Chapter 16: Construction Impacts

A. INTRODUCTION

The One Vanderbilt site occupies the southernmost block of the Vanderbilt Corridor and is located immediately west of Grand Central Terminal between East 42nd and East 43rd Streets.

The proposed actions would demolish the existing buildings on the site, and facilitate the development of an approximately 1.8 million-gross-square-foot (gsf), (1,299,390-zoning-square-foot), 30.0 FAR building (One Vanderbilt) on a site owned by Green 317 Madison LLC (317 Madison). The proposed building would contain a mix of uses including office, trading floors, retail, restaurant, a transit hall at ground level, and rooftop amenity space. The proposed One Vanderbilt development would utilize floor area bonuses pursuant to the Grand Central Public Realm Improvement and landmark transfer special permits described above. As part of the One Vanderbilt project, 317 Madison would provide the improvements to the Vanderbilt Avenue public place dedicated to pedestrian uses.

This chapter summarizes the construction program with the proposed actions and assesses the potential for significant adverse impacts during construction. The city, state, and federal regulations and policies that govern construction are described, followed by the anticipated construction schedule and the types of activities likely to occur during the construction. The types of construction equipment are also discussed, along with the expected number of workers and truck deliveries. Based on this information and by comparing the construction estimates with the proposed actions to those absent the proposed actions, an assessment of potential impacts from construction activity is conducted and the methods that may be employed to avoid or reduce significant adverse construction-related impacts are evaluated.

The potential for construction impacts to result from development on the other blocks within the proposed Vanderbilt Corridor is discussed in Chapter 19, "Conceptual Analysis."

PRINCIPAL CONCLUSIONS

Based on the analyses presented in this chapter, construction of the proposed One Vanderbilt development would not result in significant adverse construction impacts.

TRANSPORTATION

Peak construction conditions were considered for the analysis of potential transportation impacts during construction of the proposed One Vanderbilt development. Based on the construction trip projections and comparison of the construction of the proposed One Vanderbilt development with the construction of the No-Action building results, construction worker and truck trips associated with the proposed One Vanderbilt development would not result in any significant adverse traffic, parking, transit, or pedestrian impacts.

Traffic

Compared with the construction of the No-Action building, construction activities associated with the proposed One Vanderbilt development would generate 24 more passenger car equivalents (PCEs) during peak construction. The incremental construction PCEs would be below the 2014 *City Environmental Quality Review (CEQR) Technical Manual* 50 vehicle-trip analysis threshold, and, as the result, no further quantified analysis is warranted. Therefore, the proposed One Vanderbilt development is not expected to result in any significant adverse construction traffic impacts. In addition, coordination with the New York City Department of Transportation's (DOT) Office of Construction Mitigation and Coordination (OCMC) would be undertaken to ensure proper implementation of Maintenance and Protection of Traffic (MPT) plans and requirements.

Parking

Construction of the proposed One Vanderbilt development is projected to generate a maximum parking demand of 122 spaces. This parking demand could be fully accommodated by the off-street spaces and parking facilities available within a ¼-mile radius of the project site, where nearly 600 public parking spaces are currently available during the peak midday parking utilization period. Therefore, the construction for the proposed One Vanderbilt development would not result in any significant adverse parking impacts.

Transit

Compared with the construction of the No-Action building, construction of the proposed One Vanderbilt development would generate 79 additional transit trips during the peak construction period, below the 2014 *CEQR Technical Manual* 200-transit-trip analysis, and, as the result, no further quantified analysis is warranted. Therefore, construction of the proposed One Vanderbilt development would not result in any significant adverse transit impacts.

Pedestrians

Compared with the construction of the No-Action building, construction associated with the proposed One Vanderbilt development would generate 110 additional pedestrian trips during the peak construction period, well below the 2014 *CEQR Technical Manual* 200-pedestrian-trip analysis threshold and, as the result, no further quantified analysis is warranted. Therefore, construction of the proposed One Vanderbilt development would not result in any significant adverse pedestrian impacts.

AIR QUALITY

The area immediately surrounding the project site is predominantly commercial in nature, with a mix of different types of commercial activity, and built to varying scales. The One Vanderbilt site is located at some distance away from residential uses, with the nearest sensitive residence at 41 East 41st Street, approximately 250 feet south of the One Vanderbilt site and is separated by East 42nd Street. East 42nd Street would serve as a buffer between the emission sources and this sensitive residential receptor location, and the distance between the sources and the receptor would result in enhanced dispersion of pollutants. To ensure that construction of the proposed One Vanderbilt development would result in the lowest practicable diesel particulate matter (DPM) emissions, the project would implement an emissions reduction program for construction activities that would include, to the extent practicable: diesel equipment reduction, the use of ultra-low sulfur diesel (ULSD) fuel; best available tailpipe reduction technologies; the utilization of newer equipment; implementation of dust control measures; and restriction on vehicle idling.

The maximum 24-hour $PM_{2.5}$ emission rate during construction of the proposed One Vanderbilt development is approximately half of the maximum emission rate predicted in the 2012 *New York University (NYU) Core Final Environmental Impact Statement (FEIS)* construction analysis (an analysis that concluded no significant adverse air quality impacts would result from construction-related sources). In addition, the construction of the proposed One Vanderbilt development would not result in increases in vehicle volumes higher than those identified in the operational condition (Chapter 11, "Air Quality," predicted no significant adverse impacts due to operational mobile sources).

