the comparison of cumulative operational and construction traffic has been updated to reflect the Transportation analyses presented in the FEIS.

TRANSPORTATION

Construction in the future with the Proposed Action (the With-Action condition) is expected to result in significant adverse traffic and pedestrian impacts during peak construction, as summarized below. For purposes of the construction traffic analysis, two periods were

assessed—the second quarter of 2016 (peak construction traffic is expected to occur during this quarter) and the fourth quarter of 2019 (substantially more operational activities as compared to 2016). The Proposed Action is not expected to result in any significant adverse transit or parking impacts during construction; however, as with the analysis results presented for the future without the Proposed Action (the No-Action condition) and With-Action operational conditions, a parking shortfall during construction within ¼-mile of the Rezoning Area is also likely to occur.

~~As further detailed below, the construction-related transportation analyses presented in this draft environmental impact statement (DEIS) reflect a slight variation of the No-Action and With-Action RWCDS assumptions that would yield more conservative impact findings. Between the Draft and Final EIS, the construction transportation analyses will be updated to reflect the final RWCDS.~~

Traffic

During peak construction, completed projects within the Rezoning Area would generate incremental traffic to the study area in addition to the traffic anticipated to be generated by on-going construction activities. However, the cumulative operational and peak construction traffic increments for 2016 and 2019 would be lower than the full operational traffic increments associated with the Proposed Action in 2022. Therefore, the potential traffic impacts during peak construction would be within the envelope of significant adverse traffic impacts identified for the With-Action condition in Chapter 13, "Transportation." As detailed in Chapter 20, "Mitigation," measures to mitigate the 2022 operational traffic impacts were recommended for implementation at ~~17~~ 19 intersections during weekday peak hours. These measures would entail primarily signal timing adjustments and other operational measures, all of which could be implemented early at the discretion of the New York City Department of Transportation (NYCDOT) to address actual conditions experienced at that time. However, as with the With-Action condition, there could also be significant adverse traffic impacts at two intersections during the weekday AM peak hour, ten intersections during the weekday PM peak hour, and four intersections during the Saturday midday peak hour during construction that cannot be fully mitigated. Specifically, during the construction period, West Street at West Houston Street and Hudson Street at Canal Street could have unmitigated significant adverse impacts during the weekday AM peak hour and Hudson Street at Canal Street and Varick Street at West Houston, King, Charlton, Vandam, Spring, Dominick, Broome, and Canal Streets and Avenue of the Americas at Canal Street/Laight Street could have unmitigated significant adverse impacts during the weekday PM peak hour. During the Saturday midday peak hour, Varick Street at King, Charlton, Dominick, and Broome Streets could have unmitigated significant adverse impacts. ~~Furthermore, as described in Chapter 13, "Transportation," additional intersections may be analyzed between the Draft and Final EIS for the operational traffic analysis. These intersections will be selected in consultation with DCP and NYCDOT. The analysis of these additional intersections may identify additional significant adverse traffic impacts, for which mitigation measures would be identified. If feasible measures are not available to fully mitigate these impacts, they would be identified as unmitigated in the Final EIS.~~

Maintenance and Protection of Traffic (MPT) plans would be developed, reviewed, and approved by NYCDOT's Office of Construction Mitigation and Coordination (OCMC) for curb lane and sidewalk closures as well as equipment staging activities. It is expected that traffic and pedestrian flow along all surrounding streets would be maintained throughout the entire construction period.

Parking

As discussed in Chapter 13, "Transportation," the No-Action and With-Action conditions, due primarily to the displacement of existing public parking facilities, would result in parking shortfalls of ~~46~~ 66 and ~~392~~ 409 spaces, respectively, within ¼-mile of the Rezoning Area. Although the parking demand associated with construction workers commuting via auto would contribute minimally to the overall parking demand in the area, it can be expected that a parking shortfall may still occur during construction of development sites under both the No-Action and With-Action conditions within ¼-mile of the Rezoning Area. However, as with the analysis results presented for the No-Action and With-Action operational conditions, based on the magnitude of available and total parking spaces within a ½-mile of the Rezoning Area, it is anticipated that the excess demand could be accommodated with a slightly longer walking distance beyond the ¼-mile radius. Furthermore, as stated in the *CEQR Technical Manual*, a parking shortfall resulting from a project located in Manhattan does not constitute a significant adverse parking impact, due to the magnitude of available alternative modes of transportation.

Transit

The study area is well served by public transit, including the No. 1 subway line at the Houston Street and Canal Street stations; the C/E lines at the Spring Street station; and the A/C/E lines at the Canal Street station. There are also several local bus routes, including the M5, M20, and M21. The projected construction worker trips made by transit would be substantially less than the operational peak hour transit trips associated with development in the With-Action and No-Action conditions. Furthermore, these construction worker trips would occur outside of peak periods of transit ridership and be distributed to the nearby transit facilities mentioned above. Therefore, like the operational With-Action condition, travel by construction workers would not result in any significant adverse transit impacts.

Pedestrians

The projected construction worker pedestrian trips traversing the area's sidewalks, corners, and crosswalks would have minimal effects on pedestrian operations during peak commuter hours (typically 8 to 9 AM and 5 to 6 PM). However, because the full build-out of the Proposed Action is expected to result in crosswalk impacts at two intersections—north crosswalk of Avenue of the Americas and Spring Street and north crosswalk of Varick Street and Spring Street, as discussed in Chapter 13, "Transportation," the same or lesser significant adverse pedestrian impacts could occur during construction prior to the full build-out of the Proposed Action. Accordingly, the same crosswalk widenings recommended to mitigate the pedestrian impacts for the Proposed Action could be advanced to address the same impacts during construction.

AIR QUALITY

The *CEQR Technical Manual* lists several factors for consideration in determining whether a detailed construction impact assessment for air quality is appropriate. These factors include the need for a transportation analysis, the duration of construction tasks, the intensity of construction activities, the location of nearby sensitive receptors (such as residences), and emissions control measures. All of these factors have been taken into consideration in the construction air quality preliminary screening assessment undertaken for the RWCDS for this project.

Construction under the Proposed Action is not projected to result in substantial increases in vehicle volumes, lane or roadway closures, or traffic diversions. Construction trip increments during the 2016 construction weekday AM peak hour (6AM to 7AM) would not exceed the

applicable CEQR screening levels for carbon monoxide (CO) and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) (170 auto trips and 23 truck trips at peak hour, respectively) at any intersections. Therefore, construction activities under the Proposed Action would not cause significant changes in air quality related to vehicular traffic, and further mobile-source analysis is not required. With respect to potential impacts to air quality during construction at specific development sites, the Applicant would commit to implement a variety of emissions control measures to the extent practicable and feasible during construction of its projected development and enlargement sites to ensure that the construction results in the lowest practicable diesel particulate matter (DPM) emissions. In addition, it is expected that similar emissions control measures to those committed to by the Applicant would likely be implemented during construction of the other projected development and enlargement sites not controlled by the Applicant, to the extent practicable and feasible. Ultra-low sulfur diesel (ULSD) and construction equipment rated Tier 2 or higher is now readily available; diesel particle filters (DPFs) are commonly found on construction equipment used in New York City; and the New York City Air Pollution Control Code regulates construction-related dust emissions. However, there would be no mechanism under CEQR to provide for a commitment to implement any of the above emission reduction measures on sites not controlled by the Applicant. As discussed below, most of the construction induced by the Proposed Action at any given development site would be short-term and the Rezoning Area and adjacent area contains very few existing residential uses, and consequently very few air quality sensitive receptor sites.

The Rezoning Area and adjacent area contains very few existing residential uses, and consequently very few air quality sensitive receptor sites. Nonetheless construction activities induced by the Proposed Action may occur immediately adjacent to the few existing sensitive receptors and others that would be introduced as projected development sites are completed. However, the overall construction in the Rezoning Area would be gradual, taking place over an anticipated nine-year period.

In terms of air pollutant emissions, the most intense construction activities are demolition, excavation and foundation (D/E/F) work, where a number of large non-road diesel engines would be employed. However, these activities are only expected to take a total of between 3 and 15 months per development site. Projected Development Sites 1 and 3 are the only projected development or enlargement sites with anticipated overall construction durations of greater than 24 months (estimated at 27 and 33 months, respectively), but D/E/F activities would only take 6 and 15 months, respectively. It is important to note that Projected Development Sites 1 and 3 would both have No-Action condition construction durations of 27 months (with D/E/F activities of 6 and 12 months, respectively), and the air pollutant emissions experienced during construction of the Proposed Action would be similar to or lower than the No-Action condition, due to the air quality control measures that would be implemented during construction of the Applicant's projected development and enlargement sites. Air pollutant emissions would also be similar between the No-Action condition and With-Action condition for other sites where development would occur in the No-Action condition, specifically Projected Development Sites 2, 4, 5, and 17.

Based on the sizes of the development sites and the nature of the construction work involved, construction activities under the Proposed Action would not be considered out of the ordinary in terms of intensity, although emissions would be lower due to the emission control measures that would be implemented during construction of the Applicant's projected development and enlargement sites, and may be implemented during construction of the other projected development and enlargement sites. Although multiple projected development sites within the

Rezoning Area may be constructed at the same time, except for the cluster between Vandam and Spring Streets, which consists of Projected Development Site 3 and Projected Enlargement Sites 1 and 2**,** it is anticipated that these construction activities would occur on development sites that are not adjacent to each other and would therefore not have a cumulative effect on adjacent sensitive receptor locations. The cluster identified above is not located immediately adjacent to any sensitive receptors (Projected Development Site 16, which is adjacent to Enlargement Site 2, would be completed in the 3rd quarter of 2015, by which time the D/E/F activities for Projected Enlargement Site 2, which would generally be activities occurring within the existing building, would be concluding); the D/E/F activities would only overlap for a period of nine months, and would therefore not affect any nearby sensitive receptors for an extended "long-term" period of time.

Therefore, based on analysis of all of the factors affecting construction emissions, construction activities under the Proposed Action would not result in any significant adverse impact on air quality.

Almost all emissions from construction activities would be near ground level; therefore, the highest air quality impacts from construction activities would be expected at ground level locations. The increments from elevated operational stationary sources at ground level locations would be negligible. In addition, as described above under "Transportation," the cumulative operational and construction traffic increments would be of lower magnitudes than what would result from the overall Proposed Action when completed in 2022. Such small increments in operational air quality concentrations would not substantially increase air quality effects associated with construction as described above, and consequently the combined effects of construction and operational air quality associated with the Proposed Action would not result in any significant adverse impact.

NOISE AND VIBRATION

No significant adverse noise or vibration impacts would be expected at any sensitive receptor locations due to construction of the Proposed Action.

Noise

The Applicant has committed to employing a wide variety of feasible and practicable measures that exceed standard construction practices to minimize construction noise and reduce potential noise impacts associated with the construction of their development sites. These measures will be described in the noise mitigation plan required as part of the New York City Noise Control Code. At projected and potential development and enlargement sites not controlled by the Applicant, noise control measures, as required by the New York City Noise Control Code would be employed to lessen potential noise increases resulting from construction. Furthermore, as discussed below, construction of all but two individual development or enlargement sites would be expected to last 24 months or less. Therefore, no significant adverse noise or vibration impacts would be expected at any sensitive receptor locations due to construction of the Proposed Action.

The Rezoning Area and adjacent area contains very few existing residential uses, and consequently very few noise sensitive receptor sites. There are existing residential buildings on block 597 with façades along Charlton Street, Greenwich Street, and Vandam Street as well as on Spring Street between Greenwich Street and Hudson Street; residential buildings on block 578 with façades along Dominick Street, Broome Street, and Varick Street; residential buildings

on block 579 with facades on Dominick Street and Greenwich Street; residential buildings on block 505 and 506 with façades along Vandam Street and Avenue of the Americas; commercial live-work units on the northern block 491 with facades along Avenue of the Americas and Dominick Street; residential buildings on the southern block 491 with façades along Varick Street and Broome Street; residences on the northern block 477 along Watts Street between Varick Street and Avenue of the Americas; and residential buildings on the southern block 477 with façades along Grand Street, Varick Street and Watts Street that would constitute noise sensitive receptor sites in and adjacent to the Rezoning Area.

At sensitive receptor locations nearest the development and enlargement sites where construction would occur in the No-Action condition, the difference between the noise that would be experienced in the No-Action condition and the noise that would be experienced during the construction period with the Proposed Action would be unlikely to create an exceedance of the *CEQR Technical Manual* noise impact criteria. Specifically, Projected Development Sites 1, 2, 3, 4, 5, and 17 would experience new construction in the No-Action condition, and therefore the noise levels experienced during construction of the Proposed Action would be similar or lower, due to the noise control measures that would be implemented during construction of the Applicant's projected development and enlargement sites. These noise levels would be of similar duration in the No-Action condition on all sites except Projected Development Sites 2 and 4, which would have somewhat shorter construction durations in the No-Action condition.

At sensitive receptor locations whose nearest development or enlargement site would be constructed only with the Proposed Action, noise levels with construction would, in some cases, be comparable to the No Action noise levels, and would consequently not create an exceedance of the *CEQR Technical Manual* noise impact criteria. At locations with lower background levels, locations where construction occurs very close to a sensitive receptor, or locations where construction occurs simultaneously at multiple adjacent sites, such as locations near the Vandam Street/Spring Street cluster of projected development and enlargement sites, construction may result in exceedances of the *CEQR Technical Manual* noise impact criteria during some limited periods of construction; however, the exceedances would not be expected to occur continuously for 24 months due to the limited duration of D/E/F construction activities on these sites (approximately nine to 15 months of D/E/F activity on these sites). Therefore, while the noise level increases may be perceptible and intrusive, they would not be considered "long term" or significant according to *CEQR Technical Manual* criteria.

Buildings constructed as part of the Proposed Action would be constructed to provide between 22 and 38 dBA of window/wall attenuation. While these buildings may experience interior noise levels that exceed the CEQR recommended 45 dBA interior L_{10} value for residential uses at some limited times during the construction period, such exceedances would be of very limited duration and as a result of the requirements of the NYC Noise Control Code, would not occur during the night-time hours, which are the most sensitive for residential uses.

The changes in operational noise resulting from the Proposed Action were calculated to be less than 1.0 dBA upon completion of the full build-out, and the operation of development or enlargement sites that are completed during the construction period would result in even smaller noise level increments. Such small increments would not substantially increase noise associated with construction as described above, and consequently the combined effects of construction and operational noise associated with the Proposed Actions would not result in any significant adverse impact.

Vibration

The buildings and structures of most concern with regard to the potential for structural or architectural damage due to vibration are known architectural resources in the vicinity of the projected development and enlargement sites, specifically 32-36 Dominick Street, 310 Spring Street, **131 Avenue of the Americas[1],** and the Charlton-King-Vandam Historic District~~, and the proposed South Village Historic District~~ (see Chapter 7, "Historic and Cultural Resources").[2] As known architectural resources, these sites would require the application of the more stringent vibration criteria described above for such resources (the LPC criteria of 0.50 inches/second PPV). However, as a result of the distance of the nearby sensitive structures from the construction sites, vibration levels at these buildings and structures, as well as other less-sensitive nearby structures, would not be expected to exceed the 0.50 inches/second PPV limit. In addition, as discussed below, 32-36 Dominick Street, 310 Spring Street, and the Charlton-King-Vandam Historic District ~~is a designated New York City Historic District and therefore~~ would be afforded additional protection under New York City Department of Buildings (DOB) *TPPN #10/88*.

With respect to potential vibration levels that would be perceptible and annoying, the two pieces of equipment that would have the most potential for producing levels which exceed the 65 vibration decibels (VdB) limit are pile drivers and vibratory rollers. They would produce perceptible vibration levels (i.e., vibration levels exceeding 65 VdB) at receptor locations within a distance of approximately 230 feet. However, the operation would only occur for limited periods of time at a particular location and therefore would not result in any significant adverse impacts. Any blasting that may occur would be expected to produce vibrations less perceptible than those from the operation of the three pieces of equipment cited above. In no case are significant adverse impacts from vibrations expected to occur.

OTHER TECHNICAL AREAS

Historic and Cultural Resources

Construction activities related to as-of-right development that could occur as a result of the Proposed Action could result in unavoidable significant adverse impacts on archaeological and architectural resources.

Archaeological Resources

Construction would involve subsurface disturbance to areas in the proposed Rezoning Area that have been identified as archaeologically sensitive by the Phase 1A studies. Specifically, the Phase 1A Archaeological Documentary Study identified portions of four projected development sites (Sites 5, 10, 12, and 13) and two potential development sites (Sites 22 and 23) as being archaeologically sensitive for resources associated with the 19th-century occupation of the 20 historic lots included within those sites, and recommended Phase 1B archaeological testing for these sites. These potential archaeological resources could include shaft features (i.e., privies, cisterns, or wells) associated with the residential occupation of these historic lots in the early to mid-19th century. The Phase 1A was submitted to the New York City Landmarks Preservation Commission (LPC) for review and comment. In correspondence dated February 22, 2012, LPC concurred with the findings of the Phase 1A report.

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[1] 131 Avenue of the Americas has not yet been listed, but the New York State Office of Parks, Recreation and Historic Preservation (OPRHP) has determined that it is eligible for S/NR listing.

[2] ~~The South Village Historic District has not yet been designated, but LPC (letter dated August 27, 2009) and OPRHP (letter dated May 1, 1977) have determined that it is eligible for designation.~~

Since none of the six potential and projected development sites identified as archaeologically sensitive are under the Applicant's control, future construction for the development of these properties could be undertaken as as-of-right development. There are no mechanisms available through CEQR to require that such development undertake archaeological field testing to determine the presence of archaeological resources (i.e., Phase 1B testing) or mitigation for any identified significant resources through avoidance or excavation and data recovery (i.e., Phase 2 or Phase 3 archaeological testing). Therefore, construction activities related to as-of-right development that could occur as a result of the Proposed Action could result in unavoidable significant adverse impacts on archaeological resources.

However, it should be noted that if any of these sites were to be developed through future discretionary actions that would be subject to review under CEQR, Phase 1B testing would be completed to confirm the presence or absence of archaeological resources as part of any future discretionary action.

Architectural Resources

Architectural resources are defined as buildings, structures, objects, sites, or districts listed on the State and National Registers of Historic Places (S/NR) or determined eligible for such listing, National Historic Landmarks (NHLs), New York City Landmarks (NYCLs) and Historic Districts, and properties that have been found by the LPC to appear eligible for designation, considered for designation ("heard") by LPC at a public hearing, or calendared for consideration at such a hearing (these are "pending" NYCLs). There are no known architectural resources located on any of the projected or potential development or enlargement sites. ~~However, as~~ As a result of construction-related activities, the Proposed Action could result in adverse direct impacts on up to **six** known architectural resources in both the Rezoning Area and historic resources study area, which 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, subsidence, collapse, or damage from construction machinery. These known architectural resources include: 32-36 Dominick Street (3 resources); 310 Spring Street; **131 Avenue of the Americas[1],** and the Charlton-King-Vandam Historic District~~; and the proposed South Village Historic District~~.[2] The Proposed Action could also result in adverse direct construction-related impacts on up to six potential architectural resources in both the Rezoning Area the historic resources study area.

Resources that could experience accidental damage from adjacent construction would be offered some protection through DOB controls governing the protection of adjacent properties from construction activities. The DOB *Technical Policy and Procedure Notice* (*TPPN) #10/88*, applies to New York City Landmarks, properties within New York City Historic Districts, and National Register-listed properties. *TPPN #10/88* supplements the standard building protections afforded by the Building Code 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. Therefore, with the required measures of *TPPN #10/88* in place, there would be no

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significant adverse construction-related impacts on NYCLs or properties listed on the S/NR that are located within 90 feet of development resulting from the Proposed Action. That is, with these required measures, significant adverse construction-related impacts would not occur to the **following** resources noted above: 32-36 Dominick Street (three resources), 310 Spring Street, and the Charlton-King-Vandam Historic District. However, construction under the Proposed Action could potentially result in impacts to non-designated or unlisted resources, because they would not be afforded special protections under *TPPN #10/88*. Specifically, under the standards of the *CEQR Technical Manual*, construction under the Proposed Action on sites not controlled by the Applicant could result in significant adverse construction-related impacts on **up to one known architectural resource (specifically, 131 Avenue of the Americas** ~~three buildings within the proposed South Village Historic District~~) **and** six potential architectural resources because they are not NYCLs or NR-listed properties and are not afforded special protections under *TPPN #10/88*. These include: 278 Spring Street, 341 Hudson Street, 78 Vandam Street, 431 Canal Street, 189 Varick Street, and 180 Varick Street. **It should be noted that impacts to the known resource (131 Avenue of the Americas) could also occur as a result of development in the No-Action condition.**

One known resource and four potential architectural resources are located within 90 feet of the Applicant's projected development sites. With the preparation and implementation of a Construction Protection Plan (CPP) for these potential architectural resources, construction activities on the Applicant's projected development and enlargement sites resulting from the Proposed Action would not be expected to result in adverse impacts on these historic and cultural resources.