Therefore, based on the location of nearby sensitive receptors, the duration and intensity of construction activities, the use of emission control measures, a comparison of emissions profiles, and an examination of construction mobile sources, the proposed One Vanderbilt development would not result in any significant adverse construction air quality impacts.

NOISE

Noise generated by on-site construction activities would not be expected to result in exceedances of the *CEQR Technical Manual* noise impact criteria at nearest sensitive receptors (i.e., approximately 250 feet south of the One Vanderbilt site). With the construction noise control measures including 12-foot barriers and path controls or quieter models of some pieces of construction equipment, maximum $L_{eq(1)}$ noise levels at the nearest sensitive receptors during construction would be expected to be approximately in the high 40s to low 50s dBA. In addition, measured existing noise levels near these locations were in the mid-70s dBA, and would be expected to remain relatively unchanged in the future without the proposed One Vanderbilt development.

HAZARDOUS MATERIALS

Construction of the proposed One Vanderbilt development would not result in any significant adverse hazardous materials impacts. Based on the findings of the existing investigative sampling for hazardous materials, it is anticipated a Remedial Action Plan (RAP) and associated Construction Health and Safety Plan (CHASP) would be prepared for implementation during construction. The RAP and CHASP would be subject to approval by the New York City Department of Environmental Protection (DEP) or the New York City Mayor's Office of Environmental Remediation (OER). In addition, during and following demolition for the proposed One Vanderbilt development, regulatory requirements pertaining to asbestos-containing materials (ACMs), lead-based paint (LBP), and polychlorinated biphenyls (PCBs) would be followed. As described in more detail in this chapter, with these measures, the proposed One Vanderbilt development would not result in any significant adverse impacts related to hazardous materials.

HISTORIC AND CULTURAL RESOURCES

Grand Central Terminal is located 60 feet to the east of the One Vanderbilt site. To avoid inadvertent construction-period damage to Grand Central Terminal, 317 Madison would develop and implement a Construction Protection Plan (CPP) for the terminal in consultation with LPC and the Metropolitan Transit Authority (MTA). CPPs would also be prepared and implemented in consultation with the New York City Landmarks Preservation Commission (LPC) for the Pershing Square Building and the Socony-Mobil Building to avoid inadvertent damage from the construction of adjacent off-site transit-related improvements. With these measures in place, construction would not be expected to result in significant adverse impacts on historic or cultural resources.

OTHER TECHNICAL AREAS

Based on the analyses conducted, construction of the proposed One Vanderbilt development would not result in significant adverse construction impacts in the areas of vibration, land use and neighborhood character, socioeconomic conditions, community facilities, and open space.

B. GOVERNMENTAL COORDINATION AND OVERSIGHT

Construction oversight involves several city, state, and federal agencies. **Table 16-1** lists the primary involved agencies and their areas of responsibility. For projects in New York City, primary construction oversight lies with the New York City Department of Buildings (DOB), which oversees compliance with the New York City Building Code. In addition, DOB enforces safety regulations to protect workers and the general public during construction. The areas of oversight include installation and operation of equipment such as cranes and lifts, sidewalk sheds, safety netting and scaffolding. DEP enforces the *New York City Noise Code*, reviews and approves any needed RAPs and associated CHASPs, regulates water disposal into the sewer system as well as removal of fuel tanks and abatement of hazardous materials. The New York City Fire Department (FDNY) has primary oversight of compliance with the *New York City Fire Code* and the installation of tanks containing flammable materials. DOT's OCMC reviews and approves any traffic lane and sidewalk closures and MPT plans. The New York City Transit (NYCT) is responsible for subway access and, if necessary, bus stop relocations. NYCT also coordinates construction work that could affect the subway system. LPC approves the historic and cultural resources analysis, the CPP, and monitoring measures established to prevent damage to historic structures, as needed.

Table 16-1
Construction Oversight in New York City by Agency and Areas of Responsibility

Agency	Areas of Responsibility
New York City	
Department of Buildings	Primary oversight for Building Code and site safety
Department of Environmental Protection	Noise, RAPs/CHASPs, dewatering, fuel tank removal, hazardous materials abatement
Fire Department	Compliance with Fire Code, fuel tank installation
Department of Transportation	Lane and sidewalk closures, MPT plans
New York City Transit	Subway access, bus stop relocation
Landmarks Preservation Commission	Archaeological and architectural protection
New York State	
Department of Labor	Asbestos workers
Department of Environmental Conservation	Hazardous materials and fuel/chemical storage tanks
United States	
Environmental Protection Agency	Air emissions, noise, hazardous materials, poisons
Occupational Safety and Health Administration	Worker safety

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

C. CONSTRUCTION PHASING AND SCHEDULE

Table 16-2 presents the anticipated construction schedule for the proposed One Vanderbilt development and reflects the sequencing of construction events as currently contemplated. Construction of the proposed One Vanderbilt development is expected to begin in March 2015 and is expected to be complete in February of 2021 (72-month construction duration). Construction of the proposed One Vanderbilt development would consist of the following primary construction tasks, which would overlap at certain times: demolition; excavation and foundation; core and shell construction; interiors and finishing; and site work. In addition, the proposed actions would include substantial infrastructure improvements to the overall Grand Central area. These construction stages are described in greater detail below in "Primary Construction Tasks."

Table 16-2
Anticipated Construction Schedule—Proposed One Vanderbilt Development

Construction Task	Start Month	Finish Month	Approximate Duration (months)
Demolition	March 2015	August 2016	18
Excavation and Foundation	September 2016	August 2017	12
Core and Shell Construction	September 2017	February 2021	42
Interiors and Finishing	June 2019	February 2021	21
Site Work	September 2020	February 2021	6
Infrastructure Imrpovements[1]	See Table Notes below		

Notes:
1 The proposed One Vanderbilt development would include on-site transit-related improvements as well as potential off-site improvements (i.e., public amenities). These improvements would take place throughout the construction duration and may continue beyond 2021.
Source: Tishman Construction.

Table 16-3 presents the illustrative construction schedule for the No-Action building. The construction of the No-Action building would also begin in March 2015 but is expected to take approximately 57 months to complete as compared with 72 months for the proposed One Vanderbilt development. Construction for the No-Action building would consist of the following primary construction tasks, which would overlap at certain times: demolition; excavation and foundation; core and shell construction; interiors and finishing; and site work. However, absent the proposed actions, there would be no transit hall amenity, on-site or off-site transit-related improvements, or public place on Vanderbilt Avenue.

Table 16-3
Anticipated Construction Schedule—No-Action Building

Construction Task	Start Month	Finish Month	Approximate Duration (months)
Demolition	March 2015	August 2016	18
Excavation and Foundation	September 2016	July 2017	11
Core and Shell Construction	August 2017	November 2019	28
Interiors and Finishing	May 2018	November 2019	19
Site Work	June 2019	November 2019	6
Infrastructure Imrpovements[1]	See Table Notes below		

Notes:
1 The No-Action building would only include infrastructure improvements work related to the existing connection with Grand Central Terminal but would not include connections to East Side Access or any potential off-site improvements (i.e., public amenities).
Source: Tishman Construction.

D. CONSTRUCTION DESCRIPTION

GENERAL CONSTRUCTION PRACTICES

HOURS OF WORK

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

Night or weekend work would not be regularly scheduled, but could occur to make up for weather delays or other unforeseen circumstances. In such cases, appropriate work permits from DOB would be obtained. No night or weekend work could be performed until such permits were obtained. Similar to an extended workday, the numbers of construction workers and pieces of equipment in operation would be limited to those needed to complete the particular task at hand.

CLOSURES, STAGING AREAS, AND PERIMETER SAFETY

Similar to many other construction projects in New York City, temporary curb-lane and sidewalk closures may be required adjacent to the project site. Because the majority of construction activities would be accommodated on-site, construction trucks would be staged primarily within the project site, and/or on streets adjacent to the project site. Based on current logistics, temporary curb lane closures are expected along Madison Avenue, East 43rd Street, and Vanderbilt Avenue immediately adjacent to the project site. A temporary shift of the travel lane and sidewalk closure (south side) on East 43rd Street may be required during core and shell construction activities but traffic flow would be maintained throughout the construction period in coordination with DOT's OCMC. No curb lane closure is expected to occur along east 42nd Street during construction associated with the proposed One Vanderbilt development. MPT plans would be developed for any temporary curb-lane and sidewalk closures as required by DOT. Approval of these plans and implementation of the closures would be coordinated with DOT's OCMC.

A variety of measures would be employed to ensure public safety during the construction of the One Vanderbilt development. For example, sidewalk bridges would be erected where necessary to provide overhead protection for pedestrians passing by the construction site. Flaggers would be posted as necessary to control trucks entering and exiting the construction site, to provide guidance to pedestrians, and/or to alert or slow down the traffic. The installation and operation of tower cranes would follow stringent DOB requirements to ensure safe operation of the equipment. Safety nettings would be installed on the sides of the proposed One Vanderbilt development as the superstructure advances upward to prevent debris from falling to the ground. Security guards would be posted as necessary to prevent unauthorized access to the construction site and public safety. All DOB safety requirements would be followed and construction of the proposed One Vanderbilt development would be conducted with care so as to minimize the disruption to the community.

DELIVERIES AND ACCESS

The work areas would be fenced off and limited access points for workers and construction-related trucks would be provided. During below-grade construction (e.g., excavation and foundation activities), construction-related trucks are anticipated to enter or exit the construction site primarily via Madison Avenue since the eastern portion of the project site has not been excavated and the existing electrical vault is located below-grade on the northern portion of the project site. Based on current logistics, trucks delivering materials are anticipated to enter or exit the construction site primarily via East 43rd Street for above ground construction activities.

RODENT CONTROL

Construction contracts may include provisions for a rodent (i.e., mouse and rat) control program. Before the start of construction, the contractor would survey and bait the appropriate areas and provide for proper site sanitation. During construction, the contractor would carry out a maintenance program, as necessary. Signage would be posted, and coordination would be conducted with appropriate public agencies. Only EPA- and DEC-registered rodenticides would be permitted, and the contractor would be required to implement the rodent control program in a manner that is not hazardous to the general public, domestic animals, and non-target wildlife.