Hazardous Materials

The Proposed Action would not result in significant adverse impacts with respect to hazardous materials during construction.

The Proposed Action would result in the demolition of existing structures and excavation on the projected and potential development sites. An assessment of potential hazardous materials impacts was performed for the projected and potential development sites where ground disturbance from construction activities could occur as part of the anticipated future development. The hazardous materials assessment identified potential historical and existing sources of contamination within or near the Rezoning Area. To reduce the potential for adverse impacts associated with projected and potential new construction resulting from the Proposed Action, further environmental investigations will be required. To ensure that these investigations are undertaken, E-designations would be placed on projected and potential development and enlargement sites.

These E-designations require the owner of the property to do the following: conduct a Phase I Environmental Site Assessment (ESA) in accordance with the American Society of Testing Materials (ASTM) E1527-05; prepare and implement a soil and groundwater testing protocol; and conduct remediation where appropriate, to the satisfaction of the Mayor's Office of Environmental Remediation (OER) before development-related building permits for development involving soil disturbance or changes to more sensitive uses (e.g., from non-residential to residential) can be issued by DOB. If warranted by the findings of the subsurface investigation, site redevelopment would be conducted in accordance with an OER-approved Remedial Action Plan (RAP) and Construction Health and Safety Plan (CHASP), with a closure report prepared following construction documenting compliance with the RAP/CHASP. Following construction, if long-term monitoring (e.g., of groundwater quality) is required by

OER, a Site Management Plan (SMP) would be prepared specifying the necessary and appropriate procedures for operation, maintenance, testing, and reporting that remediation efforts, if any, have been employed. With the implementation of these measures, the Proposed Action would not result in any significant adverse impacts with respect to hazardous materials.

Open Space

There are no publicly accessible open spaces on any of the projected or potential development sites, and no open space resources would be used for staging or other construction activities. The Rezoning Area contains three publicly accessible open spaces. These open spaces include one privately owned publicly accessible open space—the Trump Organization's Trump SoHo Plaza—and two public open spaces—Soho Square and Duarte Square. Additionally, two public open spaces—Grand Canal Court, and Albert Capsouto Park—are adjacent to the Rezoning Area boundary near Projected Development Site 1. At limited times, activities such as excavation and foundation construction at Projected Development Sites 1 and 2 may generate noise that could impair the enjoyment of nearby open space users, but such noise effects would be temporary. (It is unlikely that construction activities on Projected Development Site 18 would result in noise levels that would impair the enjoyment of the adjacent Trump SoHo Plaza or Soho Square open spaces, as construction at this location is anticipated to include only interior modifications to accommodate a change in use.) Within the Rezoning Area, under both the No-Action and With-Action conditions, development on Projected Development Site 1 would include the improvement of the open space easement located adjacent to the site based on commitments from a prior approval, which would create an additional 0.20 acres of passive open space—with landscaping, trees, and seating areas—in the Rezoning Area and study area. For construction at Projected Development Sites 1 and 2, construction fences around these sites would shield the nearby or adjacent parks from construction activities. Construction under the With-Action condition would not limit access to these parks or other open space resources in the vicinity of the Rezoning Area. Therefore, construction under the With-Action condition would not result in significant adverse impacts on open space.

Socioeconomic Conditions

The Proposed Action would not result in significant adverse construction impacts with respect to socioeconomic conditions.

Construction could, in some instances, temporarily affect pedestrian and vehicular access on street frontages immediately adjacent to the projected development sites. However, lane and/or sidewalk closures are expected to be of very limited duration, and are not expected to occur in front of entrances to any existing or planned retail businesses, construction activities would not obstruct major thoroughfares used by customers or businesses, and businesses would not be significantly affected by any temporary reductions in the amount of pedestrian foot traffic or vehicular delays that could occur as a result of construction activities, because of the MPT measures required by NYCDOT. Utility service would be maintained to all businesses, although very short-term interruptions (i.e., hours) may occur when new equipment (e.g., a transformer, or a sewer or water line) is put into operation. Overall, construction resulting from the Proposed Action is not expected to result in any significant adverse impacts on surrounding businesses.

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

Community Facilities

Construction activities related to the Proposed Action would not physically displace or alter any existing community facilities. No community facilities would be directly affected by construction activities for an extended duration. The construction sites would be surrounded by construction fencing and barriers that would limit the effects of construction on nearby facilities. Construction workers would not place any burden on public schools and would have minimal, if any, demands on libraries, child care facilities, and health care. Construction of the proposed buildings would not block or restrict access to any facilities in the area, and would not materially affect emergency response times. New York Police Department (NYPD) and Fire Department (FDNY) emergency services and response times would not be materially affected as a result of the geographic distribution of the police and fire facilities and their respective coverage areas.

Land Use and Neighborhood Character

Construction activities would affect land use on the various projected development sites within the Rezoning Area, but would not alter surrounding land uses. As is typical with construction projects, during periods of peak construction activity there would be some disruption, predominantly noise, to the nearby area. There would be construction trucks and construction workers coming to the various sites. 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 each of the projected development sites or within portions of sidewalks, curbs, and travel lanes of public streets immediately adjacent to these sites. Throughout construction, access to surrounding residences, businesses, and institutions in the area would be maintained. In addition, measures would be implemented to control noise, vibration, emissions, and dust on construction sites, including the erection of construction fencing incorporating sound-reducing measures. Overall, while the construction at the various development sites within the Special District would be evident to the local community, the limited duration of construction at each of the sites would not result in significant or long-term adverse impacts on local land use patterns or the character of the nearby area.

Rodent Control

Construction contracts for the sites controlled by the Applicant would include provisions for a rodent (mouse and rat) control program. Similarly, such controls would be expected to be provided by developers of the other projected development sites within the Rezoning Area, as standard construction practice. Before the start of construction at any given site in the Rezoning Area, construction contractors would survey and bait the appropriate areas and provide for proper site sanitation. During the construction phase, as necessary, the contractors would carry out a maintenance program. Coordination would be maintained with appropriate public agencies. Only U.S. Environmental Protection Agency- (EPA) and New York State Department of Environmental Conservation (NYSDEC)-registered rodenticides would be utilized, and the contractors would be required to perform rodent control programs in a manner that avoids hazards to persons, domestic animals, and non-target wildlife.

B. ANALYSIS APPROACH

The construction analysis of presented in this chapter considers the potential impacts of construction activities on the projected development sites (including projected new construction,

enlargements, and residential conversion). As discussed in Chapter 1, "Project Description," the potential development sites are considered less likely to be developed within the 10-year analysis period and therefore are not included in this assessment.

As discussed in Chapter 1, two reasonable worst-case development scenarios (RWCDS) have been developed to represent potential development scenarios that could result from the Proposed Action. RWCDS 1 assumes that the maximum permitted residential development would occur on each of the development sites, and RWCDS 2 assumes that community facility uses with sleeping accommodations (dormitories), rather than residential buildings, would be developed on two of the projected development sites. Both scenarios would result in development on the same sites, but RWCDS 1 would result in a slightly greater overall amount of development, which would result in slightly more intensive construction activities. Therefore, this analysis considers the potential impacts of RWCDS 1.

As discussed in detail in the "Foreword" of the FEIS, conditions on two development sites within the Rezoning Area—Projected Development Sites 11 and 18—have changed since the issuance of the DEIS. For Projected Development Site 11, these changes would result in less construction activity in the With-Action condition and more activity in the No-Action condition; for Projected Development Site 18, these changes would result in less construction activity in the No-Action condition and the same amount of construction activity as previously assumed in the With-Action condition. These changes would have a negligible effect on the Construction analysis and the analysis of Construction impacts is more conservative absent these changes; thus, the Construction analysis assumes no change to Projected Development Sites 11 and 18. However, the comparison of cumulative operational and construction traffic has been updated to reflect the Transportation analyses presented in the FEIS.

C. METHODOLOGY

This section discusses the level of analysis used to assess the potential for significant adverse impacts in each of the construction-related analysis areas presented in the *CEQR Technical Manual*. For each of the various technical areas presented below, appropriate construction analysis years were selected to represent reasonable worst-case conditions relevant to that technical area, which can occur at different times for different analyses. For example, the noisiest part of the construction may not be at the same time as the heaviest construction traffic. Therefore, the analysis periods may differ for traffic, air quality, and noise. In each section, the methodologies to determine the period of reasonable worst-case conditions for assessing potential impacts are explained. All methodologies used in the impact analyses are in accordance with the *CEQR Technical Manual*. For all construction-related analysis areas, the methodologies used to assess potential construction-related impacts can be found in the chapters for each analysis area addressing potential operational impacts. Additional details relevant only to the construction air quality and noise analysis methodologies are given in their respective analysis sections below.

The next section in this chapter describes the conceptual construction schedule, the construction methods to be used, and city, state, and federal regulations and policies that govern construction. This section also establishes the framework used for the assessment of potential impacts from construction. The construction timeline—determined by the timing of the various major construction stages associated with constructing a building, such as excavation and foundation, core and shell construction, and interior finishing—is described. The types of equipment are

discussed, and the number of workers and truck deliveries estimated. The analyses use these data to determine the potential for significant adverse environmental impacts.

D. CONSTRUCTION PHASING AND ACTIVITIES

INTRODUCTION

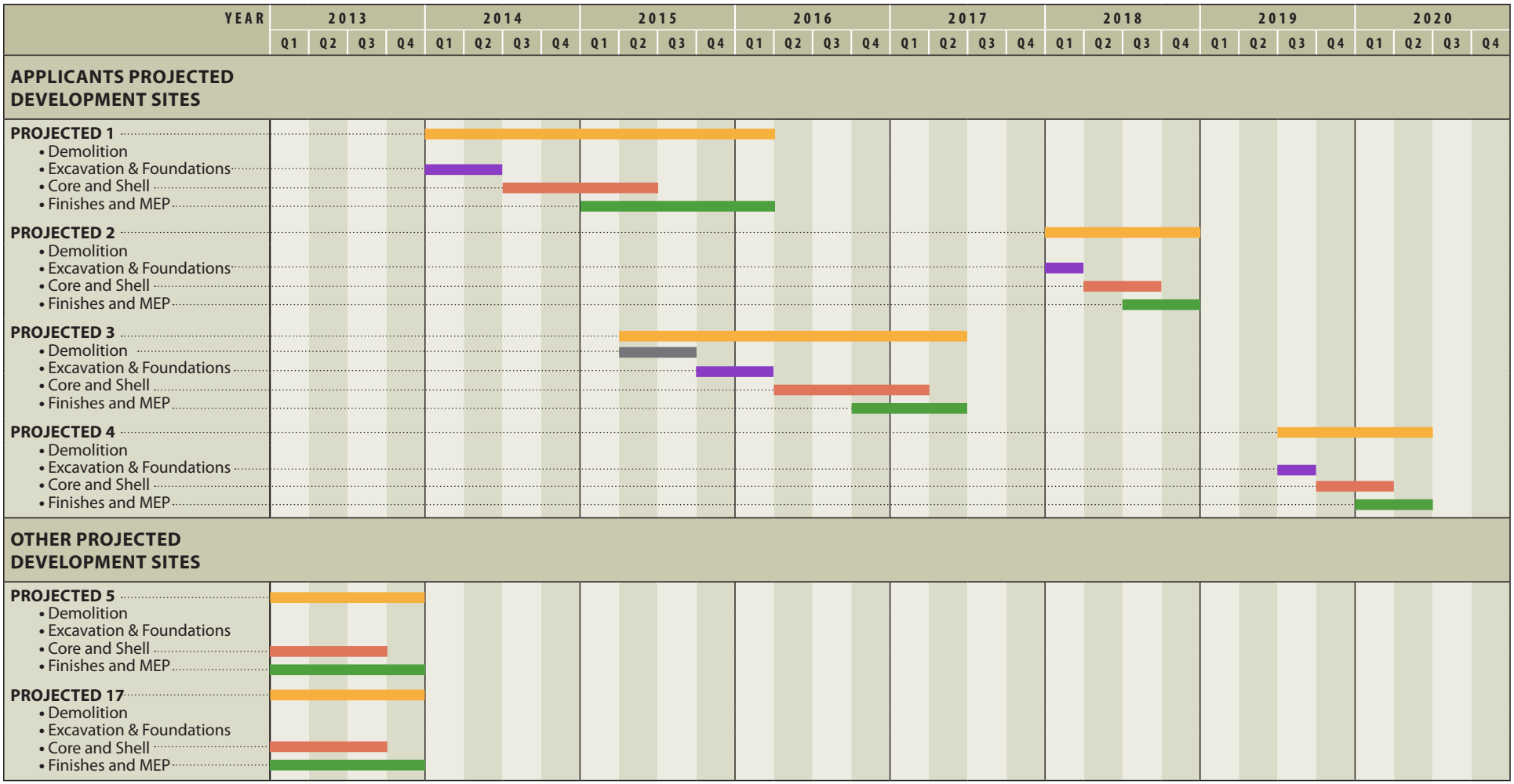
The following section describes the conceptual construction schedule and methods and means of construction. While the methods and means described below have been developed with an experienced New York City construction manager (and are commonly used in New York City), the discussion is only illustrative as other means and methods may be chosen at the time of construction. The described means and methods are conservatively chosen to serve as the basis of the analyses in this chapter and are representative of the reasonable worst-case for potential impacts.

If the Proposed Action is approved, complete build-out of the projected development sites within the Rezoning Area would occur over time, with the last building anticipated to be completed by approximately 2022. Likewise, if the Proposed Action is not approved, it is expected that development would occur on Projected Development Sites 1 through 5 and 17 in the No-Action condition pursuant to the existing zoning. This section of the chapter first gives an overview of the conceptual construction phasing and schedule for Projected Development Sites 1 through 5 and 17 under No-Action conditions, followed by an overview of the anticipated construction phasing and schedule of the various projected development and enlargement sites within the Rezoning Area in the With-Action condition, and then provides a detailed description of each type of construction activity. The activities discussed include: abatement and demolition; excavation and foundations; construction of the core and shell of the building; exterior cladding; and interior fit-out. General construction practices are then presented, including those associated with deliveries and access, hours of work, and sidewalk and lane closures. Estimates of the number of construction workers and truck trips are presented. Following the discussion of construction techniques, the chapter discusses potential impacts with regard to transportation, air quality, noise and vibration, historical and cultural resources, hazardous materials, open space, socioeconomic conditions, community facilities, land use and public policy, neighborhood character, and rodent control.

CONCEPTUAL CONSTRUCTION PHASING AND SCHEDULE

While the anticipated construction durations described below have been developed with an experienced New York City construction manager, the discussion is only illustrative as different means and methods may be chosen at the time of construction. At this time, there are no specific construction programs or designs for any development that is projected to result from the Proposed Action. The described construction durations are conservatively chosen to serve as the basis of the analyses in this chapter and are representative of the reasonable worst-case for potential impacts. The analyses conservatively account for overlapping construction activities for development sites in proximity of one another to capture the cumulative nature of construction impacts.

The conceptual construction schedule, presented in **Figure 18-1**, includes future construction that would occur without the Proposed Action at Projected Development Sites 1 through 5 and



Conceptual Construction Schedule
No-Action Condition

Figure 18-1

17.[1] Excavation and foundation work for the No-Action and With-Action conditions would be somewhat shorter but of similar duration on Projected Development Sites 2 and 4 (No-Action condition activities of 3 months each compared to With-Action condition activities of 6 to 9 months, respectively). Although the subsequent superstructure, exteriors, and interiors tasks would be substantially longer for these buildings in the With-Action condition on Projected Development Sites 2 and 4 (as those sites would result in substantially larger buildings in the With-Action condition, compared to the No-Action condition), the overall duration of construction of these two sites would still not exceed 24 months. It is also important to note that Projected Development Sites 1 and 3, which are anticipated to have construction durations exceeding 24 months (27 and 33 months, respectively) in the With-Action condition, would both have No-Action condition construction durations of 27 months. Overall, construction at various development sites would take place over a period of about 7.5 years at a total of 6 sites in the No-Action condition, and would span a period of about 9 years, at a total of 19 development and 3 enlargement sites in the With-Action condition.

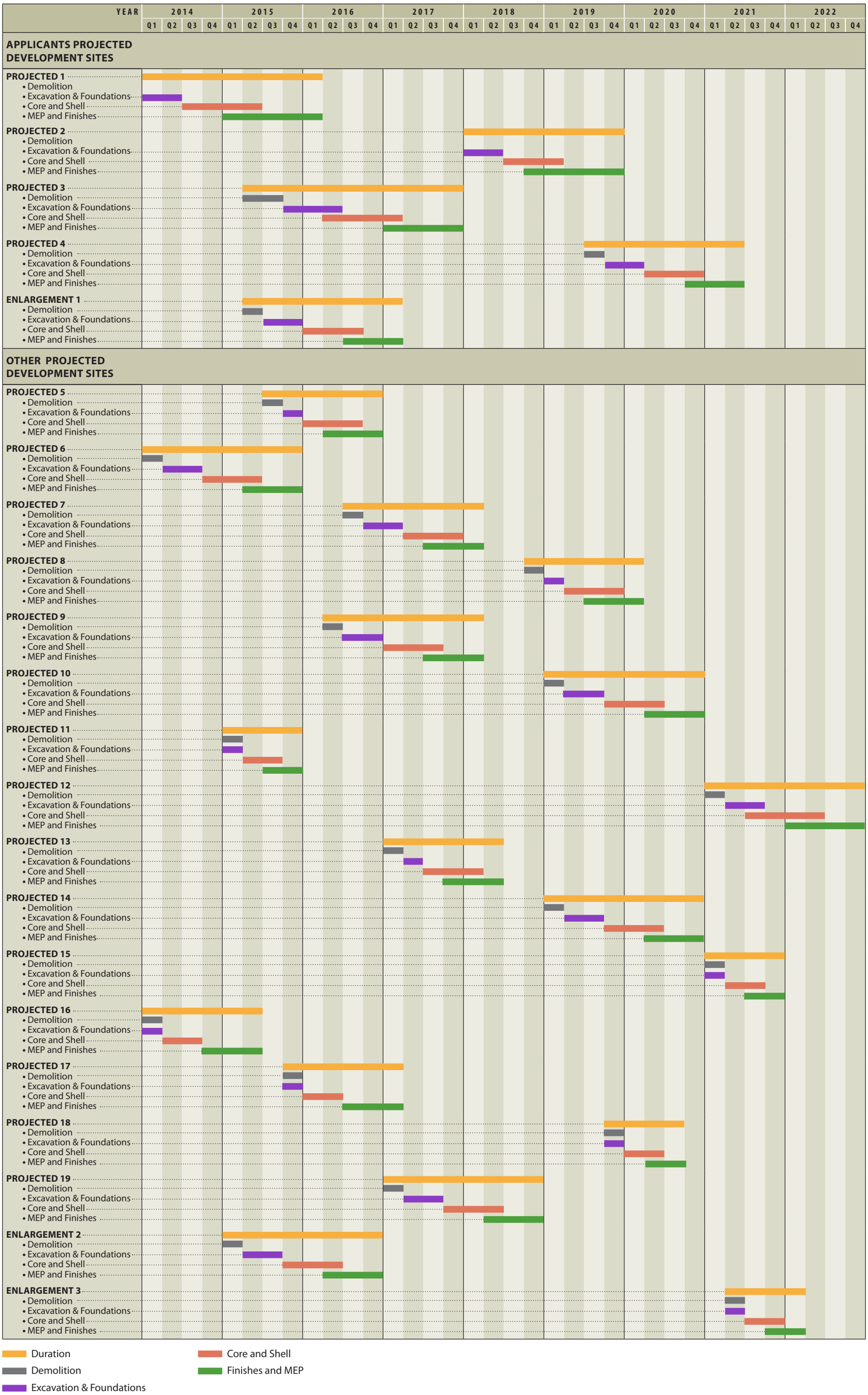
In the No-Action condition, the highest number of workers would be expected to occur in both the fourth quarter of 2016 and the first quarter of 2017, and the highest number of trucks would be expected to occur in the fourth quarter of 2015. These peak construction worker activities for the No-Action condition during portions of 2016 and 2017 reflect intensive overlapping core/shell and finishing/MEP activities at Projected Development Site 3, while the peak construction trucking activities during portions of 2015 reflect concurrent construction at two buildings in the Rezoning Area (Projected Development Sites 1 and 3).

In the With-Action condition, the highest number of workers would be expected to occur in the third quarter of 2016 and the highest number of trucks would be expected to occur in the second quarter of 2016. These peak construction activities during the middle part of 2016 reflect the anticipated concurrent construction at seven buildings in the Rezoning Area (Projected Development Sites 3, 5, 7, 9, and 17 and Projected Enlargement Sites 1 and 2).