PRIMARY CONSTRUCTION TASKS

The One Vanderbilt site would first be prepared for construction and would involve the installation of public safety measures such as fencing, netting, signs, and Jersey barriers. Access points to the project site would be established. Field office trailers for the construction engineers and managers, portable toilets, and dumpsters for trash would be hauled to the site and installed. During site set-up, permanent utility connections may be made, but utility connections may be made almost any time during the construction period. Site set-up activities would be completed within a few weeks.

DEMOLITION

The four existing buildings on the project site would first be abated of asbestos and any other hazardous materials before the start of demolition.

A New York City-certified asbestos investigator would inspect the buildings for ACMs, and those materials must be removed by a DOL-licensed asbestos abatement contractor prior to interior demolition. Asbestos abatement is strictly regulated by DEP, DOL, EPA, and OSHA to protect the health and safety of construction workers and nearby residents 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. 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.

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 are disassembled or broken apart with most paint still intact. Dust control measures (spraying with water) would be used. 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.

General demolition is the next step, and first any economically salvageable materials are removed. Then the interior of the building is deconstructed to the floor plates and structural columns. Netting around the exterior of the building would be used to prevent materials from falling into public areas. As the interior is being deconstructed, the existing elevators and other vertical transportation shafts would be used to move debris to ground level. When structures on the roof are being razed, enclosed chutes would be used to move the debris to the ground level. Front-end loaders would be used on the ground floor to load materials into dump trucks. The demolition debris would be sorted prior to being disposed at landfills to maximize recycling opportunities.

EXCAVATION AND FOUNDATION

Sheet piles would be installed where necessary with the use of drill rigs along the perimeter of the construction site to hold back soil around the excavation area. The sheet piles would have tiebacks to provide stability. Next, excavators would be used for the task of excavation. The soil would be loaded onto dump trucks for transport to a licensed disposal facility or for reuse on a construction site that needs fill. The dump trucks would be loaded in the excavation itself, and a ramp would be built to the street level. When rock is encountered, a ram hoe or a rock drill would be used to break the rock. Caisson drilling may be required but blasting or pile driving activities are not anticipated to be needed for construction at the project site. The existing combined sewer located parallel to Vanderbilt Avenue between East 42 and East 43 Street would also be relocated during this stage of construction.

Once the design excavation depth has been reached, the horizontal basement slab and vertical basement walls would be built. The vertical basement walls would be designed to allow openings for connections to the pedestrian circulation network serving Grand Central Terminal and the subway. Concrete trucks and concrete pumps would be used to pour the foundation and the below-grade structures. These trucks would use the closest parking lane on Madison Avenue, Vanderbilt Avenue, or East 43st Street, where they would pump the concrete.

The excavation and foundation task would also involve the use of truck cranes, air compressors, backhoes, generators, and hand tools.

Below-Grade Hazardous Materials

As described in greater details below under "Hazardous Materials," to reduce the potential for public exposure to contaminants during excavation and foundation activities, construction activities would be performed in accordance with all applicable regulatory requirements. All construction subsurface soil disturbances would be performed in accordance with a DEP-approved RAP and CHASP. 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 CHASP would ensure that all subsurface disturbances are done in a manner protective of workers, the community, and the environment (such as dust control and monitoring).

Dewatering

The excavated area would not be water proof until the slab-on-grade is built. In addition, rain and snow could collect in the excavation, and that water would have to be removed. Temporary erosion and sediment controls during construction would be provided as necessary, and may include settling ponds and approved filtration systems. If dewatering is required, it would be performed in accordance with DEP sewer use requirements. These requirements require testing to ensure any potentially contaminated groundwater is treated before it can be discharged to the sewer system.

CORE AND SHELL

When the below-grade construction is completed, construction of the core and shell of the new buildings would begin. 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 stage of work would also include construction of the building's framework (installation of beams and columns), and floor decks. Exterior construction would involve 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. Core and shell 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 used for the delivery of materials and vertical movement of workers during this stage where necessary.

INTERIORS AND FINISHING

This stage would include the construction of interior partitions, installation of lighting fixtures, and interior finishes (i.e., flooring, painting, etc.), and mechanical and electrical work, such as the installation of elevators, and lobby finishes. Equipment used during interiors and finishing would include exterior hoists, pneumatic equipment, delivery trucks, and a variety of small hand-held tools. Cranes may be used to lift mechanical equipment onto the roof of the building. This stage would be the quietest because most of the construction activities would occur within the buildings with the façades substantially complete.

SITE WORK

The site work task would include the installation of bollards, exterior lighting, miscellaneous planting, and replacement of the sidewalks and curbs at the project site as well as for the proposed public place on Vanderbilt Avenue. For sidewalk replacement work, a reinforcing mesh would first be laid down followed by the pouring of concrete. For curb replacement work, forms would first be placed followed by the installation of prefabricated concrete curbs. Site work would include equipment such as jackhammers, small cranes, and concrete trucks.

TRANSIT IMPROVEMENTS

The proposed One Vanderbilt development would include connections to the pedestrian circulation network serving Grand Central Terminal, the subway, and East Side Access. In addition, as described in Chapter 1, "Project Description," 317 Madison is undertaking ongoing consultation with MTA-NYCT regarding the potential provision of off-site pedestrian circulation improvements specific to the IRT Lexington Avenue subway station. The type of potential off-site improvements that are being considered include a new stair in the basement of the Pershing Building (located at the southeast corner of East 42nd Street and Park Avenue) that would connect the IRT Lexington Avenue subway mezzanine to the platform, a new street-level entrance in the sidewalk at the southeast corner of East 42nd Street and Lexington Avenue that would connect to an existing below-grade passageway, the narrowing of stairs and columns in the IRT Lexington Avenue subway mezzanine paid area to provide more platform area and improved pedestrian flow, the replacement of an existing street-level subway entrance at the northwest corner of East 42nd Street and Lexington Avenue with new stairs and an elevator, and the creation of a new IRT Lexington Avenue subway mezzanine paid area in the basement of the Grand Hyatt Hotel with two new stairs to the subway platform, as well as the conversion of enclosed spaces to open circulation space on the mezzanine level. The construction intensity of the transit improvements is expected to be small when compared with the construction intensity of the proposed One Vanderbilt development. Transit improvements are expected to take place throughout the construction period.

E. NUMBER OF CONSTRUCTION WORKERS AND MATERIAL DELIVERIES

Table 16-4 shows the estimated average daily numbers of workers and deliveries to the project site by calendar quarter for the duration of the construction period for the proposed One Vanderbilt development. The average number of workers throughout the entire period would be approximately 376 per day. The peak number of workers would reach 861 per day in the fourth quarter of 2019. For truck trips, the average number of trucks throughout the entire construction period would be 23 per day, and the peak would occur in the second quarter of 2016, with 33 trucks per day.

Table 16-5 shows the estimated average daily numbers of workers and deliveries to the project site by calendar quarter for the duration of the construction period for the No-Action building. The average number of workers throughout the entire period would be approximately 299 per day. The peak number of workers would reach 723 per day in the third quarter of 2018. For truck trips, the average number of trucks throughout the entire construction period would be 21 per day, and the peak would occur in the second quarter of 2016, with 33 trucks per day.

Table 16-4
Average Number of Daily Workers and Trucks by Year and Quarter
Proposed One Vanderbilt Development

Year	2015				2016				2017				2018			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	100	100	100	100	100	100	110	143	161	176	188	232	275	316	435	550
Trucks	30	30	30	30	30	30	29	**33**	31	19	13	13	14	17	20	22
Year	2019				2020				2021							
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	Average		Peak	
Workers	707	757	819	**861**	780	740	642	420	283	-	-	-	376		861	
Trucks	25	27	27	27	22	19	17	13	8	-	-	-	23		33	

Source: Tishman Construction

Table 16-5
Average Number of Daily Workers and Trucks by Year and Quarter
No-Action Building

Year	2015				2016				2017				2018			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	100	100	100	100	100	100	112	159	188	149	171	316	426	562	**723**	707
Trucks	30	30	30	30	30	30	29	**33**	31	20	9	10	14	19	21	20
Year	2019				2020											
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	Average				Peak			
Workers	614	489	377	233	-	-	-	-	299				723			
Trucks	16	14	9	6	-	-	-	-	21				33			

Source: Tishman Construction

F. THE FUTURE WITHOUT THE PROPOSED ACTIONS

Absent the proposed actions, the four existing buildings located on the One Vanderbilt site will be demolished, and it is expected that the One Vanderbilt site will be redeveloped with a single office tower built to the maximum as-of-right density permitted under the existing C5-3 and Midtown Special District zoning regulations (15.0 FAR). The No-Action building will be approximately 678 feet tall and will be constructed and occupied by 2019. Construction of it will not incorporate the extensive air quality emissions reduction program or the noise control measures that are being committed to by the project sponsors as part of the proposed One Vanderbilt development.

The No-Action building will not provide pedestrian circulation improvements, as the floor area bonus generated by pedestrian improvements under the Grand Central Subdistrict of the Midtown Special District are only available through a separate discretionary approval (a CPC special permit). The building constructed under the No-Action condition will also not include an amendment to the City Map to map Vanderbilt Avenue between East 42nd and East 43rd Streets as a public place. That section of Vanderbilt Avenue will, therefore, remain in its current condition and open to vehicles. The No-Action building will only include infrastructure improvements related to the existing connection with Grand Central Terminal but will not include connections to East Side Access or any potential off-site improvements (i.e., public amenities).

CONCURRENT PROJECTS

The MTA East Side Access project, which will bring Long Island Rail Road customers to East Midtown with a one-seat ride, is currently being constructed below the corridor and may potentially overlap with the construction of the proposed One Vanderbilt development. However, tunnel excavation, the primary construction task associated with the East Side Access project, has already been completed. Most of the material transport for the remaining construction tasks would take place below grade. Although at-grade connection tie-ins and work related to the ventilation building may require some temporary and localized MPTs at area sidewalks and curb lanes, it is not expected that there would be any noticeable at-grade construction near the project site that would require extensive sidewalk and lane closures except for the existing MPT at East 44th Street between Madison Avenue and Vanderbilt Avenue, which will remain in place between now and the completion of the East Side Access project for storage and staging.