Figure 18-2 and **Table 18-1** present a conceptual schedule of construction for the RWCDS. In the conceptual construction schedule, construction is assumed to begin in 2014. This schedule represents the reasonable worst-case scenario for potential environmental impacts since it results in the highest number of workers, trucks, and non-road engines on site at the various projected development and enlargement sites within the Rezoning Area at any given time, within reasonable construction scheduling constraints of the Proposed Action. However, due to the conservative nature of this conceptual schedule as explained above, construction may start at an earlier time. If the Proposed Action is approved, complete build-out of the projected development and enlargement sites would occur over time with the last building completed approximately by the end of 2022.

Construction on Projected Development Sites 1, 6, and 16 would begin in the first quarter of 2014. Projected Development Site 1 would be completed in approximately 27 months while Projected Development Sites 6 and 16 are expected to take about 24 and 18 months to complete, respectively. Construction on Projected Development Site 11 and Projected Enlargement Site 2 would begin in the first quarter of 2015, and would take about 12 and 24 months to complete,

[1] In the No-Action condition, construction on Projected Development Site 5 and 17 is expected to commence prior to 2013.



Conceptual Construction Schedule
With-Action Condition
Figure 18-2

Table 18-1
Conceptual Construction Schedule

Reasonable Worst Case Development Scenario (RWCDS) Site	Start Month	Finish Month	Approximate Duration (months)
Projected Development/Enlargement Sites Controlled by the Applicant:			
Projected Development Site 1	1st quarter 2014	1st quarter 2016	27
Projected Development Site 2	1st quarter 2018	4th quarter 2019	24
Projected Development Site 3	2nd quarter 2015	4th quarter 2017	33
Projected Development Site 4	3rd quarter 2019	2nd quarter 2021	24
Projected Enlargement Site 1	2nd quarter 2015	1st quarter 2017	24
Other Projected Development/Enlargement Sites (not controlled by the Applicant):			
Projected Development Site 5	3rd quarter 2015	4th quarter 2016	18
Projected Development Site 6	1st quarter 2014	4th quarter 2015	24
Projected Development Site 7	3rd quarter 2016	1st quarter 2018	21
Projected Development Site 8	4th quarter 2018	1st quarter 2020	18
Projected Development Site 9	2nd quarter 2016	1st quarter 2018	24
Projected Development Site 10	1st quarter 2019	4th quarter 2020	24
Projected Development Site 11	1st quarter 2015	4th quarter 2015	12
Projected Development Site 12	1st quarter 2021	4th quarter 2022	24
Projected Development Site 13	1st quarter 2017	2nd quarter 2018	18
Projected Development Site 14	1st quarter 2019	4th quarter 2020	24
Projected Development Site 15	1st quarter 2021	4th quarter 2021	12
Projected Development Site 16	1st quarter 2014	2nd quarter 2015	18
Projected Development Site 17	4th quarter 2015	1st quarter 2017	18
Projected Development Site 18	4th quarter 2019	3rd quarter 2020	12
Projected Development Site 19	1st quarter 2017	4th quarter 2018	24
Projected Enlargement Site 2	1st quarter 2015	4th quarter 2016	24
Projected Enlargement Site 3	2nd quarter 2021	1st quarter 2022	12
Source: Hunter Roberts Construction Group			

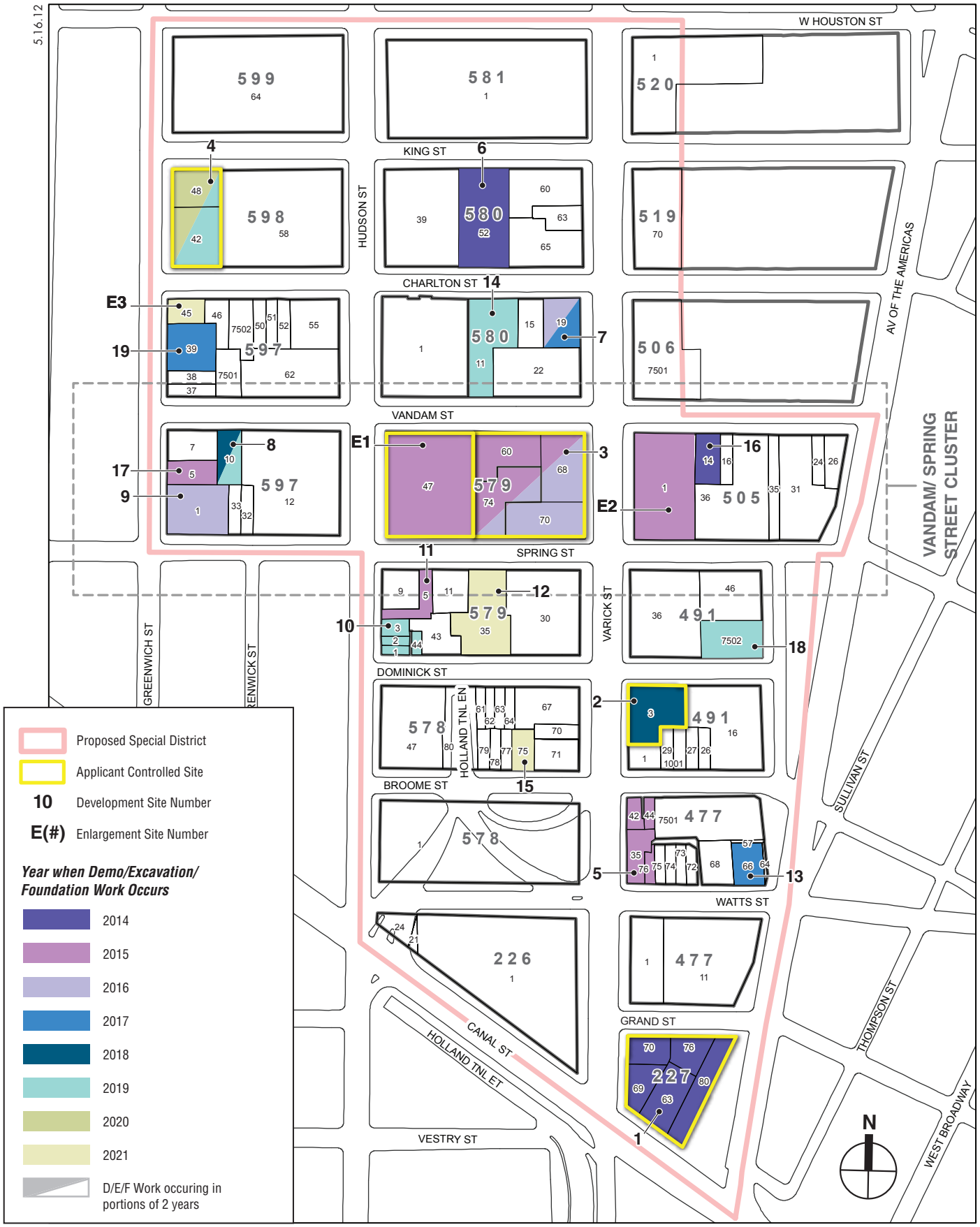
respectively. Construction on Projected Enlargement Site 1 would begin in the second quarter of 2015, and would take about 24 months to complete. Construction on Projected Development Sites 3, 5, and 17 would begin in the second, third, and fourth quarters of 2015, respectively, and would take about 33, 18, and 18 months to complete, respectively. Construction on Projected Development Sites 7 and 9 would begin in the third and second quarters of 2016, respectively. Projected Development Site 7 would be completed in approximately 21 months while Projected Development Site 9 is expected to take about 24 months to complete. At the beginning of 2017, construction would commence on Projected Development Sites 13 and 19, and would be completed by the second and fourth quarters of 2018, respectively. Construction on Projected Development Sites 2 and 8 would begin in the first and fourth quarters of 2018, respectively, and would take about 24 and 18 months to complete, respectively. At the beginning of 2019, construction would commence on Projected Development Sites 10 and 14, and would both be completed by the fourth quarter of 2020. Construction on Projected Development Sites 4 and 18 would begin in the third and fourth quarters of 2019, respectively, and would take about 24 and 12 months to complete, respectively. At the beginning of 2021, construction would commence on Projected Development Sites 12 and 15, and would take about 24 and 12 months to complete, respectively. By the second quarter of 2021, construction on Projected Enlargement Site 3 would begin and would take approximately 12 months to complete.

Because of the types of machinery and activities involved, the demolition and excavation/foundation phases of construction are more likely to generate emissions of concern

from an air quality perspective and to be more onerous and intrusive from a noise perspective. While other construction phases (Building Core, Shell and Finishing) that involve greater numbers of workers would generate considerably more traffic, they would not be of such concern from a stationary source air quality or noise perspective because the equipment used for these activities would be dispersed vertically throughout a given building under construction, resulting in very low air concentration increments in adjacent areas, and would not generate the intrusive types of noise that emanates from equipment used during the demolition/excavation/foundation (D/E/F) work, and/or would be enclosed during building finishing work. For these reasons, the D/E/F phases of construction for the projected development and enlargement sites are the focus of the preliminary screening assessments related to the potential for construction air quality and noise impacts. **Figure 18-3** shows the years during which each of the projected development or enlargement sites would be undergoing the D/E/F phases of construction over the course of the nine year construction period for the RWCDS. It can be seen that the majority of the projected development and enlargement sites are concentrated in a cluster within the proposed Rezoning Area—running east-west along Spring and Vandam Streets, as indicated on **Figure 18-3**.

Again referring to the *CEQR Technical Manual*, construction activities of 24 months or less are considered short-term, and do not generally require detailed assessment. Examining the D/E/F phase of construction for the RWCDS, it is noted that various projected development and enlargement sites have D/E/F phases ranging from 3 months to as many as 15 months for the largest of the proposed buildings (Projected Development Site 3), and that on average the D/E/F phase of construction is between 6 and 9 months. Of the 19 Projected Development and 3 Projected Enlargement Sites, six have D/E/F phases of 3 months (Projected Development Sites 11, 15, 16, 17, 18, and Projected Enlargement Site 3); five have D/E/F phases of 6 months (Projected Development Sites 1, 2, 5, 8, and 13); ten have D/E/F phases of 9 months (Projected Development Sites 4, 6, 7, 9, 10, 12, 14, 19, and Projected Enlargement Sites 1 and 2); finally, only one has a D/E/F phase of more than a year, Projected Development Site 3, at 15 months.

Projected Development Sites 1, 2, 3, 4, 5, and 17 would all have D/E/F work occurring under the No-Action condition similar to what would occur under the With-Action condition. The excavation and foundation work for the No-Action condition would be of somewhat shorter duration on Projected Development Sites 2 and 4 (3 months each) than the With-Action condition (6 and 9 months, respectively as those sites would result in substantially larger buildings in the With-Action condition). Similarly, the subsequent superstructure, exteriors, and interiors tasks would be substantially longer for these buildings in the With-Action condition on Projected Development Sites 2 and 4 (as those sites would result in substantially larger buildings in the With-Action condition, compared to the No-Action condition), but the overall duration of construction of these two sites would still not exceed 24 months. It is also important to note that Projected Development Sites 1 and 3, which are the only projected development or enlargement sites anticipated to have construction durations exceeding 24 months (27 and 33 months, respectively) in the With-Action condition, would both have No-Action condition construction durations of 27 months. The anticipated D/E/F work for Projected Development Sites 1 and 3 would be comparable between the No-Action and With Action conditions at 6 and 12 months, respectively for No-Action conditions, compared with 6 and 15 months, respectively under With-Action conditions. The overall construction duration, as well as the D/E/F work anticipated for Projected Development Sites 5 and 17 would also be comparable for the No-Action condition and With-Action conditions; in either case, both buildings would have overall construction durations of approximately 18 months, with corresponding D/E/F work of 6 month or less.



Conceptual Sequence of Demolition/Excavation/Foundation Activities
RWCDS – Projected Development Sites

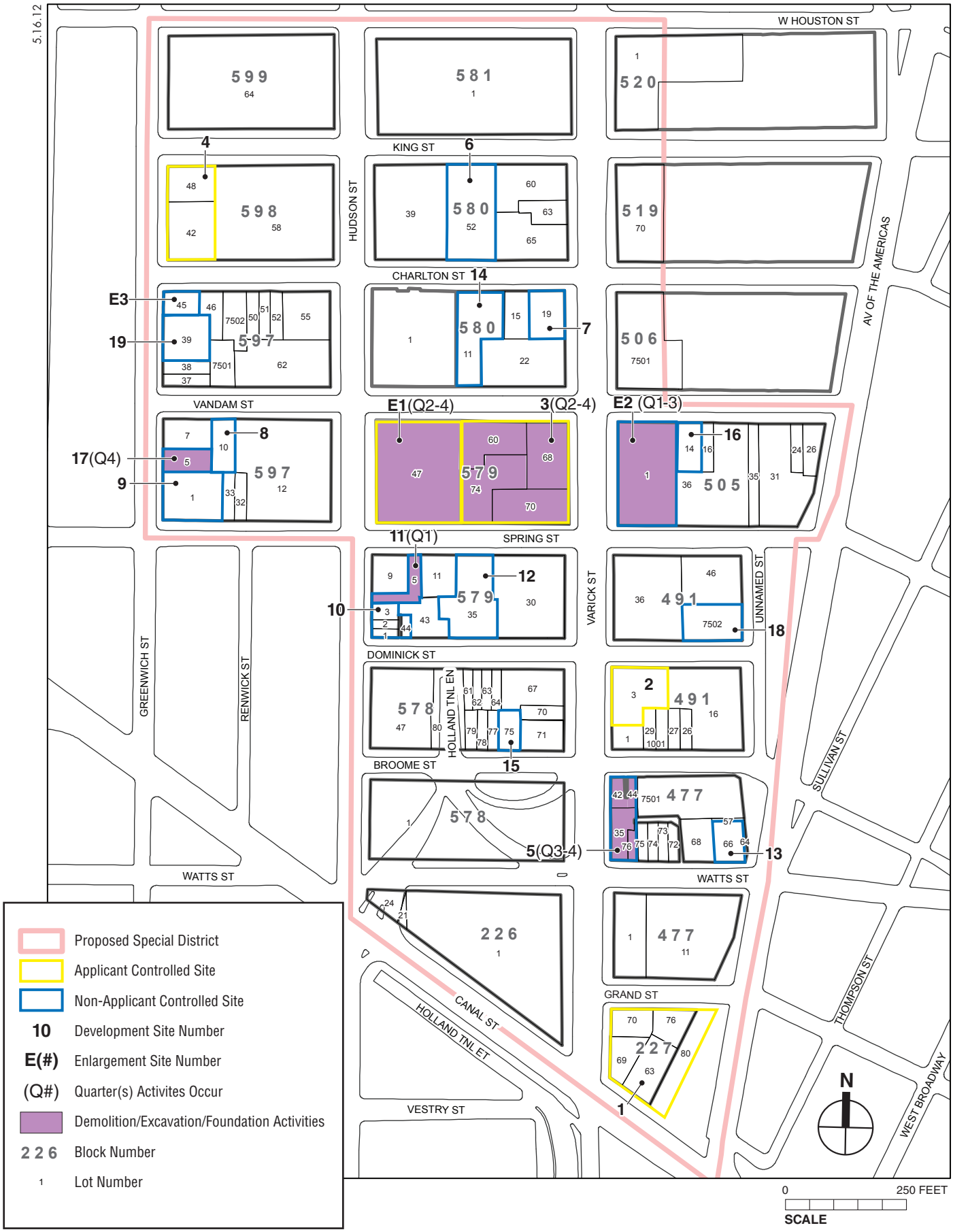
More closely examining the D/E/F phase of construction for the RWCDS in this Vandam/Spring Street Cluster, based on the conceptual construction schedule the majority of the D/E/F phase work at sites in the Rezoning area would occur in 2015 and 2016 (see **Figure 18-4** and **Figure 18-5**, which show the sites that would have ongoing D/E/F work occurring in 2015 and 2016, respectively). Construction at Projected Development Sites 3 and 11 and Projected Enlargement Sites 1 and 2 would all begin all during 2015 (see **Figure 18-4**), which would represent the most concentrated occurrence of adjacent D/E/F work over the nine year construction period. Further, it is important to note that of this period the overlapping D/E/F work would only extend for 3 months with Projected Development Site 11 and Enlargement Site 2 occurring simultaneously during the first quarter of 2015; then three sites (Projected Development Site 3 and Enlargement Sites 1 and 2) would have simultaneous D/E/F work occurring during the second and third quarters of 2015, with the D/E/F work at Enlargement Site 2 ending in the third quarter, and the D/E/F work at Projected Development Site 3 and Enlargement Site 1 extending through the fourth quarter of 2015. By 2016 only Projected Development Site 3 would have D/E/F work occurring in the first half of the year, with Projected Development Sites 7 and 9 having their D/E/F work commencing in the second and third quarters of 2016, respectively and extending for 9 months at each site.

As shown in **Figure 18-3**, multiple projected development sites under the RWCDS conceptual construction schedule within the Rezoning Area may be constructed at the same time. However, based on the conceptual construction schedule developed for the RWCDS, it is anticipated that these construction activities would occur on development sites that are not adjacent to each other and would therefore not have a cumulative effect on adjacent sensitive uses from an air quality or noise perspective. Moreover, while construction could proceed differently than outlined in the conceptual construction schedule, the Vandam/Spring Street cluster of sites represents the greatest number of adjacent large-scale buildings in the Rezoning Area that could have overlapping construction activities. Other adjacent sites are either of sizes similar to buildings in this cluster, or smaller and would have shorter D/E/F work and overall construction activities, compared with the sites in this cluster. As described above, the only exception would be for the cluster of sites between Vandam and Spring Streets (Projected Development Sites 3 and 11 and Projected Enlargement Sites 1 and 2), identified in **Figure 18-4,** which would all begin construction in 2015. At this cluster of development and enlargement sites identified in **Figure 18-4,** none of the sites are located immediately adjacent to any sensitive uses (Projected Development Site 16, which is adjacent to Enlargement Site 2, would be completed in the 3rd quarter of 2015, by which time the D/E/F activities for Projected Enlargement Site 2, which would generally be activities occurring within the existing building, would be concluding). In addition, as indicated in **Figure 18-4**, the D/E/F activities for Projected Development Site 3 and Projected Enlargements Sites 1 and 2 would only overlap for a period of six months, with Projected Development Site 3 and Projected Enlargement Site 1 overlapping for a period of nine months, and would therefore not affect any nearby sensitive receptors for an extended "long-term" period of time. The air quality and noise implications of the RWCDS schedule and anticipated construction activities are detailed more completely in Section F, "Future With the Proposed Action," in the "Air Quality" and "Noise and Vibration" subsections.