MTA's Grand Central Terminal Leaks Remediation project, which will repair water leak infiltration from surrounding buildings, streets, and sidewalks into Grand Central, is currently underway. It is expected to be completed by December 2016 and may potentially overlap with the construction of the proposed One Vanderbilt development. The existing MPT along Vanderbilt Avenue would remain in place temporarily and as needed until the remediation work is completed on Vanderbilt Avenue.

G. THE FUTURE WITH THE PROPOSED ACTIONS

Construction activities associated with the proposed One Vanderbilt development, as is the case with any construction activities, may result in some temporary disruptions in the surrounding area. As part of the One Vanderbilt project, 317 Madison would provide the improvements to the proposed public place dedicated to pedestrian uses. Further, the proposed One Vanderbilt development would include connections to the pedestrian circulation network serving Grand Central Terminal, the subway, and East Side Access as well as off-site transit improvements. The following analysis describes the overall temporary construction effects on transportation, air quality, noise and vibration, land use and neighborhood character, socioeconomic conditions, community facilities, open space, historic and cultural resources, and hazardous materials.

TRANSPORTATION

The construction transportation analysis is based on a study of peak worker and truck trips, taking into account several factors, including: worker modal splits, vehicle occupancy and trip distribution; and truck passenger car equivalents (PCEs) and arrival patterns. The effects of the construction activities for the proposed One Vanderbilt development were compared with the construction activities for the No-Action building to assess the potential transportation impacts during construction. Since the potential transportation impacts during construction are based on peak construction related activities, the quarter with the highest level of construction trip generation was assessed.

STREET SYSTEM CHANGES DURING CONSTRUCTION

During construction of the proposed One Vanderbilt development, it is anticipated that sidewalks adjacent to the construction sites would be temporarily closed or replaced by protected walkways, while curb lanes may be displaced for some periods of time. Detailed MPT plans would be developed for approval by DOT's OCMC. Aside from the proposed One Vanderbilt

project, area roadway conditions may also change as a result of the various nearby construction activities, including the East Side Access and Grand Central Terminal Leaks Remediation construction projects. However, similar to the proposed One Vanderbilt development, all MPT plans would be developed for approval by DOT's OCMC.

TRAFFIC

An evaluation of construction sequencing and worker/truck projections was undertaken to assess potential traffic impacts.

Construction Trip-Generation Projections

Average daily construction worker and truck activities by quarter were projected for the entire construction period. 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 PCE factor for construction truck traffic.

Daily Workforce and Truck Deliveries

For a reasonable worst-case analysis of potential traffic-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 associated with the proposed One Vanderbilt development would generate the highest amount of daily traffic in the fourth quarter of 2019, with an estimated average of 861 workers and 27 truck deliveries per day (see **Table 16-4**), while the construction for the No-Action building would generate the highest amount of daily traffic in the third quarter of 2018, with an estimated average of 723 workers and 21 truck deliveries per day (see **Table 16-5**). These estimates of construction activities are discussed further below.

Construction Worker Modal Splits and Vehicle Occupancy

Based on a survey conducted by AKRF, Inc. at the construction site of the New York Times Building in 2006, it is anticipated that 28.9 percent of construction workers would commute to the project site by private autos at an average occupancy of approximately 2.04 persons per vehicle.

Peak-Hour Construction-Worker Vehicle and Truck Trips

Similar to other construction projects in New York City, most of the construction activities at the project site are expected to take place from 7:00 AM to 3:30 PM. While construction truck trips would occur throughout the day (with more trips during the early morning), and most trucks would remain in the area for short durations, construction workers would commute during the hours before and after the work shift. For analysis purposes, each truck delivery was assumed to result in two truck trips during the same hour (one "in" and one "out"), whereas each worker vehicle was assumed to arrive near the work shift start hour and depart near the work shift end hour. Further, 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 for construction workers and trucks. For construction workers, the majority (approximately 80 percent) of the arrival and departure trips would take place during the hour before and after each work shift. Construction truck deliveries typically peak during the hour before each shift (25 percent), overlapping with

construction worker arrival traffic. **Table 16-6** presents the hourly-trip projections for the peak construction quarter (fourth quarter of 2019) for the proposed One Vanderbilt development. As shown, the maximum construction-related traffic increments would be approximately 126 PCEs between 6:00 AM and 7:00 AM and 98 PCEs between 3:00 PM and 4:00 PM.

Table 16-6
Peak Construction Vehicle Trip Projections
Proposed One Vanderbilt Development

	Auto Trips			Truck Trips			Total					
	Regular Shift			Regular Shift			Vehicle Trips			PCE Trips		
Hour	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
6 AM - 7 AM	**98**	**0**	**98**	**7**	**7**	**14**	**105**	**7**	**112**	**112**	**14**	**126**
7 AM - 8 AM	24	0	24	3	3	6	27	3	30	30	6	36
8 AM - 9 AM	0	0	0	3	3	6	3	3	6	6	6	12
9 AM -10 AM	0	0	0	3	3	6	3	3	6	6	6	12
10 AM -11 AM	0	0	0	3	3	6	3	3	6	6	6	12
11 AM - 12 PM	0	0	0	3	3	6	3	3	6	6	6	12
12 PM - 1 PM	0	0	0	3	3	6	3	3	6	6	6	12
1 PM - 2 PM	0	0	0	1	1	2	1	1	2	2	2	4
2 PM - 3 PM	0	6	6	1	1	2	1	7	8	2	8	10
3 PM - 4 PM	0	98	98	0	0	0	0	98	98	0	98	98
4 PM - 5 PM	0	18	18	0	0	0	0	18	18	0	18	18
Daily Total	122	122	244	27	27	54	149	149	298	176	176	352

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).