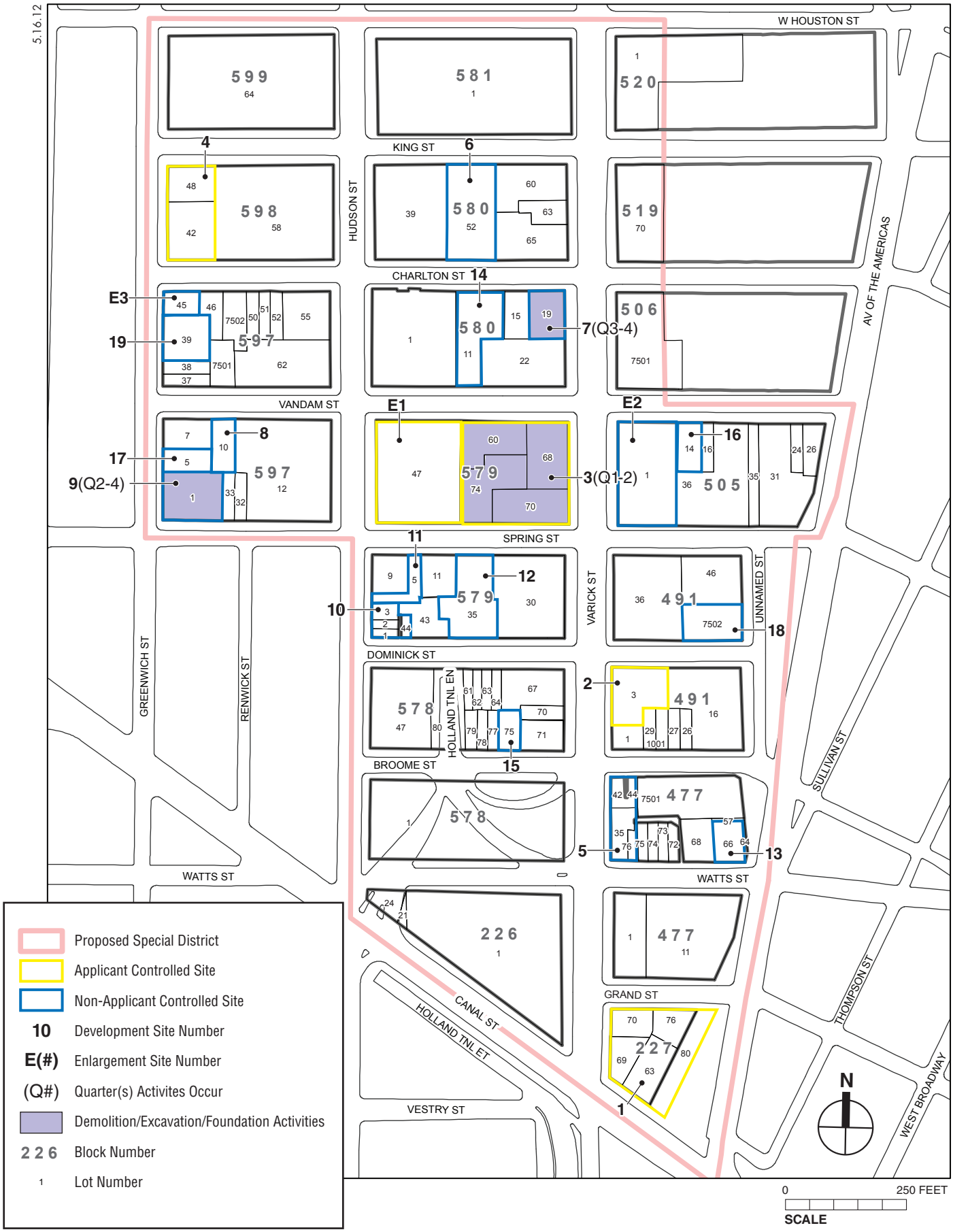
CONSTRUCTION DESCRIPTION

OVERVIEW

Construction of mid-rise or large-scale buildings in New York City typically follows a general pattern. The first task is construction startup, which involves the siting of work trailers,



2015 Demolition/Excavation/Foundation Activity
RWCDS – Projected Development Sites



2016 Demolition/Excavation/Foundation Activity
RWCDS – Projected Development Sites

Figure 18-5

installation of temporary power and communication lines, and the erection of site perimeter fencing. Then, if there is an existing building on the site, any potential hazardous materials (such as asbestos) are abated, and the building is then demolished with some of the materials recycled and the debris taken to a licensed disposal facility. Excavation and removal of the soils is next, followed by construction of the foundations. When the below-grade construction is completed, construction of the core and shell of the new building begins. The core is the central part of the building and is the main part of the structural system. It contains the elevators and the mechanical systems for heating, ventilation, and air conditioning (HVAC). The shell is the outside of the building. As the core and floor decks of the building are being erected, installation of the mechanical and electrical internal networks would start. As the building progresses upward, the exterior cladding is placed, and the interior fit out begins. During the busiest time of building construction, the upper core and structure are built while the mechanical/electrical connections, exterior cladding, and interior finishing progress on lower floors. Construction activities are similar for building enlargements, but have very limited, if any foundation work, and often involve some reconfiguration of core and other interior space in the existing portion of a building to accommodate the new building systems.

GENERAL CONSTRUCTION PRACTICES

Certain activities would be ongoing throughout the construction period within the Rezoning Area. For the Projected Development and Enlargement Sites under the control of the Applicant (Projected Development Sites 1, 2, 3, and 4, and Projected Enlargement Site 1), there would be a field representative designated to serve as the contact point for the community and local leaders. The representative would be available to meet and work with the community to resolve concerns or problems that arise during the construction process. This is a fairly standard practice for the construction of large buildings in New York City, and it is anticipated that for the other development and enlargement sites, the developers of those sites would also designate field representatives to serve as contact points for the community with respect to construction on those sites. New York City maintains a 24-hour-a-day telephone hotline (311) so that concerns can be registered with the city.

Governmental Coordination and Oversight

The following describes governmental construction oversight agencies and typical construction practices in New York City. In certain instances, specific practices may vary from those described below. However, the typical practices are expected to be used because they have been developed over many years and have been found to be necessary to successfully complete large projects in a confined urban area. All deliveries, material removals, and hoist uses have to be tightly scheduled to maintain an orderly work area and to keep the construction on schedule and within budget.

The governmental oversight of construction in New York City is extensive and involves a number of city, state, and federal agencies. **Table 18-2** shows the main agencies involved in construction oversight and the agency's areas of responsibilities. The primary responsibilities lie with New York City agencies. DOB has the primary responsibility for ensuring that the construction meets the requirements of the Building Code and that the building is structurally, electrically, and mechanically safe. In addition, DOB enforces safety regulations to protect both the workers and the public. The areas of responsibility include installation and operation of the equipment, such as cranes and lifts, sidewalk shed, and safety netting and scaffolding. In addition, DOB approves the CPP used when the construction is in proximity to historic structures. NYCDEP enforces the Noise Code and regulates water disposal into the sewer system. FDNY has primary oversight for compliance with the Fire Code and for the installation

of tanks containing flammable materials. NYCDOT reviews and approves any traffic lane and sidewalk closures. New York City Transit (NYCT) is responsible for subway access and, if necessary, bus stop relocations. NYCT also coordinates construction work which could affect the subway system. LPC approves studies and testing to prevent loss of archaeological materials and to prevent damage to fragile historic structures. The New York City Department of Parks and Recreation is responsible for the oversight, enforcement, and permitting of the replacement of street trees that are lost due to construction. Section 5-102 et. seq. of the Laws of the City of New York requires a permit to remove any trees and the replacement of the trees as determined by calculating the size, condition, species, and location rating of the tree proposed for removal.

Table 18-2
Construction Oversight in New York City

Agency	Areas of Responsibility
New York City	
Department of Buildings	Primary oversight for Building Code and site safety
Department of Environmental Protection	Noise, hazardous materials, dewatering
Office of Environmental Remediation	RAPs/CHASPs
Fire Department	Compliance with Fire Code, tank operation
Department of Transportation	Lane and sidewalk closures
New York City Transit	Subway access, bus stop relocation
Department of Parks & Recreation	Street trees
Landmarks Preservation Commission	Archaeological and architectural protection
New York State	
Department of Labor	Asbestos workers
Department of Environmental Conservation	Dewatering, hazardous materials, tanks, Stormwater Pollution Prevention Plan, Industrial SPDES, if any discharge into the Hudson River
United States	
Environmental Protection Agency	Air emissions, noise, hazardous materials, toxic substances
Occupational Safety and Health Administration	Worker safety

NYSDEC regulates discharge of water into rivers and streams, disposal of hazardous materials, and construction, operation, and removal of bulk petroleum and chemical storage tanks. The New York State Department of Labor (DOL) licenses asbestos workers. On the federal level, the EPA has wide ranging authority over environmental matters, including air emissions, noise, hazardous materials, and the use of poisons. Much of the responsibility is delegated to the state level. The Occupational Safety and Health Administration (OSHA) sets standards for work site safety and the construction equipment.

Deliveries and Access

Access to the various construction sites of the RWCDS would be controlled. The work areas would be fenced off, and limited access points for workers and trucks would be provided. Private worker vehicles would not be allowed into the construction area. Security guards and flaggers may be posted as necessary, and all persons and trucks would have to pass through security points. Workers or trucks without a need to be on the site would not be allowed entry. After work hours, the gates would be closed and locked. Security guards may patrol the construction sites after work hours and over the weekends to prevent unauthorized access.

Material deliveries to the site would be controlled and scheduled. Unscheduled or haphazard deliveries would be minimized. To aid in adhering to the delivery schedules, as is normal for building construction in New York City, flaggers would be employed at each of the gates. The

flaggers could be supplied by the subcontractor on-site at that time or by the construction manager. The flaggers would control trucks entering and exiting the site, so that they would not interfere with one another. In addition, they would provide an additional traffic aid as the trucks enter and exit the on-street traffic streams.

Hours of Work

Construction activities for the various development and enlargement sites would take place in accordance with New York City laws and regulations, which allow construction activities to take place between 7 AM and 6 PM. Construction work would begin at 7 AM on weekdays, with most workers arriving between 6 AM and 7 AM. Typically, work would end at 3:30 PM, but could be extended until 6 PM for such tasks as finishing a concrete pour for a pad, or completing the bolting of a steel frame erected that day. Extended workday activities would not include all construction workers on site, but only those involved in the specific task. Extended workdays would occur during foundation and superstructure tasks, and limited extended workdays could occur during other tasks over the course of construction, but would likely be minimized.

At limited times over the course of constructing a building; weekend work could be required to make up for weather delays or other unforeseen circumstances. 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. Weekend work requires a permit from DOB and, in certain instances, approval of a noise mitigation plan from the NYCDEP under the City's Noise Code. The New York City Noise Control Code, as amended in December 2005 and effective July 1, 2007, limits construction (other than 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. Construction activities occurring after hours (weekdays between 6 PM and 7 AM and on weekends) may be permitted only to accommodate: (1) emergency conditions; (2) public safety; (3) construction projects by or on behalf of City agencies; (4) construction activities with minimal noise impacts; and (5) 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. If it were to become necessary, the typical weekend workday would be on Saturday, beginning with worker arrival and site preparation at 7 AM, and ending with site cleanup at 5 PM.

A few tasks may have to be completed without interruption, and the work can extend past 6 PM. In certain situations, concrete must be poured continuously to form one structure without joints. This type of concrete pour is usually associated with foundations and structural slabs at grade, which would require a minimum of 12 hours or more to complete, depending on the size of the area being poured.

Sidewalk and Lane Closures

During the course of construction, traffic lanes and sidewalks would be closed or protected for varying periods of time. Truck movements would be spread throughout the day and would generally occur between the hours of 6:00 AM and 3:00 PM, depending on the stage of construction. No rerouting of traffic is anticipated and moving lanes of traffic are expected to be available at all times. Some street lanes and sidewalks could be continuously closed, and some lanes and sidewalks would be closed only intermittently to allow for certain construction activities.

For construction at the various development and enlargement sites, any necessary sidewalk and lane closures would maintain pedestrian flow throughout the construction period for each site, and would not divert pedestrians to the other side of the street. Pedestrian circulation and access would be maintained through the use of protected sidewalk enclosures, temporary sidewalks or sidewalk bridges. NYCDOT would be consulted to determine the appropriate protective measures for ensuring pedestrian safety surrounding the various development and enlargement sites; this work would be coordinated with and approved by NYCDOT.

GENERAL CONSTRUCTION TASKS

Construction Startup Tasks

The following tasks are considered to be typical startup work to prepare a site for construction. The tasks could include, but are not limited to, the following items. The means and methods and order of completion of these tasks could change as necessary. Startup work generally involves the installation of public safety measures, such as fencing, sidewalk sheds, and Jersey barriers. The site is fenced off, typically with solid fencing to minimize interference between the persons passing by the site and the construction work. Separate gates for workers and for trucks are installed, and sidewalk shed and Jersey barriers are erected. Trailers for the construction engineers and managers are hauled to the site and installed. These trailers could be placed within the fence line, in the curb lane, or over the sidewalk sheds. Also, portable toilets, dumpsters for trash, and water and fuel tankers are brought to the site and installed. Temporary utilities are connected to the construction trailers. During the startup period, permanent utility connections may be made, especially if the contractor has obtained early electric power for construction use, but utility connections may be made almost any time during the construction sequence. Construction startup tasks may have anywhere from 5 to 20 workers on site, and usually fewer than 10 truck deliveries per day. Construction startup tasks are normally completed within weeks.

New utility connections can be made at any time during the construction process. The initial investigatory work often occurs early during excavation and foundations, with the actual connections typically occurring once the building mechanical, electrical and plumbing systems are installed. The existing utility lines in the streets within the Rezoning Area have sufficient capacity to support the development anticipated as a result of the Proposed Action. Connections to new buildings would be made from the existing utility lines.

As discussed in Chapter 14, "Air Quality," an (E) designation requiring the use of utility steam from Con Edison for the building's heat and hot water systems would be assigned at four projected development sites (Projected Development Sites 3, 6, 8, and 14) to avoid any potential significant impacts. According to Con Edison, steam pipe installation is typical of other subsurface utility work. The steam pipe is typically installed after the building demolition and excavation/foundation phases are completed, and after the steel superstructure is completed, so that the building can be heated as needed during the building fit out. A description of this work is provided below under "*Exteriors, Interior Fit-Out, and Finishing*."

Abatement, Demolition, and Remediation

The Proposed Action would result in the demolition of surface parking and/or loading areas on Projected Development Sites 2, 3, 4, 10, and 12. In addition, existing buildings on Projected Development Sites 3, 4, 6, 7, 8, 9, 10, 11, 13, 15, 16, and 19 would be demolished. As indicated in **Figure 18-2** (see above), demolition activities at these sites would last for about three months, except at Projected Development Site 3, where they would be anticipated to last for six months.

These facilities would be abated of asbestos and any other hazardous materials within the existing buildings and structures, where applicable.

A New York City-certified asbestos investigator would inspect the buildings for asbestos-containing materials (ACMs), and those materials must be removed by a NYCDOL-licensed asbestos abatement contractor prior to interior demolition. Asbestos abatement is strictly regulated by NYCDEP, NYCDOL, EPA, and 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, including the new February 2, 2011 NYCDEP regulations. These regulations specify abatement methods, including wet removal of ACMs that minimize asbestos fibers from becoming airborne, and containment measures. The areas of the building with ACMs would be isolated from the surrounding area with a containment system and a decontamination system. The types of these systems would depend on the type and quantity of ACMs, and may include hard barriers, isolation barriers, critical barriers, and caution tape. Specially trained and certified workers, wearing personal protective equipment, would remove the ACMs and place them in bags or containers lined with plastic sheeting for disposal at an asbestos-permitted landfill. Depending on the extent and type of ACMs, an independent third-party air-monitoring firm would collect air samples before, during, and after the asbestos abatement. These samples would be analyzed in a laboratory to ensure that regulated fiber levels are not exceeded. After the abatement is completed and the work areas have passed a visual inspection and monitoring, if applicable, the general demolition work can begin.

Any activities with the potential to disturb lead-based paint would be performed in accordance with the applicable OSHA regulation (OSHA 29 CFR 1926.62—*Lead Exposure in Construction*). When conducting demolition (unlike lead abatement work), lead-based paint is generally not stripped from surfaces. Structures may be disassembled or broken apart with most paint still intact. Dust control measures (spraying with water) would be used if necessary. The lead content of any resulting dust is therefore expected to be low. Work zone air monitoring for lead may be performed during certain activities with a high potential for releasing airborne lead-containing particulates in the immediate work zone, such as manual demolition of walls with lead paint or cutting of steel with lead-containing coatings. Such monitoring would be performed to ensure that workers performing these activities are properly protected against lead exposure.

Any suspected PCB-containing equipment (such as fluorescent light ballasts) that would be disturbed 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.

All of these procedures related to the handling of ACM, lead-based paint, and potential PCB-containing equipment would be contained in the OER-approved CHASP.

General demolition is the next step, where necessary. Demolition would occur in accordance with DOB guidelines/requirements. In general, the first step is to remove any economically salvageable materials. Then the building is deconstructed using large equipment. Typical demolition requires fencing around the building to prevent accidental dispersal of building materials into areas accessible to the general public. The demolition debris would be sorted prior to being disposed at landfills to maximize recycling opportunities. For the projected development sites that would require building demolition activities (Projected Development Sites 3, 4, 6-11, 13, 15, 16, and 19), it is estimated that between about 5 and 24 workers per day are expected to be on-site at any given location, and typically up to one truckload of debris

would be removed per hour from any given site. The general demolition phase is expected to last approximately three months at these projected development sites, except at Projected Development Site 3, where demolition activities are anticipated to last up to six months.

Excavation and Foundation

Soil excavation and foundation construction for the buildings anticipated to be constructed in the With-Action condition has been estimated to take approximately three to nine months to complete, depending on the size of the development. As indicated in **Figure 18-2** (see above), the excavation and foundation construction activities at 9 of these sites would last for about 3 months; at 12 of the sites they would last for about 6 months; and at Projected Development Site 3, they would last for about 9 months. Excavators would be used for the task of digging foundations. The soil would be loaded onto dump trucks for transport to a licensed disposal facility or for reuse on another construction site. Foundation work could include pile driving and pouring concrete footings and foundation. The excavation/foundation task could involve the use of excavators, cranes, pile drivers, concrete pumps, concrete trucks, generators, and hand tools. Anywhere from 5 to 35 workers would be on-site at any given time. About 3 to 30 trucks per day are expected for this phase of work at any given site.

Below-Grade Hazardous Materials

All construction subsurface soil disturbances would be performed in accordance with an OER-approved RAP and CHASP. At a minimum, the RAP would provide for the appropriate handling, stockpiling, testing, transportation, and disposal of excavated materials, as well as any unexpectedly encountered tanks, in accordance with all applicable federal, state, and local regulatory requirements. The RAP would also provide for vapor control measures such as vapor barriers. The CHASP would ensure that all subsurface disturbances are done in a manner protective of workers, the community, and the environment.

Dewatering

The excavated area at any given site could be subject to accumulating groundwater until the slab-on-grade is built. In addition to groundwater, rain and snow could collect in the excavation, and that water would have to be removed. If necessary, the water would be pretreated prior to discharge. The decanted water would then be discharged into the New York City sewer system. Discharge in the sewer system is governed by NYCDEP regulations.

NYCDEP has a formal procedure for issuing a Letter of Approval to discharge into the New York City sewer system. The authorization is issued by the NYCDEP Borough office if the discharge is less than 10,000 gallons per day; an additional approval by the Division of Connections & Permitting is needed if the discharge is more than 10,000 gallons per day. All chemical and physical testing of the water has to be done by a laboratory that is certified by the New York State Department of Health (NYSDOH). The design of the pretreatment system has to be signed by a New York State Professional Engineer or Registered Architect. For water discharged into New York City sewers, NYCDEP regulations specify the following maximum concentration of pollutants.

- Petroleum hydrocarbons 50 parts per million (ppm)
- Cadmium 2 ppm
- Hexavalent chromium 5 ppm
- Copper 5 ppm
- Amenable cyanide 0.2 ppm
- Lead 2 ppm
- Mercury 0.05 ppm

- Nickel 3 ppm
- Zinc 5 ppm
- pH between 5 to 12
- Temperature less than 150 degrees Fahrenheit (F)
- Flash Point greater than 140 degrees F
- Benzene 134 parts per billion (ppb)
- Ethylbenzene 380 ppb
- Methyl-Tert-Butyl-Ether (MTBE) 50 ppb
- Naphthalene 47 ppb
- Tetrachloroethylene (perc) 20 ppb
- Toluene 74 ppb
- Xylenes 74 ppb
- PCB 1 ppb
- Total Suspended Solids 350 ppm

Any groundwater discharged in the New York City system would meet these limits. NYCDEP can also impose project-specific limits, depending on the location of the project and contamination that has been found in nearby areas.

Core and Shell

In general, core and shell construction of the various buildings anticipated to be constructed in the With-Action condition would last approximately 6 to 12 months, depending on the size of the building. Construction of the interior structure, or core, of the buildings would include elevator shafts; vertical risers for mechanical, electrical, and plumbing systems; electrical and mechanical equipment rooms; core stairs; and restroom areas. This phase of work would also include construction of the building's framework (installation of beams and columns), and floor decks. These activities would require the use of cranes, delivery trucks, concrete pumps, concrete trowels, welding equipment, and a variety of handheld tools. Temporary construction elevators (hoists) would also be constructed for the delivery of materials and vertical movement of workers during this stage where necessary. Each day, about 20 to 275 workers and between 1 and 21 daily truck deliveries would be required for the core and shell construction of each building, depending on the size of the building.

Exteriors, Interior Fit-Out, And Finishing

Exterior construction involves the installation of the façade (exterior walls, windows, and cladding) and the roof. Cranes would be used to lift the façade into place, and welding machines and impact wrenches would secure the exterior to the superstructure. This stage of construction would also include the construction of interior partitions, installation of lighting fixtures, interior finishes (flooring, painting, etc.), and mechanical and electrical work, such as the installation of elevators. Mechanical and other interior work would overlap with building core and shell construction for between three and six months, depending on the size of the building. This activity would employ the greatest number of construction workers: with about 20 to 210 workers per day at each building. In addition, anywhere from 1 to 18 truck deliveries would be expected per day at each building. Equipment used during interior construction would include hoists, delivery trucks, and a variety of small hand-held tools. However, this stage of construction is the quietest, and does not generate fugitive dust.

As mentioned above, an (E) designation requiring the use of utility steam from Con Edison for the building's heat and hot water systems would be assigned at four projected development sites (Projected Development Sites 3, 6, 8, and 14) to avoid any potential significant. According to Con Edison, steam pipe installation is typical of other subsurface utility work. Steam pipe is installed by excavating (trenching) down to approximately six feet. Con Edison is required to obtain permits from NYCDOT to conduct this work. NYCDOT requires that the work minimize traffic disruptions, so it typically takes place during nights and weekends, with trenches covered by plates when construction is not taking place. This work does not result in the closure of any streets. Con Edison typically coordinates with other utilities working in the area to minimize construction impacts.

The duration of construction will depend on a number of factors, including the length of the connection and the location of other existing utilities below grade. However, based on discussions with Con Edison, new steam connections can generally be installed in a month or less. The steam pipe is typically installed after the building demolition and excavation/foundation phases are completed, and after the steel superstructure is completed, so that the building can be heated as needed during the building fit out.

NUMBER OF CONSTRUCTION WORKERS AND MATERIAL DELIVERIES

Construction is labor intensive, and the number of workers varies with the general construction task and the size of the building. Likewise, material deliveries generate many trucks, and the number also varies depending on the construction task and size of the building. **Table 18-3** shows the estimated numbers of workers and deliveries to the Rezoning Area by calendar quarter for all construction anticipated in the With-Action condition. These represent the average number of daily workers and trucks within each quarter. The average number of workers and trucks would be about 409 and 39 per day, respectively. The highest number of workers would be 939 per day in the third quarter of 2016 and the highest number of trucks would be 86 per day in the second quarter of 2016. These peak construction activities during the middle part of 2016 reflect concurrent construction at seven buildings in the Rezoning Area (Projected Development Sites 3, 5, 7, 9, and 17 and Projected Enlargement Sites 1 and 2). Detailed workforce and delivery projections can be found in **Appendix 7**.

Table 18-3
With-Action Condition
Average Number of Daily Workers and Trucks by Quarter

Year	**2014**				**2015**				**2016**				**2017**			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	49	108	252	371	550	778	434	546	606	919	**939**	704	908	505	759	779
Trucks	41	55	39	28	54	63	36	82	67	**86**	70	59	66	53	55	47
Year	**2018**				**2019**				**2020**				**2021**			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	417	239	247	356	289	177	228	422	284	606	389	532	177	213	179	155
Trucks	33	24	17	26	33	30	33	53	36	39	23	30	17	27	29	13
Year	**2022**															
Quarter	1st	2nd	3rd	4th									**Average**		**Peak**	
Workers	212	194	101	101									409		939	
Trucks	17	16	6	6									39		86	

Note: **Bold** indicates the peak workers and trucks.
Some construction activities may begin in 2013; however, the summary above shows a 2014 first quarter start to reflect a more compacted schedule for analysis. The compacted schedule provides for a more conservative analysis.
Source: Hunter Roberts Construction Group.

E. THE FUTURE WITHOUT THE PROPOSED ACTION

The No-Action condition consists of currently planned or ongoing development projects within the Rezoning Area, as well as the development that is expected to occur on certain sites controlled by the Applicant by 2022. In the No-Action condition, it is expected that new construction would occur on four projected development sites owned the Applicant (Projected Development Sites 1, 2, 3, and 4), as well as on two sites in the Rezoning Area not controlled by the Applicant (Projected Development Site 5 and Projected Development Site 17), as described in detail in Chapter 1, "Project Description." These sites will be developed with new retail, hotel, commercial, and parking uses. Hotel and commercial developments will be built on Projected Development Sites 1, 3, 5, and 17. On Projected Development Site 1, a 419-room hotel with 16,409-gsf of ground-floor retail uses, 50,666-gsf of other commercial use, and 80 parking spaces will be built. On Projected Development Site 3, a 381-room hotel with 12,100-gsf of retail uses, 86,216-gsf of other commercial uses, and 82 parking spaces will be built. On Projected Development Site 5, a 202-room hotel with 2,750 sf of retail use is expected to be developed. On Projected Development Site 17, a 124-room hotel is expected to be developed. Projected Development Sites 2 and 4 will be redeveloped with commercial uses, consisting of: 13,328-gsf of retail space and 13,328-gsf of other commercial space, as well as 7 parking spaces on Projected Development Site 2; and 21,934-gsf of retail uses and 21,934-gsf other commercial uses, as well as 11 parking spaces, on Projected Development Site 4.

As discussed in Chapter 1, "Project Description," three other sites in the Rezoning Area would experience construction activities or changes in use in the No-Action condition. However, such development is not assumed for the construction analyses in the No-Action condition because it would either occur on sites that are not projected development or enlargement sites or would result in minimal construction activity.[1]

Table 18-4 presents a conceptual schedule of construction for the No-Action condition (see also **Figure 18-1**, above). In this conceptual construction schedule, construction in the area is assumed to begin in 2014 (at Projected Development Sites 1, 2, 3, and 4) and is expected to begin sometime in 2012 at Projected Development Sites 5 and 17, with the last building completed approximately by the end of 2020.

[1] On Projected Development Site 18, a 5,032-gsf commercial enlargement was completed shortly before certification of the Draft EIS. See the discussion of Projected Development Site 18 in the Foreword section of the FEIS and the "Analysis Approach" section above. ~~Between the Draft and Final EIS, the analyses in this document will be updated to reflect the enlargement as an existing condition. which is underway and nearly complete, will be completed.~~ On Projected Development Site 19, the 70,000-sf vacant building will be re-tenanted with commercial or storage uses, involving minimal construction. At 330 Hudson Street, which is not a projected development site, a commercial office conversion and expansion enlargement project will result in 330,000-gsf of office uses and 20,000-gsf of retail uses.

Table 18-4
No-Action Conditon Conceptual Construction Schedule

No-Action Development Scenario Sites	Start Month	Finish Month	Approximate Duration (months)
Projected Development/Enlargement Sites Controlled by the Applicant:			
Projected Development Site 1	1st quarter 2014	1st quarter 2016	27
Projected Development Site 2	1st quarter 2018	4th quarter 2018	12
Projected Development Site 3	2nd quarter 2015	2nd quarter 2017	27
Projected Development Site 4	3rd quarter 2019	2nd quarter 2020	12
Other Projected Development/Enlargement Sites (not controlled by the Applicant):			
Projected Development Site 5	Before 1st quarter 2013	4th quarter 2013	12+
Projected Development Site 17	Before 1st quarter 2013	4th quarter 2013	12+
Source: Hunter Roberts Construction Group			

Table 18-5 shows the estimated numbers of workers and deliveries to the Rezoning Area by calendar quarter for all construction in the No-Action condition. These represent the average number of daily workers and trucks anticipated within each quarter. As described above, the conceptual construction schedule for the No-Action condition, presented in **Figure 18-1**, includes the future construction from the six projected development sites. Note that in the No-Action condition, construction activities in the Rezoning Area would be anticipated to commence prior to 2013, but would be expected to conclude in 2020, as shown above in Figure 18-1. In the No-Action condition, the average numbers of workers and trucks would be about 133 and 15 per day, respectively. The highest number of workers would be 417 per day, occurring in both the fourth quarter of 2016 and the first quarter of 2017, and the highest number of trucks would be 42 per day in the fourth quarter of 2015. The peak construction trucking activities during portions of 2015 reflect concurrent construction at two buildings in the Rezoning Area (Projected Development Sites 1 and 3). The peak construction worker activities during portions of 2016 and 2017 reflect intensive overlapping Core/Shell and Finishing/MEP activities at Projected Development Site 3. Detailed workforce and delivery projections can be found in **Appendix 7.**

Table 18-5
No-Action Condition
Average Number of Daily Workers and Trucks by Quarter

Year	**2013**				**2014**				**2015**				**2016**					
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th		
Workers	172	172	712	85	29	29	176	176	347	370	195	201	201	170	170	**417**		
Trucks	12	12	12	5	30	30	13	13	26	29	16	**42**	42	13	13	25		
Year	**2017**				**2018**				**2019**				**2020**				**Average**	**Peak**
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd				
Workers	**417**	247	0	0	4	27	43	16	0	0	7	44	71	27			133	417
Trucks	25	12	0	0	11	1	2	1	0	0	18	3	21	18			15	42

Note: **Bold** indicates the peak workers and trucks.
Source: Hunter Roberts Construction Group

F. FUTURE WITH THE PROPOSED ACTION

This section assesses the potential for construction-related impacts in the With-Action condition in the areas of transportation, air quality, noise and vibration, historic and cultural resources, hazardous materials, open space, socioeconomic conditions, community facilities, land use and neighborhood character, and rodent control.

As noted above, the anticipated construction durations have been developed with an experienced New York City construction manager, but the discussion is only illustrative as specific means and methods will be chosen at the time of construction. At this time, there are no specific construction programs or designs for any development that is projected to result from the Proposed Action. The construction durations are conservatively chosen to serve as the basis of the analyses in this chapter and are representative of the reasonable worst-case for potential impacts. The conceptual schedule represents a very compressed and conservative potential timeline for construction, which shows overlapping construction activities and simultaneously operating construction equipment for projected development sites in proximity of one another. Thus, the analysis captures the cumulative nature of construction impacts, which would result in the greatest impacts at nearby receptors.

TRANSPORTATION

As described above, sites within the Rezoning Area would be developed under both the No-Action and With-Action conditions. Hence, the potential transportation impacts during construction were determined based on a comparison of No-Action and With-Action peak construction and operational activities that are expected to occur over the course of the nine-year period (2014 to 2022) during which these sites would be completed. The net or incremental effects of this assessment were then compared to the operational impacts identified for the full build-out of the Proposed Action in 2022 to assess the potential transportation impacts during construction and the measures that can be implemented to mitigate these impacts. Since the potential transportation impacts during construction are based on a comparison of the No-Action and With-Action cumulative construction and operational activities, two periods during construction were assessed—the second quarter of 2016, in which the With-Action peak construction activities are expected to occur but the operational activities are expected to be low, and the fourth quarter of 2019, in which the With-Action construction activities would be more moderate but there would be substantially more operational activities due to the completion of a majority of the projected sites within the Rezoning Area. The two assessed construction periods are further discussed below.

~~As described in Chapter 1, "Project Description" and Chapter 13, "Transportation," the transportation analyses were prepared based on a slight variation of the No-Action and With-Action RWCDS assumptions. As a result of recent building permits issued for new developments in the Rezoning Area that were not accounted for in the Draft Scope of Work, several changes were made to the No-Action and With-Action RWCDS assumptions. The changes to the RWCDS occurred shortly prior to certification of the DEIS, after substantial work had been completed on the transportation analyses. Because the RWCDS analyses analyzed a larger incremental development between the No-Action and With-Action conditions (the updated RWCDS assumptions would yield up to approximately 470 fewer incremental person trips and up to approximately 80 fewer incremental vehicle trips), the transportation analyses described in this DEIS are conservative in that they present a larger potential for project-generated impacts. Correspondingly, the incremental operational trips during peak construction and at full build-out of the Proposed Action presented below are also based on the same more conservative variation of the No-Action and With-Action RWCDS assumptions.~~

~~Between the Draft and Final EIS, the construction transportation analyses will be updated to reflect the final RWCDS. The updated analyses would result in smaller incremental operational trips during peak construction and at full build-out of the Proposed Action. However, it is anticipated that the cumulative operational and construction traffic increments during peak~~

~~construction would still be of lower magnitudes than what the overall Proposed Action would result in when completed in 2022 during the peak hours of operational traffic. Therefore, the potential traffic impacts during peak construction would continue to be within the envelope of significant adverse traffic impacts identified for the With-Action conditions in Chapter 13, "Transportation." Furthermore, as described in Chapter 13, "Transportation," additional intersections may be analyzed between the Draft and Final EIS for the operational traffic analysis. These intersections will be selected in consultation with DCP and NYCDOT. The analysis of these additional intersections may identify additional significant adverse traffic impacts, for which mitigation measures would be identified. If feasible measures are not available to fully mitigate these impacts, they would be identified as unmitigated in the Final EIS.~~

TRAFFIC

Construction activities would generate construction worker and truck traffic. An evaluation of construction sequencing and worker/truck projections was undertaken to assess potential traffic impacts. As demonstrated below, the 2016 and 2019 peak cumulative incremental project trip generation would be less than what would be realized upon the full build-out of the Proposed Action in 2022. Therefore, the anticipated impacts during construction would be within the envelope of significant adverse traffic impacts identified for the With-Action condition in Chapter 13, "Transportation," and can be similarly addressed with the mitigation measures described in Chapter 20, "Mitigation."

Construction Trip Generation Projections

Average daily construction worker and truck activities by quarter were projected for the entire construction period. As detailed above, construction of sites within the Rezoning Area could be completed by 2020 under the No-Action condition, whereas it would take two additional years to complete under the With-Action condition. The projected quarterly average worker and truck trip projections were further refined to account for worker modal splits and vehicle occupancy, arrival and departure distribution, and passenger car equivalent (PCE) factor for construction truck traffic. These estimates are presented in **Tables 18-6**, **18-7**, and **18-8** to depict With-Action, No-Action, and incremental construction activities, respectively.

Daily Workforce and Truck Deliveries

For a reasonable worst-case development scenario analysis of potential transportation-related impacts during construction, the daily 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 activities would generate the highest amount of incremental daily traffic in the second quarter of 2016 (or the second quarter of the third year of construction), with an estimated incremental average of 749 (919 under With-Action and 170 under No-Action) workers and 73 (86 under With-Action and 13 under No-Action) truck deliveries per day (see **Tables 18-3 and 18-5** above and **Appendix 7** for details). Because trucks are considered to be equivalent to two passenger vehicles each and they are assumed to enter and exit construction sites within the same hour, the large number of trucks during this period cause it to have the largest number of PCEs, although another quarter was estimated to generate more incremental construction workers. These estimates of construction activities are further discussed below.

Table 18-6
With-Action Construction Level 1 Screening: Trip Generation

Vehicle PCE Trips (Auto + Truck)	2013				2014				2015				2016				2017			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
6 AM - 7 AM	0	0	0	0	46	68	69	70	118	152	85	146	137	**192**	178	140	171	109	142	136
7 AM - 8 AM	0	0	0	0	17	27	23	23	36	46	28	47	45	62	55	44	54	34	45	42
8 AM - 9 AM	0	0	0	0	16	24	16	12	20	24	16	32	28	36	28	24	28	20	24	20
9 AM -10 AM	0	0	0	0	16	24	16	12	20	24	16	32	28	36	28	24	28	20	24	20
10 AM -11 AM	0	0	0	0	16	24	16	12	20	24	16	32	28	36	28	24	28	20	24	20
11 AM - 12 PM	0	0	0	0	16	24	16	12	20	24	16	32	28	36	28	24	28	20	24	20
12 PM - 1 PM	0	0	0	0	16	24	16	12	20	24	16	32	28	36	28	24	28	20	24	20
1 PM - 2 PM	0	0	0	0	8	12	8	4	12	12	8	16	12	16	16	12	12	12	12	8
2 PM - 3 PM	0	0	0	0	8	13	10	7	16	17	11	19	16	22	23	17	19	15	17	13
3 PM - 4 PM	0	0	0	0	14	24	37	46	74	100	57	78	81	**120**	122	92	115	69	98	96
4 PM - 5 PM	0	0	0	0	1	2	5	8	12	17	9	12	13	20	20	15	19	11	16	17
Daily Total	0	0	0	0	174	266	232	218	368	464	278	478	444	**612**	554	440	530	350	450	412
Vehicle PCE Trips (Auto + Truck)	**2018**				**2019**				**2020**				**2021**				**2022**			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
6 AM - 7 AM	79	51	44	68	65	52	58	100	68	109	68	92	36	52	48	30	40	38	19	19
7 AM - 8 AM	24	15	15	22	20	17	18	32	24	33	19	27	13	18	17	8	14	13	7	7
8 AM - 9 AM	12	8	8	12	12	12	12	20	16	16	8	12	8	12	12	4	8	8	4	4
9 AM -10 AM	12	8	8	12	12	12	12	20	16	16	8	12	8	12	12	4	8	8	4	4
10 AM -11 AM	12	8	8	12	12	12	12	20	16	16	8	12	8	12	12	4	8	8	4	4
11 AM - 12 PM	12	8	8	12	12	12	12	20	16	16	8	12	8	12	12	4	8	8	4	4
12 PM - 1 PM	12	8	8	12	12	12	12	20	16	16	8	12	8	12	12	4	8	8	4	4
1 PM - 2 PM	8	4	4	4	8	8	8	12	8	8	4	8	4	4	4	4	4	4	0	0
2 PM - 3 PM	11	6	6	6	10	9	9	15	10	12	7	12	5	5	5	5	5	5	1	1
3 PM - 4 PM	55	31	32	44	41	28	34	60	40	77	48	68	24	28	24	22	28	26	11	11
4 PM - 5 PM	9	5	5	8	6	4	5	9	6	13	8	11	4	5	4	3	5	4	2	2
Daily Total	246	152	146	212	210	178	192	328	236	332	194	278	126	172	162	92	136	130	60	60

Table 18-7
No-Action Construction Level 1 Screening: Trip Generation

Vehicle PCE Trips (Auto + Truck)	2013				2014				2015				2016				2017			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
6 AM - 7 AM	32	31	31	14	35	35	32	32	67	70	38	67	67	31	31	71	71	40	0	0
7 AM - 8 AM	9	9	9	6	13	13	9	9	22	22	14	22	22	9	9	24	24	11	0	0
8 AM - 9 AM	4	4	4	4	12	12	4	4	12	12	8	16	16	4	4	12	12	4	0	0
9 AM -10 AM	4	4	4	4	12	12	4	4	12	12	8	16	16	4	4	12	12	4	0	0
10 AM -11 AM	4	4	4	4	12	12	4	4	12	12	8	16	16	4	4	12	12	4	0	0
11 AM - 12 PM	4	4	4	4	12	12	4	4	12	12	8	16	16	4	4	12	12	4	0	0
12 PM - 1 PM	4	4	4	4	12	12	4	4	12	12	8	16	16	4	4	12	12	4	0	0
1 PM - 2 PM	4	4	4	0	8	8	4	4	4	4	4	8	8	4	4	4	4	4	0	0
2 PM - 3 PM	5	5	5	0	8	8	5	5	7	6	6	10	10	5	5	7	7	6	0	0
3 PM - 4 PM	24	23	23	10	11	11	24	24	43	46	26	31	31	23	23	51	51	32	0	0
4 PM - 5 PM	4	4	4	2	1	1	4	4	7	8	4	4	4	4	4	9	9	5	0	0
Daily Total	98	96	96	52	136	136	98	98	210	216	132	222	222	96	96	226	226	118	0	0
Vehicle PCE Trips (Auto + Truck)	**2018**				**2019**				**2020**				**2021**				**2022**			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
6 AM - 7 AM	13	3	9	2	0	0	21	9	28	23	0	0	0	0	0	0	0	0	0	0
7 AM - 8 AM	4	1	1	0	0	0	8	1	10	9	0	0	0	0	0	0	0	0	0	0
8 AM - 9 AM	4	0	0	0	0	0	8	0	8	8	0	0	0	0	0	0	0	0	0	0
9 AM -10 AM	4	0	0	0	0	0	8	0	8	8	0	0	0	0	0	0	0	0	0	0
10 AM -11 AM	4	0	0	0	0	0	8	0	8	8	0	0	0	0	0	0	0	0	0	0
11 AM - 12 PM	4	0	0	0	0	0	8	0	8	8	0	0	0	0	0	0	0	0	0	0
12 PM - 1 PM	4	0	0	0	0	0	8	0	8	8	0	0	0	0	0	0	0	0	0	0
1 PM - 2 PM	4	0	0	0	0	0	4	0	4	4	0	0	0	0	0	0	0	0	0	0
2 PM - 3 PM	4	0	0	0	0	0	4	0	4	4	0	0	0	0	0	0	0	0	0	0
3 PM - 4 PM	5	3	5	2	0	0	5	5	12	7	0	0	0	0	0	0	0	0	0	0
4 PM - 5 PM	0	1	1	0	0	0	0	1	2	1	0	0	0	0	0	0	0	0	0	0
Daily Total	50	8	16	4	0	0	82	16	100	88	0	0	0	0	0	0	0	0	0	0

Table 18-8
Incremental (With-Action Minus No-Action) Construction Level 1 Screening: Trip Generation

Vehicle PCE Trips (Auto + Truck)	2013				2014				2015				2016				2017			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
6 AM - 7 AM	-32	-31	-31	-14	11	33	37	38	51	82	47	79	70	**161**	147	69	100	69	142	136
7 AM - 8 AM	-9	-9	-9	-6	4	14	14	14	14	24	14	25	23	53	46	20	30	23	45	42
8 AM - 9 AM	-4	-4	-4	-4	4	12	12	8	8	12	8	16	12	32	24	12	16	16	24	20
9 AM -10 AM	-4	-4	-4	-4	4	12	12	8	8	12	8	16	12	32	24	12	16	16	24	20
10 AM -11 AM	-4	-4	-4	-4	4	12	12	8	8	12	8	16	12	32	24	12	16	16	24	20
11 AM - 12 PM	-4	-4	-4	-4	4	12	12	8	8	12	8	16	12	32	24	12	16	16	24	20
12 PM - 1 PM	-4	-4	-4	-4	4	12	12	8	8	12	8	16	12	32	24	12	16	16	24	20
1 PM - 2 PM	-4	-4	-4	0	0	4	4	0	8	8	4	8	4	12	12	8	8	8	12	8
2 PM - 3 PM	-5	-5	-5	0	0	5	5	2	9	11	5	9	6	17	18	10	12	9	17	13
3 PM - 4 PM	-24	-23	-23	-10	3	13	13	22	31	54	31	47	50	**97**	99	41	64	37	98	96
4 PM - 5 PM	-4	-4	-4	-2	0	1	1	4	5	9	5	8	9	16	16	6	10	6	16	17
Daily Total	-98	-96	-96	-52	38	130	134	120	158	248	146	256	222	**516**	458	214	304	232	450	412
Vehicle PCE Trips (Auto + Truck)	**2018**				**2019**				**2020**				**2021**				**2022**			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
6 AM - 7 AM	66	48	35	66	65	52	37	91	40	86	68	92	36	52	48	30	40	38	19	19
7 AM - 8 AM	20	14	14	22	20	17	10	31	14	24	19	27	13	18	17	8	14	13	7	7
8 AM - 9 AM	8	8	8	12	12	12	4	20	8	8	8	12	8	12	12	4	8	8	4	4
9 AM -10 AM	8	8	8	12	12	12	4	20	8	8	8	12	8	12	12	4	8	8	4	4
10 AM -11 AM	8	8	8	12	12	12	4	20	8	8	8	12	8	12	12	4	8	8	4	4
11 AM - 12 PM	8	8	8	12	12	12	4	20	8	8	8	12	8	12	12	4	8	8	4	4
12 PM - 1 PM	8	8	8	12	12	12	4	20	8	8	8	12	8	12	12	4	8	8	4	4
1 PM - 2 PM	4	4	4	4	8	8	4	12	4	4	4	8	4	4	4	4	4	4	0	0
2 PM - 3 PM	7	6	6	6	10	9	5	15	6	8	7	12	5	5	5	5	5	5	1	1
3 PM - 4 PM	50	28	27	42	41	28	29	55	28	70	48	68	24	28	24	22	28	26	11	11
4 PM - 5 PM	9	4	4	8	6	4	5	8	4	12	8	11	4	5	4	3	5	4	2	2
Daily Total	196	144	130	208	210	178	110	312	136	244	194	278	126	172	162	92	136	130	60	60

Similarly, it is expected that construction activities would generate a moderate amount of incremental daily traffic in the fourth quarter of 2019 (or the fourth quarter of the sixth year of construction), with an estimated incremental average of 378 (422 under With-Action and 44 under No-Action) workers and 50 (53 under With-Action and 3 under No-Action) truck deliveries per day (see **Tables 18-3 and 18-5** above and **Appendix 7** for details).