Using the same methodology, construction vehicle trip projections were also developed for the No-Action building (see **Table 16-7**). The construction vehicle activities associated with the future without the proposed project scenario represent the baseline to which projected construction activities would be compared to determine potential construction traffic impacts.

Table 16-7
Peak Construction Vehicle Trip Projections
No-Action Building

	Auto Trips			Truck Trips			Total					
	Regular Shift			Regular Shift			Vehicle Trips			PCE Trips		
Hour	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
6 AM - 7 AM	**82**	**0**	**82**	**5**	**5**	**10**	**87**	**5**	**92**	**92**	**10**	**102**
7 AM - 8 AM	20	0	20	2	2	4	22	2	24	24	4	28
8 AM - 9 AM	0	0	0	2	2	4	2	2	4	4	4	8
9 AM -10 AM	0	0	0	2	2	4	2	2	4	4	4	8
10 AM -11 AM	0	0	0	2	2	4	2	2	4	4	4	8
11 AM - 12 PM	0	0	0	2	2	4	2	2	4	4	4	8
12 PM - 1 PM	0	0	0	2	2	4	2	2	4	4	4	8
1 PM - 2 PM	0	0	0	2	2	4	2	2	4	4	4	8
2 PM - 3 PM	0	5	5	1	1	2	1	6	7	2	7	9
3 PM - 4 PM	0	82	82	1	1	2	1	83	84	2	84	86
4 PM - 5 PM	0	15	15	0	0	0	0	15	15	0	15	15
Daily Total	102	102	204	21	21	42	123	123	246	144	144	288

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).

The incremental construction trips in PCEs are presented in **Table 16-8**. Compared with the construction of the No-Action building, with peak quarter construction activities expected to yield 102 peak hour (6:00 to 7:00 AM) PCEs, construction activities associated with the proposed One Vanderbilt development would generate 24 more PCEs. The incremental construction PCEs would be below the 2014 *CEQR Technical Manual* 50 vehicle-trip analysis threshold, and, as the result, no further quantified analysis is warranted. Therefore, the proposed project is not expected to result in any significant adverse construction traffic impacts.

Table 16-8
Incremental Peak Hour (6:00 AM to 7:00 AM)
Construction Vehicle Trips in PCEs

Scenario	Auto Trips			Truck Trips			Total (PCE)		
	In	Out	Total	In	Out	Total	In	Out	Total
Peak Hour (6:00 AM to 7:00AM)									
Proposed One Vanderbilt Development	98	0	98	7	7	14	112	14	126
No-Action Building	82	0	82	5	5	10	92	10	102
Incremental	16	0	16	2	2	4	20	4	24

Notes: Peak 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).

PARKING

As shown in **Table 16-4**, the peak number of workers during the construction for the proposed One Vanderbilt development would be approximately 861 per day, and would occur in the fourth quarter of 2019. Based on a survey conducted by AKRF, Inc. at the construction site of the New York Times Building in 2006, it is anticipated that 28.9 percent of construction workers would commute to the project site by private autos at an average occupancy of approximately 2.04 persons per vehicle. The anticipated construction activities are therefore projected to generate a maximum parking demand of 122 spaces. This parking demand could be fully accommodated by the off-street spaces and parking facilities available within a one-quarter-mile radius of the project site, where nearly 600 public parking spaces are currently available during the peak midday parking utilization period, as shown in Chapter 10, "Transportation." Therefore, the construction for the proposed One Vanderbilt development would not result in any significant adverse parking impacts.

TRANSIT

Based on the survey conducted by AKRF, Inc. at the construction site of the New York Times Building in 2006, it is anticipated that approximately 71.1 percent of construction workers would commute to the project site via transit. The study area is well served by mass transit, including 9 subway lines (Nos. 4, 5, 6, and 7, and B, D, F, M, and S) and numerous local and express bus routes as well as the Metro-North commuter rail system. During the peak-construction worker shift (a maximum of 861 average daily construction workers in the 7:00 AM to 3:30 PM shift during the peak construction period for the proposed One Vanderbilt development and a maximum of 723 average daily construction workers in the 7:00 AM to 3:30 PM shift during peak construction period for the No-Action building), this would correspond to approximately 612 and 514 workers traveling by transit, respectively. With 80 percent of these workers arriving or departing during the construction peak hours, the estimated number of peak-hour transit trips

would be 490 and 411, respectively. **Table 16-9** provides a summary of the peak transit trip generation during peak construction for the proposed One Vanderbilt development and the No-Action building. As shown in **Table 16-9,** compared with the construction without the proposed actions, construction associated with the proposed One Vanderbilt development would generate 79 additional transit trips during the peak construction period, well below the 2014 *CEQR Technical Manual* 200-transit-trip analysis threshold, and, as the result, no further quantified analysis is warranted. Therefore, construction for the proposed One Vanderbilt development would not result in any significant adverse transit impacts, and no further analysis is required.