Construction Worker Modal Splits and Vehicle Occupancy

Based on the survey conducted at the construction site of the New York Times Building in 2006, it is anticipated that construction workers' travel within or commute to Manhattan would be primarily by public transportation (approximately 70 percent), with a smaller percentage by private autos (approximately 30 percent) at an average occupancy of approximately 2 persons per vehicle.

Peak Hour Construction Worker Vehicle and Truck Trips

Similar to other typical construction projects in New York City, most of the construction activities at various sites within the Rezoning Area are expected to take place during the construction shift of 7:00 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 workers would typically commute during the hours before and after the work shift. For analysis purposes, each worker vehicle was assumed to arrive in the morning and depart in the afternoon, whereas each truck delivery was assumed to result in two truck trips during the same hour (one "in" and one "out"). Furthermore, in accordance with the *CEQR Technical Manual*, the traffic analysis assumed that each truck has a PCE of 2.

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. For construction trucks, deliveries would occur throughout the day when the construction site is active. Construction truck deliveries typically peak during the early morning (25 percent), overlapping with construction worker arrival traffic. The 2016 and 2019 peak construction hourly trip projections for With-Action, No-Action, and incremental construction activities are summarized in **Tables 18-9**, **18-10**, **18-11**, **18-12, 18-13,** and **18-14** respectively. As shown, the maximum incremental construction activities would result in 161 PCEs between 6 and 7 AM and 97 PCEs between 3 and 4 PM on weekdays in the second quarter of 2016. Similarly, the incremental activities would result in 91 PCEs between 6 and 7 AM and 55 PCEs between 3 and 4 PM on weekdays in the fourth quarter of 2019.

To evaluate the potential traffic impacts during construction, the cumulative effects of these activities together with those generated by the completed components of various development sites within the Rezoning Area would need to be considered. Similar to how the projected construction activities are portrayed above, the operational trips associated with completed projects would be evaluated incrementally between the With-Action and No-Action conditions, as further described below.

Table 18-9
2016 With-Action Peak Construction Vehicle Trip Projections

Hour	Auto Trips			Truck Trips			Total					
	Regular Shift			Regular Shift			Vehicle Trips			PCE Trips		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
2nd Quarter of 2016												
6 AM - 7 AM	104	0	104	22	22	44	126	22	148	148	44	192
7 AM - 8 AM	26	0	26	9	9	18	35	9	44	44	18	62
8 AM - 9 AM	0	0	0	9	9	18	9	9	18	18	18	36
9 AM -10 AM	0	0	0	9	9	18	9	9	18	18	18	36
10 AM -11 AM	0	0	0	9	9	18	9	9	18	18	18	36
11 AM - 12 PM	0	0	0	9	9	18	9	9	18	18	18	36
12 PM - 1 PM	0	0	0	9	9	18	9	9	18	18	18	36
1 PM - 2 PM	0	0	0	4	4	8	4	4	8	8	8	16
2 PM - 3 PM	0	6	6	4	4	8	4	10	14	8	14	22
3 PM - 4 PM	0	104	104	4	4	8	4	108	112	8	112	120
4 PM - 5 PM	0	20	20	0	0	0	0	20	20	0	20	20
Daily Total	130	130	260	88	88	176	218	218	436	306	306	612

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

Table 18-10
2016 No-Action Peak Construction Vehicle Trip Projections

Hour	Auto Trips			Truck Trips			Total					
	Regular Shift			Regular Shift			Vehicle Trips			PCE Trips		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
2nd Quarter of 2016												
6 AM - 7 AM	19	0	19	3	3	6	22	3	25	25	6	31
7 AM - 8 AM	5	0	5	1	1	2	6	1	7	7	2	9
8 AM - 9 AM	0	0	0	1	1	2	1	1	2	2	2	4
9 AM -10 AM	0	0	0	1	1	2	1	1	2	2	2	4
10 AM -11 AM	0	0	0	1	1	2	1	1	2	2	2	4
11 AM - 12 PM	0	0	0	1	1	2	1	1	2	2	2	4
12 PM - 1 PM	0	0	0	1	1	2	1	1	2	2	2	4
1 PM - 2 PM	0	0	0	1	1	2	1	1	2	2	2	4
2 PM - 3 PM	0	1	1	1	1	2	1	2	3	2	3	5
3 PM - 4 PM	0	19	19	1	1	2	1	20	21	2	21	23
4 PM - 5 PM	0	4	4	0	0	0	0	4	4	0	4	4
Daily Total	24	24	48	12	12	24	36	36	72	48	48	96

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

Table 18-11
2016 Incremental Peak Construction Vehicle Trip Projections

Hour	Auto Trips			Truck Trips			Total					
	Regular Shift			Regular Shift			Vehicle Trips			PCE Trips		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
2nd Quarter of 2016												
6 AM - 7 AM	85	0	85	19	19	38	104	19	123	123	38	161
7 AM - 8 AM	21	0	21	8	8	16	29	8	37	37	16	53
8 AM - 9 AM	0	0	0	8	8	16	8	8	16	16	16	32
9 AM -10 AM	0	0	0	8	8	16	8	8	16	16	16	32
10 AM -11 AM	0	0	0	8	8	16	8	8	16	16	16	32
11 AM - 12 PM	0	0	0	8	8	16	8	8	16	16	16	32
12 PM - 1 PM	0	0	0	8	8	16	8	8	16	16	16	32
1 PM - 2 PM	0	0	0	3	3	6	3	3	6	6	6	12
2 PM - 3 PM	0	5	5	3	3	6	3	8	11	6	11	17
3 PM - 4 PM	0	85	85	3	3	6	3	88	91	6	91	97
4 PM - 5 PM	0	16	16	0	0	0	0	16	16	0	16	16
Daily Total	106	106	212	76	76	152	182	182	364	258	258	516

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

Table 18-12
2019 With-Action Peak Construction Vehicle Trip Projections

Hour	Auto Trips			Truck Trips			Total					
	Regular Shift			Regular Shift			Vehicle Trips			PCE Trips		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
4th Quarter of 2019												
6 AM - 7 AM	48	0	48	13	13	26	61	13	74	74	26	100
7 AM - 8 AM	12	0	12	5	5	10	17	5	22	22	10	32
8 AM - 9 AM	0	0	0	5	5	10	5	5	10	10	10	20
9 AM -10 AM	0	0	0	5	5	10	5	5	10	10	10	20
10 AM -11 AM	0	0	0	5	5	10	5	5	10	10	10	20
11 AM - 12 PM	0	0	0	5	5	10	5	5	10	10	10	20
12 PM - 1 PM	0	0	0	5	5	10	5	5	10	10	10	20
1 PM - 2 PM	0	0	0	3	3	6	3	3	6	6	6	12
2 PM - 3 PM	0	3	3	3	3	6	3	6	9	6	9	15
3 PM - 4 PM	0	48	48	3	3	6	3	51	54	6	54	60
4 PM - 5 PM	0	9	9	0	0	0	0	9	9	0	9	9
Daily Total	60	60	120	52	52	104	112	112	224	164	164	328

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

Table 18-13
2019 No-Action Peak Construction Vehicle Trip Projections

Hour	Auto Trips			Truck Trips			Total					
	Regular Shift			Regular Shift			Vehicle Trips			PCE Trips		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
4th Quarter of 2019												
6 AM - 7 AM	5	0	5	1	1	2	6	1	7	7	2	9
7 AM - 8 AM	1	0	1	0	0	0	1	0	1	1	0	1
8 AM - 9 AM	0	0	0	0	0	0	0	0	0	0	0	0
9 AM -10 AM	0	0	0	0	0	0	0	0	0	0	0	0
10 AM -11 AM	0	0	0	0	0	0	0	0	0	0	0	0
11 AM - 12 PM	0	0	0	0	0	0	0	0	0	0	0	0
12 PM - 1 PM	0	0	0	0	0	0	0	0	0	0	0	0
1 PM - 2 PM	0	0	0	0	0	0	0	0	0	0	0	0
2 PM - 3 PM	0	0	0	0	0	0	0	0	0	0	0	0
3 PM - 4 PM	0	5	5	0	0	0	0	5	5	0	5	5
4 PM - 5 PM	0	1	1	0	0	0	0	1	1	0	1	1
Daily Total	6	6	12	1	1	2	7	7	14	8	8	16

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

Table 18-14
2019 Incremental Peak Construction Vehicle Trip Projections

Hour	Auto Trips			Truck Trips			Total					
	Regular Shift			Regular Shift			Vehicle Trips			PCE Trips		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
4th Quarter of 2019												
6 AM - 7 AM	43	0	43	12	12	24	55	12	67	67	24	91
7 AM - 8 AM	11	0	11	5	5	10	16	5	21	21	10	31
8 AM - 9 AM	0	0	0	5	5	10	5	5	10	10	10	20
9 AM -10 AM	0	0	0	5	5	10	5	5	10	10	10	20
10 AM -11 AM	0	0	0	5	5	10	5	5	10	10	10	20
11 AM - 12 PM	0	0	0	5	5	10	5	5	10	10	10	20
12 PM - 1 PM	0	0	0	5	5	10	5	5	10	10	10	20
1 PM - 2 PM	0	0	0	3	3	6	3	3	6	6	6	12
2 PM - 3 PM	0	3	3	3	3	6	3	6	9	6	9	15
3 PM - 4 PM	0	43	43	3	3	6	3	46	49	6	49	55
4 PM - 5 PM	0	8	8	0	0	0	0	8	8	0	8	8
Daily Total	54	54	108	51	51	102	105	105	210	156	156	312

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

Comparison of Cumulative Operational and Construction Traffic

During peak construction in 2016, completed projects within the Rezoning Area would generate incremental traffic to the area in addition to the activities anticipated to be generated by on-going construction activities. As described above, peak construction is expected to occur in the second quarter of 2016. Similarly, by 2019, while construction activities would be more moderate, a substantial number of projected sites would be completed and would generate more incremental operational traffic to the area (as compared to 2016) in addition to the activities anticipated to be generated by on-going construction activities. A comparison of the projected incremental traffic levels during 2016 and 2019 peak construction and those upon full build-out of the Proposed Action in 2022 was developed and summarized in **Table 18-15**. As shown, the cumulative operational and construction traffic increments during 2016 and 2019 peak construction would be of lower magnitudes than what the overall Proposed Action would impose when completed in 2022 during the peak hours of operational traffic (8-9 AM, 12-1 PM, and 5-6 PM). Therefore, the potential traffic impacts during peak construction would be within the envelope of significant adverse traffic impacts identified for the With-Action condition in Chapter 13, "Transportation."

Table 18-15
Comparison of Weekday Vehicle Trip Generation—Construction and Operational

	Peak Construction in 2016											
	Incremental Construction Trips in PCEs (Q2 2016)			Incremental Operational Trips from Completed Projects in PCEs			Total PCEs			2022 Full Build-Out Incremental Operational Trips in PCEs		
Time	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
6-7 AM	123	38	161	6	4	10	129	42	171	31	12	43
7-8 AM	37	16	53	3	19	22	40	35	75	42	128	170
8-9 AM	16	16	32	-48	-9	-57	-32	7	-25	134	240	374
12-1 PM	16	16	32	-77	-71	-148	-61	-55	-116	-3	16	13
3-4 PM	6	91	97	-3	-26	-29	3	65	68	117	62	179
4-5 PM	0	16	16	3	-45	-42	3	-29	-26	147	108	255
5-6 PM	0	0	0	-44	-63	-107	-44	-63	-107	104	112	216
	Peak Construction in 2019											
	Incremental Construction Trips in PCEs (Q4 2019)			Incremental Operational Trips from Completed Projects in PCEs			Total PCEs			2022 Full Build-Out Incremental Operational Trips in PCEs		
Time	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
6-7 AM	67	24	91	16	7	23	83	31	114	31	12	43
7-8 AM	21	10	31	16	68	84	37	78	115	42	128	170
8-9 AM	10	10	20	51	98	149	61	108	169	134	240	374
12-1 PM	10	10	20	-81	-63	-144	-71	-53	-124	-3	16	13
3-4 PM	6	49	55	61	7	68	67	56	123	117	62	179
4-5 PM	0	8	8	78	39	117	78	47	125	147	108	255
5-6 PM	0	0	0	-7	35	28	-7	35	28	104	112	216

Notes: Peak hours of operational traffic are generally 8-9 AM, 12-1 PM, and 5-6 PM.
PCEs = passenger car equivalents where 1 truck trip equals 2 PCEs.

The construction and operational traffic increments summarized above provide an indication that although significant adverse traffic impacts during construction would be likely, the peak hour traffic conditions during peak construction in 2016 and in 2019 would be more favorable than those identified for the full build-out of the Proposed Action in 2022. As detailed in Chapter 20, "Mitigation," measures to mitigate the operational traffic impacts in 2022 were recommended for implementation at ~~17~~ 19 intersections during weekday peak hours. These measures would encompass primarily signal timing adjustments and other operational measures, all of which could be implemented early at the discretion of NYCDOT to address actual conditions

experienced at that time. However, as with the With-Action condition, there could also be significant adverse traffic impacts at two intersections during the weekday AM peak hour, ten intersections during the weekday PM peak hour, and four intersections during the Saturday midday peak hour during construction that cannot be fully mitigated. Specifically, during the construction period, West Street at West Houston Street and Hudson Street at Canal Street could have unmitigated significant adverse impacts during the weekday AM peak hour and Hudson Street at Canal Street and Varick Street at West Houston, King, Charlton, Vandam, Spring, Dominick, Broome, and Canal Streets and Avenue of the Americas at Canal Street/Laight Street could have unmitigated significant adverse impacts during the weekday PM peak hour. During the Saturday midday peak hour, Varick Street at King, Charlton, Dominick, and Broome Streets could have unmitigated significant adverse impacts.

Curb Lane Closures and Staging

Similar to many other construction projects in New York City, temporary curb lane and sidewalk closures are expected to be required adjacent to each of the development sites within the Rezoning Area. Each of the construction sites would have dedicated gates, driveways, or ramps for delivery vehicle access. Flag-persons are expected to be present at these active driveways, where needed, to manage the access and movement of trucks and to ensure no on-street queuing. Some of the site deliveries may also occur along the perimeters of the construction sites within delineated closed-off areas for concrete pour or steel delivery. MPT plans would be developed for any curb lane and sidewalk closures. Approval of these plans and implementation of all temporary sidewalk and curb lane closures during construction would be coordinated with NYCDOT OCMC. It is expected that traffic and pedestrian flow along all surrounding streets would be maintained throughout the entire construction period.

PARKING

The With-Action condition construction activities are projected to generate a maximum parking demand of 133 spaces during the third quarter of 2016, as compared with up to 59 spaces during the fourth quarter of 2016 and the first quarter of 2017 with No-Action construction. As discussed in Chapter 13, "Transportation," the No-Action and With-Action conditions, due primarily to the displacement of existing public parking facilities, would result in parking shortfalls of ~~46~~ 66 and ~~392~~ 409 spaces, respectively, within ¼ mile of the Rezoning Area. Although the parking demand associated with construction workers commuting via auto would contribute minimally to the overall parking supply in the area, it can be expected that a parking shortfall may still occur within ¼-mile of the Rezoning Area during construction of development sites under both the No-Action and With-Action conditions. However, as with the analysis results presented for the No-Action and With-Action operational conditions, based on the magnitude of available and total parking spaces within a ½-mile of the Rezoning Area, it is anticipated that the excess demand could be accommodated with a slightly longer walking distance beyond the ¼-mile radius. Furthermore, as stated in the *CEQR Technical Manual*, a parking shortfall resulting from a project located in Manhattan does constitute a significant adverse parking impact, due to the magnitude of available alternative modes of transportation.

TRANSIT

The study area is well served by public transit, including the No. 1 subway line at the Houston Street and Canal Street stations; the C/E lines at the Spring Street station; and the A/C/E lines at

the Canal Street station. There are also several local bus routes, including the M5, M20, and M21.

The bulk of the workers (approximately 70 percent) are estimated to travel to and from the construction sites via transit. During peak construction (maximum of 939 and 417 average daily construction workers under With-Action and No-Action conditions, respectively), this distribution would represent correspondingly up to 668 and 296 daily workers traveling by transit. With 80 percent of these workers arriving or departing during the construction peak hours, the total estimated number of peak hour transit trips would be 534 for With-Action condition construction and 237 for No-Action condition construction, both substantially less than the peak hour transit trip-making projected for development components associated with the With-Action and No-Action conditions. Furthermore, these construction worker trips would occur outside of peak periods of transit ridership and be distributed to the nearby transit facilities mentioned above. Therefore, like the With-Action condition, travel by construction workers would not result in any significant adverse transit impacts.

PEDESTRIANS

As summarized above, up to 939 and 417 average daily construction workers were projected for With-Action and No-Action conditions construction, respectively. With 80 percent of these workers arriving or departing during the construction peak hours (6 to 7 AM and 3 to 4 PM), the corresponding numbers of peak hour pedestrian trips traversing the area's sidewalks, corners, and crosswalks would be up to 751 under With Action and 334 under No-Action conditions. Accordingly, these trips would have minimal effects on pedestrian operations during peak commuter hours (typically 8 to 9 AM and 5 to 6 PM). However, because the full build-out of the Proposed Action is expected to result in crosswalk impacts at two intersections—the north crosswalk of Avenue of the Americas and Spring Street and the north crosswalk of Varick Street and Spring Street, as discussed in Chapter 13, "Transportation," the same or lesser significant adverse pedestrian impacts could occur during construction prior to the full build-out of the Proposed Action. Accordingly, the same crosswalk widenings recommended to mitigate the pedestrian impacts for the Proposed Action can be advanced to address the same impacts during construction.

AIR QUALITY

The *CEQR Technical Manual* lists several factors for consideration in determining whether a detailed construction impact assessment is appropriate. These factors include the need for a transportation analysis, the duration of construction tasks, the intensity of construction activities, the location of nearby sensitive receptors (such as residences), and emissions control measures. The following preliminary screening assessment describes the Proposed Action in the context of these factors.

ON-ROAD SOURCES

Generally, if a transportation analysis is not needed with regard to construction activities, an air quality assessment of construction vehicles is likely not warranted. As demonstrated above under "Transportation," construction under the Proposed Action does not require a quantitative transportation analysis. The construction would not result in substantial increases in vehicle volumes, lane or roadway closures, or traffic diversions. Nonetheless, construction trip increments were prepared for the 2016 construction weekday AM peak hour. The construction

trip increments would not exceed the applicable CEQR screening levels for carbon monoxide (CO) and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) (170 auto trips and 23 truck trips at peak hour, respectively) at any intersections. Therefore, construction activities under the Proposed Action would not cause significant changes in air quality related to vehicular traffic, and further mobile-source analysis is not required.

ON-SITE SOURCES

Duration. Most of the construction induced by the Proposed Action at any given development site would be short-term (i.e., construction equipment would operate at any site for less than two years) and overall construction would be gradual, taking place over the anticipated nine-year build period, thereby minimizing potential impacts. In terms of air pollutant emissions, the most intense construction activities are demolition, excavation and foundation (D/E/F) work, where a number of large non-road diesel engines would be employed. These activities are only expected to take a total of between 3 and 15 months per development site, depending on the size of the development. Although Projected Development Sites 1 and 3 have anticipated overall construction durations of greater than 24 months (estimated at 27 and 33 months, respectively), D/E/F activities would only take 6 and 15 months, respectively. It is important to note that Projected Development Sites 1 and 3 would both have No-Action condition construction durations of 27 months (with D/E/F activities of 6 and 12 months, respectively), and the air pollutant emissions experienced during construction of the Proposed Action would be similar to or lower than the No-Action condition, due to the air quality control measures (more on emission controls below) that would be implemented during construction of the Applicant's projected development and enlargement sites. Air pollutant emissions would also be similar between the No-Action condition and With-Action condition for other sites where development would occur in the No-Action condition, specifically Projected Development Sites 2, 4, 5, and 17. For the cluster of sites between Vandam and Spring Streets (Projected Development Sites 3 and 11 and Projected Enlargement Sites 1 and 2) identified in **Figure 18-4,** the D/E/F activities would only overlap for a combined period of 9 months or less. The equipment that would be operating in later construction phases such as exterior façade work and interior fit-outs would be dispersed vertically throughout the building, resulting in very low concentration increments in adjacent areas. In addition, the construction efforts in the later construction phases will result in very little emissions since the heavy duty diesel equipment associated with excavation and concrete work will no longer be needed on-site.

Intensity. During the demolition, excavation and foundation work, a handful of large non-road diesel engines would operate throughout the construction site. These engines would move throughout the site, although a concrete pump would be located in one location during concrete pours. Based on the sizes of the development sites and the nature of the construction work involved, construction activities under the Proposed Action would not be considered out of the ordinary in terms of intensity, although emissions would be lower due to the emission control measures implemented by the Applicant during construction of their projected development and enlargement sites (more detail in the section below). Furthermore, since construction induced by the Proposed Action would be gradual, taking place over a nine-year period, the emissions intensity would therefore be lower and potential impacts would be minimized.

Location of Nearby Sensitive Receptors. The Rezoning Area and adjacent area contains very few existing residential uses, and consequently very few air quality sensitive receptor sites. Nonetheless construction activities induced by the Proposed Action may occur immediately adjacent to the few existing sensitive receptors and others that would be introduced as projected

development sites are completed. However, the overall construction in the Rezoning Area would be gradual, taking place over an anticipated nine-year period. In addition, the most intense construction activities (demolition, excavation and foundations work) would be short-term, taking a total of between 3 and 15 months per development site. Although multiple projected development sites under the RWCDS schedule within the Rezoning Area may be constructed at the same time, as shown in **Figure 18-3,** it is anticipated that these construction activities would occur on development sites that are not adjacent to each other and would therefore not have a cumulative effect on adjacent sensitive receptor locations. The exception would be for the Vandam/Spring Street cluster**,** which would begin construction in 2015. At this cluster of development and enlargement sites identified in **Figure 18-4,** none of the sites are located immediately adjacent to any sensitive receptors (Projected Development Site 16, which is adjacent to Enlargement Site 2, would be completed in the 3rd quarter of 2015, by which time the D/E/F activities for Projected Enlargement Site 2, which would generally be activities occurring within the existing building, would be concluding). In addition, as indicated in **Figure 18-4**, the D/E/F activities for Projected Development Site 3 and Projected Enlargements Sites 1 and 2 would only overlap for a period of six months, with Projected Development Site 3 and Projected Enlargement Site 1 overlapping for a period of nine months, and would therefore not affect any nearby sensitive receptors for an extended "long-term" period of time. Although it is possible that the actual construction sequence may not proceed as expected in the conservative conceptual schedule and new sensitive receptors would be introduced in the Rezoning Area as projected development and enlargement sites are completed, the Vandam/Spring Street cluster would still represent the largest potential reasonable cluster in the Rezoning Area.

Emission Control Measures. To ensure that the construction under the Proposed Action results in the lowest practicable diesel particulate matter (DPM) emissions, the Applicant would commit to implement the following emissions reduction measures to the extent practicable and feasible during construction of their projected development and enlargement sites:

- *Diesel Equipment Reduction.* Construction of the Applicant's projected development and enlargement sites would minimize the use of diesel engines and use electric engines, to the extent practicable and feasible. The Applicant would apply for a grid power connection early on so as to ensure the availability of grid power, reducing the need for on-site generators, and request the use of electric engines in lieu of diesel where practicable and feasible.
- *Clean Fuel.* Ultra-low sulfur diesel (ULSD) would be used exclusively for all diesel engines throughout the Applicant-controlled construction sites.
- *Best Available Tailpipe Reduction Technologies*. For construction of the Applicant's projected development and enlargement sites, 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 best available tailpipe (BAT) 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 for the Applicant's sites would specify that all diesel nonroad engines rated at 50 hp or greater would utilize DPFs, either installed on the engine by the original equipment manufacturer (OEM) or a retrofit DPF verified by EPA or the California Air Resources Board, and may include active

DPFs,[1] if necessary; or other technology proven to reduce DPM by at least 90 percent. This measure is expected to reduce site-wide tailpipe PM emissions by at least 90 percent.

- *Utilization of Newer Equipment.* In addition to the tailpipe controls commitments, the construction program for the Applicant's projected development and enlargement sites would mandate the use of construction equipment rated Tier 3[2] or higher for all nonroad diesel engines with a power output of 50 hp or greater. Tier 3 NO_x emissions range from 40 to 60 percent lower than Tier 1 emissions and considerably lower than uncontrolled engines.
- *Dust Control.* Strict fugitive dust control plans will be required as part of contract specifications for construction of the Applicant's projected development and enlargement sites. For example, stabilized truck exit areas would be established for washing off the wheels of all trucks that exit the construction sites. Truck routes within the sites would be either watered as needed or, in cases where such routes would remain in the same place for an extended duration, the routes would be stabilized, covered with gravel, or temporarily paved to avoid the re-suspension of dust. All trucks hauling loose material will be equipped with tight fitting tailgates and their loads securely covered prior to leaving the sites. In addition to regular cleaning by the city, streets adjacent to the sites would be cleaned as frequently as needed. Chutes would be used for material drops during demolition. An on-site vehicular speed limit of 5 mph would be imposed. Water sprays will be used for all excavation, demolition, and transfer of spoils to ensure that materials are dampened as necessary to avoid the suspension of dust into the air. Loose materials will be watered, stabilized with a biodegradable suppressing agent, or covered.
- *Source Location.* In order to reduce the resulting concentration increments at residential, academic, and open space locations, large emissions sources and activities such as concrete trucks and pumps would be located away from residential buildings, schools, and publicly accessible open spaces to the extent practicable and feasible.
- *Idle Restriction.* In addition to adhering to the local law restricting unnecessary idling on roadways, on-site vehicle idle time will also be restricted to three minutes for all equipment and vehicles that are not using their engines to operate a loading, unloading, or processing device (e.g., concrete mixing trucks) or otherwise required for the proper operation of the engine.

In addition, it is expected that similar emissions control measures to those committed to by the Applicant would likely be implemented during construction of the other projected development

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[1] There are two types of DPFs currently in use: 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 for equipment manufactured in 2000 through 2008. In 2004, The EPA introduced Tier 4 emissions standards with a phased-in period of 2008 to 2015. The Tier 1 through 4 standards regulate the EPA criteria pollutants, including 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.

and enlargement sites not controlled by the Applicant, to the extent practicable and feasible. ULSD and construction equipment rated Tier 2 or higher is now readily available; DPFs are commonly found on construction equipment used in New York City; and the New York City Air Pollution Control Code regulates construction-related dust emissions. However, there would be no mechanism under CEQR to provide for a commitment to implement any of the above emission reduction measures on sites not controlled by the Applicant. As discussed above, most of the construction induced by the Proposed Action at any given development site would be short-term and the Rezoning Area and adjacent area contains very few existing residential uses, and consequently very few air quality sensitive receptor sites.

Based on analysis of all of the above factors affecting construction emissions, construction activities under the Proposed Action would not result in any significant adverse impact on air quality.

COMBINED OPERATIONAL AND CONSTRUCTION AIR QUALITY.

Almost all emissions from construction activities would be near ground level; therefore, the highest air quality impacts from construction activities would be expected at ground level locations. The increments from elevated operational stationary sources at ground level locations would be negligible. In addition, as described above under "Transportation," the cumulative operational and construction traffic increments would be of lower magnitudes than what would result from the overall Proposed Action when completed in 2022. Such small increments in operational air quality concentrations would not substantially increase air quality effects associated with construction as described above, and consequently the combined effects of construction and operational air quality associated with the Proposed Action would not result in any significant adverse impact.

NOISE AND VIBRATION

NOISE

Introduction

Impacts on community noise levels during construction of the Proposed Action could result from noise from construction equipment operation and from construction and delivery vehicles traveling to and from the various construction sites. Noise and vibration levels at a given location are dependent on the kind and number of pieces of construction equipment being 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 phase of construction and the location of the construction relative to receptor locations. The most significant construction noise sources are expected to be impact equipment such as jackhammers, excavators with ram hoes, drill rigs, rock drills, impact wrenches, tower cranes, and paving breakers, as well as the movements of trucks.

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 7:00 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 authorized in the following circumstances: (1) emergency conditions; (2) public safety; (3) construction projects by or on behalf of City agencies; (4) construction activities with minimal noise impacts; and (5) 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.

Construction Noise Impact Criteria

The *CEQR Technical Manual* states that significant noise impacts due to construction would occur "only at sensitive receptors that would be subjected to high construction noise levels for an extensive period of time." This has been interpreted to mean that such impacts would occur only at sensitive receptors where the activity with the potential to create high noise levels would occur continuously for approximately two years or longer. In addition, the *CEQR Technical Manual* states that the impact criteria for vehicular sources, using the No-Action noise level as the baseline, should be used for assessing construction impacts. As recommended in the *CEQR Technical Manual*, this study uses the criteria to define a significant adverse noise impact as follows:

- If the No-Action noise level is less than 60 dB(A) $L_{eq(1)}$, a 5 dB(A) $L_{eq(1)}$ or greater increase would be considered significant.
- If the No-Action noise level is between 60 dB(A) $L_{eq(1)}$ and 62 dB(A) $L_{eq(1)}$, a resultant $L_{eq(1)}$ of 65 dB(A) or greater would be considered a significant increase.
- If the No-Action noise level is equal to or greater than 62 dB(A) $L_{eq(1)}$, or if the analysis period is a nighttime period (defined in the CEQR criteria as being between 10:00 PM and 7:00 AM), the incremental significant impact threshold would be 3 dB(A) $L_{eq(1)}$.

The impact criteria contained in the 2012 *CEQR Technical Manual* were used for assessing impacts from mobile and on-site construction activities.

Noise Analysis Fundamentals

Construction activities for the Proposed Action would be expected to 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 trips, and material and equipment trips) on the surrounding roadways. The effect of each of these noise sources was evaluated.

Noise from the operation of construction equipment on-site at a specific receptor location near a construction site is 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 site is a function of:

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

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

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

Sensitive Receptor Sites

The Rezoning Area and adjacent area contains very few existing residential uses, and consequently very few noise sensitive receptor sites. The Rezoning Area and adjacent area contains very few existing residential uses, and consequently very few noise sensitive receptor sites. There are existing residential buildings on block 597 with façades along Charlton Street, Greenwich Street, and Vandam Street as well as on Spring Street between Greenwich Street and Hudson Street; residential buildings on block 578 with façades along Dominick Street, Broome Street, and Varick Street; residential buildings on block 579 with facades on Dominick Street and Greenwich Street; residential buildings on block 505 and 506 with façades along Vandam Street and Avenue of the Americas; commercial live-work units on the northern block 491 with facades along Avenue of the Americas and Dominick Street; residential buildings on the southern block 491 with façades along Varick Street and Broome Street; residences on the northern block 477 along Watts Street between Varick Street and Avenue of the Americas; and residential buildings on the southern block 477 with façades along Grand Street, Varick Street and Watts Street that would constitute noise sensitive receptor sites in and adjacent to the Rezoning Area.

These receptor locations in the Rezoning Area are those located closest to the construction activities associated with the Proposed Action, and would be most likely to experience elevated noise levels as result of those construction activates, and consequently would have the greatest potential for construction noise impacts. In addition, new sensitive receptors would be created in the Rezoning Area as residential buildings are completed while other sites are still under construction.

Existing weekday daytime noise levels in the area, as described in Chapter 16, "Noise," range from the mid 60s to high 70s of dBA depending on the specific location and the level of traffic on adjacent roadways.

The sensitive receptor sites are distributed throughout the Rezoning Area along several different roadways on several blocks, as are the projected and potential development and enlargement sites where construction would occur. Because of the disparate nature of the receptors and the construction sites, the amount of construction noise that would occur at each sensitive receptor location would be primarily a function of the activities that occur at the nearest construction site to the receptor rather than the entirety of the construction cumulatively.

The distances between the sensitive receptor locations and their respective nearest construction site(s) varies between approximately 20 feet when construction would occur on the same block as a sensitive receptor site, to approximately 50 feet when construction would occur across the street from a sensitive receptor site, up to over 100 feet when construction would occur on an adjacent block. There are also intervening buildings in some cases between the sensitive receptor sites and the nearby construction sites, which provide shielding from the construction noise.

Noise Reduction Measures

Any developer(s) constructing buildings on the projected development or enlargement sites would be required to follow the requirements of the New York City Noise Control Code (New York City Noise Code) for construction noise control measures. Specific noise control measures will be described in a noise mitigation plan required under the New York City Noise Code. These measures would include a variety of source and path controls.

In terms of source controls (i.e., reducing noise levels at the source or during the most sensitive time periods), the following measures would be implemented by developers of any of the projected development or enlargement sites, in accordance with the New York City Noise Code:

- Equipment that meets the sound level standards specified in Subchapter 5 of the New York City Noise Control Code would be utilized from the start of construction. Table 16-6 shows the noise levels for typical construction equipment and the mandated noise levels for the equipment that would be used for construction of the Proposed Action.
- As early in the construction period as logistics will allow, diesel- or gas-powered equipment would be replaced with electrical-powered equipment such as welders, water pumps, bench saws, and table saws (i.e., early electrification) to the extent feasible and practicable.
- Where feasible and practical, construction sites would be configured to minimize back-up alarm noise. In addition, all trucks would not be allowed to idle more than three minutes at the construction site based upon New York City Local Law.
- 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 practical:

- 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. Once building foundations are completed, delivery trucks would operate behind a construction fence, where possible;
- Noise barriers would be utilized to provide shielding (e.g., the construction sites would have a minimum 8-foot barrier and, where logistics allow, truck deliveries would take place behind these barriers once building foundations are completed); and
- Path noise control measures (i.e., portable noise barriers, panels, enclosures, and acoustical tents, where feasible) would be used for certain dominant noise equipment to the extent feasible and practical (i.e., asphalt pavers, drill rigs, excavators with ram hoe, hoists, impact wrenches, jackhammers, power trowels, powder actuated devices, rivet busters, rock drills, concrete saws, and sledge hammers). These barriers were conservatively assumed to offer only a 10 dBA reduction in noise levels for each piece of equipment to which they are applied, as shown in **Table 18-16**. The details to construct portable noise barriers, enclosures, tents, etc. are based upon the instructions of NYCDEP Citywide Construction Noise Mitigation.

Table 18-16
Typical Construction Equipment Noise Emission Levels (dBA)

Equipment List	NYCDEP & FTA Typical Noise Level at 50 feet[1]	Mandated Noise Level at 50 feet[2] Under Subchapter 5 of the NYC Noise Control Code	Noise Level with Path Controls at 50 feet[3]
Asphalt Paver	85	85	75
Asphalt Roller	85	74	
Backhoe/Loader	80	77	
Compressors	80	67	
Concrete Pump	82	79	
Concrete Trucks	85	79	
Cranes	85	77	
Cranes (Tower Cranes)	85	85	75
Delivery Trucks	84	79	
Drill Rigs	84	84	74
Dump Trucks	84	79	
Excavator	85	77	
Excavator with Ram Hoe	90	90	80
Fuel Truck	84	79	
Generators	82	68	
Hoist	85	80	70
Impact Wrenches	85	85	75
Jackhammer	85	82	72
Mortar Mixer	80	63	
Pile Driver	101	95	73[4]
Power Trowel	85	85	75
Powder Actuated Device	85	85	75
Pump (Spray On Fire Proof)	82	76	
Pump (Water)	77	76	
Rebar Bender	80	80	
Rivet Buster	85	85	75
Rock Drill	85	85	75
Saw (Chain Saw)	85	75	
Saw (Concrete Saw)	90	85	75
Saw (Masonry Bench)	85	76	
Saw (Circular & Cut off)	76	76	
Saw (Table Saw)	76	76	
Sledge Hammers	85	85	75
Street Cleaner	80	80	
Tractor Trailer	84	79	
Vibratory Plate Compactor	80	80	
Welding Machines	73	73	

Notes:
1 Sources: Citywide Construction Noise Mitigation, Chapter 28, Department of Environmental Protection of New York City, 2007. Transit Noise and Vibration Impact Assessment, FTA, May 2006.
2 Mandated noise levels are achieved by using quieter equipment, better engine mufflers, and refinements in fan design and improved hydraulic systems.
3 Path controls include portable noise barriers, enclosures, acoustical panels, and curtains, whichever feasible and practical.
4 Based on information from noise bellow system manufacturer.

Additional Noise Reduction Measures for Applicant-Controlled Sites

The Applicant has committed to employing a wide variety of feasible and practicable measures that exceed standard construction practices to minimize construction noise and reduce potential noise impacts associated with the construction of their development sites. These measures will include a variety of source and path controls and will be described in the noise mitigation plan required as part of the New York City Noise Control Code. There would be no mechanism under CEQR to provide for a commitment to implement any of the below noise reduction measures on

sites not controlled by the Applicant. However, as discussed above, construction of all but two individual development or enlargement sites would be expected to last 24 months or less and there are few existing noise sensitive receptors within the Rezoning Area.

In terms of source controls (i.e., reducing noise levels at the source or during the most sensitive time periods), the following measures for construction, which go beyond typical construction techniques, would be implemented during construction of the Applicant's projected development and enlargement sites:

- Equipment that meets the sound level standards specified in Subchapter 5 of the New York City Noise Control Code would be utilized from the start of construction activities, along with a wide range of equipment, including construction trucks, which produce lower noise levels than typical construction equipment. **Table 18-16** shows the noise levels for typical construction equipment and the mandated noise levels for the equipment that would be used for construction of the Applicant's projected development and enlargement sites.
- Where feasible and practicable, construction procedures that reduce noise levels and equipment (such as concrete trucks, delivery trucks, and trailers) that are quieter than that required by the New York City Noise Control Code would be used.
- Where practicable and feasible, construction sites would be configured to minimize back-up alarm noise. In addition, all trucks would not be allowed to idle more than three minutes at the construction site based upon New York City Local Law.
- Where practicable and feasible, automatic or community sensitive back-up alarms would be used on equipment.
- Limit equipment on-site (only necessary equipment on-site).
- Contractors and subcontractors would be required to properly maintain their equipment and have quality mufflers installed.
- Quieter pile driving methods would be employed where feasible and practicable, including hydraulic pile pushing system, vibratory pile driving, hydraulic impact pile driving, drop-hammer method, or diesel impact pile driving.
- Impact cushions would be used on top of piles when driven by an impact hammer, where feasible and practicable.
- Noise bellow systems, such as IHC Hydrohammer, would be used when feasible and practicable while pile driving.
- Where practicable and feasible, quieter means of rock excavation would be used, including hydraulic jacks and chemical splitting.
- All equipment operators would be properly trained to ensure the most efficient methods are used.
- Where practicable and feasible, dump trucks with bed liners would be used to minimize the noise due to loading.
- Where practicable and feasible, asphalt cold patch would be applied around the edges of any road plates to minimize tire impact on the plate and keep the plate in place.

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, which go beyond typical construction techniques, will be implemented to the extent practicable and feasible during construction of the Applicant's projected development and enlargement sites:

- 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 would be utilized to provide shielding (e.g., the construction sites would have a minimum 12-foot barrier and, where logistics allow, truck deliveries would take place behind these barriers once building foundations are completed); and
- Path noise control measures (i.e., portable noise barriers, panels, enclosures, and acoustical tents, where feasible) would be used for certain dominant noise equipment (i.e., asphalt pavers, drill rigs, excavators with ram hoe, hoists, impact wrenches, jackhammers, power trowels, powder actuated devices, rivet busters, rock drills, concrete saws, and sledge hammers). The details to construct portable noise barriers, enclosures, tents, etc. are based upon the instructions of NYCDEP Citywide Construction Noise Mitigation.
- Noise shrouds would be placed around equipment heads whenever possible, e.g., Hoe Rams.

Previous construction noise analyses have shown that construction with measures such as these usually results in noise levels in the mid 70s of dBA at a distance of approximately 100 feet from the construction site.

The Future Without the Proposed Action

In the No-Action condition, new buildings would be constructed on Projected Development Sites 1, 2, 3, 4, 5, and 17; and an enlargement would be completed at 330 Hudson Street. According to the conceptual construction schedule, the duration of this construction would be a total of approximately 7.5 years. Construction at each development site would include up to 6 months of demolition, up to 6 months of foundations and excavation, up to 12 months of core and shell work, and up to 15 months of finishing and mechanical work. In addition, as described previously, the vacant building on Projected Development Site 19 is expected to be re-tenanted with commercial or storage uses, involving minimal construction. The discrete construction tasks and construction at the various development and enlargement sites would be expected to overlap somewhat.

The Future With the Proposed Action

The construction of the various projected and potential development and enlargement sites associated with the Proposed Action as described in the conceptual construction schedule would last a total of nine years. This would include similar construction to that of the No-Action condition on Projected Development Sites 1, 2, 3, 4, 5, and 17, as well as 330 Hudson, with additional construction at the other projected and potential development and enlargement sites. This construction would be expected to include up to 6 months of demolition, up to 9 months of foundations and excavation, up to 12 months of core and shell work, and up to 15 months of finishing and mechanical work at each development or enlargement site. Some of the discrete construction tasks and construction at the various development and enlargement sites would be expected to overlap.

Intensity of Construction Noise

At sensitive receptor locations nearest the development and enlargement sites where construction would occur in the No-Action condition, the difference between the noise that would be experienced in the No-Action condition and the noise that would be experienced during the With-Action construction period would be unlikely to create an exceedance of the *CEQR Technical Manual* noise impact criteria. Specifically, Projected Development Sites 1, 2, 3, 4, 5, and 17 would experience new construction in the No-Action condition, and therefore the noise levels experienced during construction of the Proposed Action would be similar or lower,

due to the noise control measures that would be implemented during construction of the Applicant's projected development and enlargement sites. These noise levels would be of similar duration in the No-Action condition on all sites except Projected Development Sites 2 and 4, which would have somewhat shorter construction durations in the No-Action condition.

At sensitive receptor locations whose nearest development or enlargement site would be constructed only with the Proposed Action, the No-Action noise levels would likely be comparable to the existing noise levels, elevated slightly by natural growth in traffic on adjacent roadways and construction or operation of No-Action developments or enlargements. These levels, as mentioned previously, would range from approximately the mid-60s of dBA to high 70s of dBA. Such levels would, in some cases, be comparable to the noise levels resulting from construction, which, with the noise control measures described above for the Applicant's projected development and enlargement sites, would be approximately in the mid to high 70s of dBA at 50 to 100 feet, and would consequently not create any exceedances of the *CEQR Technical Manual* noise impact criteria.

At locations with lower background levels, locations where construction occurs very close to a sensitive receptor, or locations where construction occurs simultaneously at multiple adjacent sites, such as locations near the Vandam Street/Spring Street cluster of projected development and enlargement sites, construction may result in exceedances of the *CEQR Technical Manual* noise impact criteria during some limited periods of construction.

Duration of Construction Noise

Construction of all but two individual development or enlargement sites would be expected to last 24 months or less. The noisiest construction activities at any projected development/enlargement site, which include demolition, excavation and foundation (D/E/F) work, would be expected to last between 3 and 15 months, depending on the size of the development and the extent of the work to be undertaken. As illustrated in **Figure 18-2**, on non-Applicant-controlled development and enlargement sites, such D/E/F work would be expected to last a combined 9 months or less. The loudest construction activities (i.e., demolition, excavation, and foundation work) on adjacent sites at the Vandam Street/Spring Street cluster would occur only in the years 2015 and 2016. Consequently, even if an exceedance of the *CEQR Technical Manual* noise impact criteria would occur at some sensitive receptor locations during the noisiest work at the nearest construction site, the exceedance would not be expected to occur continuously for 24 months. While the noise level increases may be perceptible and intrusive, they would not be considered "long-term" or significant according to CEQR criteria.

Project-Related Sensitive Receptors

The Proposed Action would also have the potential to introduce new sensitive receptors to the Rezoning Area on completed development and enlargement sites while other sites are still under construction. This may result in elevated noise levels at these newly completed sensitive receptors during some limited construction periods. The duration of such elevated noise levels would be short, and residential buildings constructed as part of the Proposed Action would be constructed to provide between 22 and 38 dBA of window/wall attenuation, which would result in interior noise levels at these receptor locations that would be considered acceptable according to CEQR criteria throughout most of the construction period. Such window/wall attenuation levels would be required by Restrictive Declarations and/or (E) designations. While these buildings may experience interior noise levels that exceed the CEQR recommended 45 dBA interior L_{10} value for residential uses at some limited times during the construction period, such exceedances would be of very limited duration and as a result of the requirements of the NYC Noise Control Code, would not occur during the night-time hours, which are the most sensitive for residential uses.

Based on the construction noise screening analysis presented above, no significant adverse noise impacts would be expected at any sensitive receptor locations due to construction of the Proposed Action.

Combined Operational and Construction Noise

The changes in operational noise resulting from the Proposed Action were calculated to be less than 1.0 dBA upon completion of the full build-out, and the operation of development or enlargement sites that are completed during the construction period would result in even smaller noise level increments. Such small increments would not substantially increase noise associated with construction as described above, and consequently the combined effects of construction and operational noise associated with the Proposed Action would not result in any significant adverse impact.

VIBRATION

Introduction

Construction activities have the potential to result in vibration levels that may in turn 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 which spread through the ground and decrease in strength with distance. Vehicular traffic, even in locations close to major roadways, typically does not result in perceptible vibration levels unless there are discontinuities in the roadway surface. With the exception of the case of fragile and possibly historically significant structures or buildings, construction activities generally do not reach the levels that can cause architectural or structural damage, but can achieve levels that may be perceptible and annoying in buildings very close to a construction site. An assessment has been prepared to quantify potential vibration impacts of construction activities on structures and residences near the various development and enlargement sites.

Construction Vibration Criteria

For purposes of assessing potential structural or architectural damage, the determination of a significant impact was based on the vibration impact criterion used by LPC of a peak particle velocity (PPV) of 0.50 inches/second. For non-fragile buildings, vibration levels below 0.60 inches/second would not be expected to result in any structural or architectural damage.

For purposes of evaluating potential annoyance or interference with vibration-sensitive activities, vibration levels greater than 65 VdB would have the potential to result in significant adverse impacts if they were to occur for a prolonged period of time.

Analysis Methodology

For purposes of assessing potential structural or architectural damage, the following formula was used:

$$PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$$

where: PPV_{equip} is the peak particle velocity in in/sec of the equipment at the receiver location;

PPV_{ref} is the reference vibration level in in/sec at 25 feet; and

D is the distance from the equipment to the received location in feet.

For purposes of assessing potential annoyance or interference with vibration sensitive activities, the following formula was used:

$$L_v(D) = L_v(ref) - 30\log(D/25)$$

where: $L_v(D)$ is the vibration level in VdB of the equipment at the receiver location;
$L_v(ref)$ is the reference vibration level in VdB at 25 feet; and
D is the distance from the equipment to the receiver location in feet.

Table 18-17 shows vibration source levels for typical construction equipment.

Table 18-17
Vibration Source Levels for Construction Equipment

Equipment	PPV_{ref} (in/sec)	Approximate L_v (ref) (VdB)
Pile Driver (Impact)*	0.644-1.518	104-112
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 buildings and structures of most concern with regard to the potential for structural or architectural damage due to vibration are known architectural resources in the vicinity of the projected development and enlargement sites, specifically 32-36 Dominick Street, 310 Spring Street, **131 Avenue of the Americas,** and the Charlton-King-Vandam Historic District, ~~and the proposed South Village Historic District~~ (See Chapter 7, "Historic and Cultural Resources").[1] As known architectural resources, these sites would require the application of the more stringent vibration criteria described above for such resources (the LPC criteria of 0.50 inches/second PPV). However, as a result of the distance of the nearby sensitive structures from the construction sites, vibration levels at these buildings and structures, as well as other less-sensitive nearby structures, would not be expected to exceed the 0.50 inches/second PPV limit. In addition, 32-36 Dominick Street, 310 Spring Street, and the Charlton-King-Vandam Historic District would be afforded additional protection under DOB *TPPN #10/88,* as described in more detail under "Historic and Cultural Resources" below.

In addition, certain projected development sites would be located near the Holland Tunnel. Future development on these sites would require coordination by the developers with the Port Authority of New York and New Jersey (PANYNJ) to ensure that construction activities would not result in damage to the nearby Holland Tunnel.

In terms of potential vibration levels that would be perceptible and annoying, the two pieces of equipment that would have the most potential for producing levels which exceed the 65 VdB limit are pile drivers and vibratory rollers. They would produce perceptible vibration levels (i.e., vibration levels exceeding 65 VdB) at receptor locations within a distance of approximately 230

[1] ~~The South Village Historic District has not yet been designated, but LPC (letter dated August 27, 2009) and OPRHP (letter dated May 1, 1977) have determined that it is eligible for designation.~~

feet. However, while the vibration may be perceptible and even intrusive, the operation would only occur for limited periods of time at a particular location and therefore would not result in any significant adverse impacts. Any blasting that may occur would be expected to produce vibrations less perceptible than those from the operation of the two pieces of equipment cited above. In no case are significant adverse impacts from vibrations expected to occur.

OTHER TECHNICAL AREAS

HISTORIC AND CULTURAL RESOURCES

Construction activities related to as-of-right development by property owners other than the Applicant that could occur as a result of the Proposed Action could result in unavoidable significant adverse impacts on archaeological and architectural resources.

Archaeological Resources

Construction would involve subsurface disturbance to areas in the Rezoning Area that have been identified as archaeologically sensitive by the Phase 1A studies. Specifically, the Phase 1A Archaeological Documentary Study identified portions of four projected development sites (Sites 5, 10, 12, and 13) and two potential development sites (Sites 22 and 23) as being archaeologically sensitive for resources associated with the 19th century occupation of the 20 historic lots included within those sites, and recommended Phase 1B archaeological testing for these sites. These potential archaeological resources could include shaft features (i.e., privies, cisterns, or wells) associated with the residential occupation of these historic lots in the early to mid-19th century. The Phase 1A was submitted to LPC for review and comment. In correspondence data February 22, 2012, LPC concurred with the findings of the Phase 1A report.

Since none of the six potential and projected development sites identified as archaeologically sensitive for resources are under the Applicant's control, future construction for the development of these properties could be undertaken as as-of-right development. There are no mechanisms available through CEQR to require that such development undertake archaeological field testing to determine the presence of archaeological resources (i.e., Phase 1B testing) or mitigation for any identified significant resources through avoidance or excavation and data recovery (i.e., Phase 2 or Phase 3 archaeological testing). Therefore, construction activities related to as-of-right development that could occur as a result of the Proposed Action could result in unavoidable significant adverse impacts on archaeological resources.

However, it should be noted that if any of these sites were to be developed through future discretionary actions that would be subject to review under CEQR, Phase 1B testing would be completed to confirm the presence or absence of archaeological resources as part of any future discretionary action.

Architectural Resources

Architectural resources are defined as buildings, structures, objects, sites or districts listed on the S/NR or determined eligible for such listing, NHLs, NYCLs and Historic Districts, and properties that have been found by LPC to appear eligible for designation, considered for designation ("heard") by LPC at a public hearing, or calendared for consideration at such a hearing (these are "pending" NYCLs). There are no known architectural resources located on any of the projected or potential development or enlargement sites. ~~However, as~~ As a result of construction-related activities, the Proposed Action could result in adverse direct impacts on up to **six** known architectural resources in both the Rezoning Area and historic resources study area,

which are located within 90 feet of proposed construction activities, close enough to potentially experience adverse construction-related impacts from groundborne construction-period vibrations, falling debris, subsidence, collapse, or damage from construction machinery. These known architectural resources include: 32-36 Dominick Street (3 resources); 310 Spring Street; **131 Avenue of the Americas;** and the Charlton-King-Vandam Historic District~~; and the proposed South Village Historic District~~.[1] The Proposed Action could also result in adverse direct construction-related impacts on up to six potential architectural resources in both the Rezoning Area and historic resources study area.

Resources that could experience accidental damage from adjacent construction would be offered some protection through DOB controls governing the protection of adjacent properties from construction activities. The DOB *TPPN #10/88* applies to New York City Landmarks, properties within New York City Historic Districts, and National Register-listed properties. *TPPN #10/88* supplements the standard building protections afforded by the Building Code 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. Therefore, with the required measures of *TPPN #10/88* in place, there would be no significant adverse construction-related impacts on NYCLs or properties listed on the S/NR that are located within 90 feet of development resulting from the Proposed Action. That is, with these required measures, significant adverse construction-related impacts would not occur to any of the resources noted above, including 32-36 Dominick Street (three resources), 310 Spring Street, and the Charlton-King-Vandam Historic District. However, construction under the Proposed Action could potentially result in impacts to non-designated or unlisted resources, because they would not be afforded special protections under *TPPN #10/88*. Specifically, under the standards of the *CEQR Technical Manual*, construction under the Proposed Action on sites not controlled by the Applicant could result in significant adverse construction-related impacts on **up to ~~1~~ one known architectural resource (specifically, 131 Avenue of the Americas** ~~three buildings within the proposed South Village Historic District~~**) and** six potential architectural resources because they are not NYCLs or NR-listed properties and are not afforded special protections under *TPPN #10/88*. These include: 278 Spring Street, 341 Hudson Street, 78 Vandam Street, 431 Canal Street, 189 Varick Street, and 180 Varick Street. **It should be noted that impacts to the known resource (131 Avenue of the Americas) could also occur as a result of development in the No-Action condition.**

One known resource and four potential architectural resources are located within 90 feet of the Applicant's projected development sites. With the preparation and implementation of a CPP for these potential architectural resources, construction activities on the Applicant's projected development and enlargement sites resulting from the Proposed Action would not be expected to result in adverse impacts on these historic and cultural resources.

HAZARDOUS MATERIALS

The Proposed Action would not result in significant adverse impacts with respect to hazardous materials during construction.

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[1] ~~The South Village Historic District has not yet been designated, but LPC (letter dated August 27, 2009) and the Office of Parks, Recreation and Historic Preservation (letter dated May 1, 1977) have determined that it is eligible for designation.~~

The Proposed Action would result in the demolition of existing structures and excavation on the projected and potential development sites. An assessment of potential hazardous materials impacts was performed for the projected and potential development sites where ground disturbance from construction activities could occur as part of the anticipated future development. The hazardous materials assessment identified potential historical and existing sources of contamination within or near the Rezoning Area. To reduce the potential for adverse impacts associated with projected and potential new construction resulting from the Proposed Action, further environmental investigations will be required. To ensure that these investigations are undertaken, E-designations would be placed on projected and potential development sites.

These E-designations require the owner of the property to do the following: conduct a Phase I ESA in accordance with the ASTM E1527-05; prepare and implement a soil and groundwater testing protocol; and conduct remediation where appropriate, to the satisfaction of OER before development-related building permits for development involving soil disturbance or changes to more sensitive uses (e.g., from non-residential to residential) can be issued by the DOB. If warranted by the findings of the subsurface investigation, site redevelopment would be conducted in accordance with an OER-approved RAP and CHASP, with a closure report prepared following construction documenting compliance with the RAP/CHASP. Following construction, if long-term monitoring (e.g., of groundwater quality) is required by OER, an SMP would be prepared specifying the necessary and appropriate procedures for operation, maintenance, testing and reporting that remediation efforts, if any, have been employed. With the implementation of these measures, the Proposed Action would not result in any significant adverse impacts with respect to hazardous materials.

OPEN SPACE

There are no publicly accessible open spaces on any of the projected or potential development sites, and no open space resources would be used for staging or other construction activities. The Rezoning Area contains three publicly accessible open spaces. These open spaces include one privately owned publicly accessible open space—the Trump Organization's Trump SoHo Plaza—and two public open spaces—Soho Square and Duarte Square. Additionally, there are two public open spaces—Grand Canal Court, and Albert Capsouto Park—that are adjacent to the Proposed Rezoning Area boundary near Projected Development Site 1. At limited times, activities such as excavation and foundation construction at Projected Development Sites 1 and 2 may generate noise that could impair the enjoyment of nearby open space users, but such noise effects would be temporary. (It is unlikely that construction activities on Projected Development Site 18 would result in noise levels that would impair the enjoyment of the adjacent Trump SoHo Plaza or Soho Square open spaces, as construction at this location is anticipated to include only interior modifications to accommodate a change in use.) Within the Rezoning Area, under both the No-Action and With-Action conditions, development on Projected Development Site 1 would include the improvement of the open space easement located adjacent to the site based on commitments from a prior approval, which would create an additional 0.20 acres of passive open space—with landscaping, trees, and seating areas—in the Rezoning Area and study area. For construction at Projected Development Sites 1 and 2, construction fences around these sites would shield the nearby or adjacent parks from construction activities. Construction under the With-Action condition would not limit access to these parks or other open space resources in the vicinity of the Rezoning Area. Therefore, construction under the With-Action condition would not result in significant adverse impacts on open space.

SOCIOECONOMIC CONDITIONS

The Proposed Action would not result in significant adverse construction impacts with respect to socioeconomic conditions.

Construction could, in some instances, temporarily affect pedestrian and vehicular access on street frontages immediately adjacent to the projected development sites. However, lane and/or sidewalk closures are expected to be of very limited duration, and are not expected to occur in front of entrances to any existing or planned retail businesses, construction activities would not obstruct major thoroughfares used by customers or businesses, and businesses would not be significantly affected by any temporary reductions in the amount of pedestrian foot traffic or vehicular delays that could occur as a result of construction activities, because of the MPT measures required by NYCDOT. Utility service would be maintained to all businesses, although very short-term interruptions (i.e., hours) may occur when new equipment (e.g., a transformer, or a sewer or water line) is put into operation. Overall, construction resulting from the Proposed Action is not expected to result in any significant adverse impacts on surrounding businesses.

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

COMMUNITY FACILITIES

Construction activities related to the Proposed Action would not physically displace or alter any existing community facilities. No community facilities would be directly affected by construction activities for an extended duration. The construction sites would be surrounded by construction fencing and barriers that would limit the effects of construction on nearby facilities. Construction workers would not place any burden on public schools and would have minimal, if any, demands on libraries, child care facilities, and health care. Construction of the proposed buildings would not block or restrict access to any facilities in the area, and would not materially affect emergency response times. NYPD and FDNY emergency services and response times would not be materially affected as a result of the geographic distribution of the police and fire facilities and their respective coverage areas.

LAND USE AND NEIGHBORHOOD CHARACTER

Construction activities would affect land use on the various projected development sites within the Rezoning Area, but would not alter surrounding land uses. As is typical with construction projects, during periods of peak construction activity there would be some disruption, predominantly noise, to the nearby area. There would be construction trucks and construction workers coming to the various sites. 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 each of the projected development sites or within portions of sidewalks, curbs, and travel lanes of public streets immediately adjacent to these sites. Throughout construction, access to surrounding residences, businesses, and institutions in the area would be maintained. In addition, measures would be implemented to control noise, vibration, emissions, and dust on construction sites, including the erection of construction fencing incorporating sound-reducing measures. Overall, while the construction at the various development sites within the Rezoning Area would be evident to the local community, the limited duration of

construction at each of the sites would not result in significant or long-term adverse impacts on local land use patterns or the character of the nearby area.

RODENT CONTROL

Construction contracts for the sites controlled by the Applicant would include provisions for a rodent (mouse and rat) control program. Similarly, such controls would be expected to be provided by developers of the other projected development sites within the Rezoning Area, as standard construction practice. Before the start of construction at any given site in the Rezoning Area, construction contractors would survey and bait the appropriate areas and provide for proper site sanitation. During the construction phase, as necessary, the contractors would carry out a maintenance program. Coordination would be maintained with appropriate public agencies. Only EPA- and NYSDEC-registered rodenticides would be utilized, and the contractors would be required to perform rodent control programs in a manner that avoids hazards to persons, domestic animals, and non-target wildlife. ✷