Table 16-9
Incremental Peak Hour (6:00 AM to 7:00 AM)
Construction Transit Trip Projections

Scenario	Peak Construction Period (3rd Quarter of 2019) 6:00 AM to 7:00 AM		
	Daily Construction Workers	Daily Construction Transit Trips	Peak Hour Construction Transit Trips
Proposed One Vanderbilt Development	861	612	490
No-Action Building	723	514	411
Incremental	138	98	79

PEDESTRIANS

As summarized above, up to 861 average daily construction workers are projected in the 7:00 AM to 3:30 PM shift during peak construction for the proposed One Vanderbilt development and 723 average daily construction workers during peak construction for the No-Action building. With 80 percent of these workers arriving or departing during the construction peak hours (6:00 AM to 7:00 AM and 3:00 PM to 4:00 PM), the corresponding numbers of peak-hour pedestrian trips traversing the area's sidewalks, corners, and crosswalks would be approximately 689 and 579 respectively. **Table 16-10** provides a summary of the peak pedestrian trip generation during peak construction for the proposed One Vanderbilt development and the No-Action building. As shown in **Table 16-10,** compared with the construction without the proposed actions, construction associated with the proposed One Vanderbilt development would generate 110 additional pedestrian trips during the peak construction period, well below the 2014 *CEQR Technical Manual* 200-pedestrian-trip analysis threshold, and, as the result, no further quantified analysis is warranted. Therefore, construction for the proposed One Vanderbilt development would not result in any significant adverse pedestrian impacts, and no further analysis is required.

Table 16-10
Incremental Peak Hour (6:00 AM to 7:00 AM)
Construction Pedestrian Trip Projections

Scenario	Peak Construction Period (3rd Quarter of 2019) 6:00 AM to 7:00 AM	
	Daily Construction Workers	Peak Hour Construction Transit Trips
Proposed One Vanderbilt Development	861	689
No-Action Building	723	579
Incremental	138	110

AIR QUALITY

Emissions from on-site construction equipment and on-road construction-related vehicles, as well as dust generating construction activities, have the potential to affect air quality. In general, much of the heavy equipment used in construction has diesel-powered engines and produces relatively high levels of nitrogen oxides (NO_x) and particulate matter (PM). Fugitive dust generated by construction activities also contains PM. Finally, gasoline engines produce relatively high levels of carbon monoxide (CO). Therefore, the primary air pollutants of concern for construction activities include nitrogen dioxide (NO_2), particulate matter with an aerodynamic diameter of less than or equal to 10 micrometers (PM_{10}) and 2.5 micrometers ($PM_{2.5}$), and CO.

The *CEQR Technical Manual* lists several factors for consideration in determining whether a quantified on-site and/or off-site construction impact assessment for air quality is appropriate. These factors include the location of nearby sensitive receptors, the duration and intensity of construction activities, the use of emission control measures, and project generated construction-related vehicle trips.

LOCATION OF NEARBY SENSITIVE RECEPTORS

The area immediately surrounding the project site is predominantly commercial in nature, with a mix of different types of commercial activity, and built to varying scales. The blocks surrounding Grand Central Terminal contain some of the largest office towers in the East Midtown area, including the 59-story MetLife Building (formerly the Pan Am Building) located immediately to the north of the Terminal. 42nd Street in particular is a major office tower corridor, with large buildings such as the 53-story W.R. Grace Building, the 53-story Lincoln Building (also known as One Grand Central Place), the 52-story Chanin Building, and the 77-story Chrysler Building. Smaller 12- to 20-story office buildings are generally located in midblock areas.

Generally, the project site is located at some distance away from residential uses, with the nearest residence at 41 East 41st Street, approximately 250 feet south of the project site and is separated by East 42nd Street. East 42nd Street would serve as a buffer between the emission sources and this sensitive residential receptor location and the distance (at least 250 feet away) between the sources and the receptor would result in enhanced dispersion of pollutants. Therefore, potential concentration increments from on-site sources at this location would be reduced. Further, the 5-story 41 East 41st Street residence is shielded by the 53-story Lincoln Building located immediately to its north such that there is no direct pathway between the emission sources and this sensitive receptor location. The next nearest residence from the project site is 20 East 42nd Street, located approximately 310 feet southwest of the project site and is separated by East 42nd Street and Madison Avenue. This 6-story residential building is partially shielded by the 38-story 300 Madison Avenue commercial building located immediately to its east and the 40-story 330 Madison Avenue commercial building to its north.

DURATION OF CONSTRUCTION ACTIVITIES

Construction of the proposed One Vanderbilt development, as is the case with any construction activities, may be disruptive to the surrounding area. While the overall construction duration for the proposed project is anticipated to be approximately 72 months, the construction duration for the most intense construction activities in terms of air pollutant emissions (demolition,

excavation, and foundation stages, where the largest number of large non-road diesel engines would be employed) is anticipated to occur for only a portion of the duration—29 months.

The other stages of construction, including superstructure, exterior facades, interior finishes and site work, would result in much lower air emissions since they would require few pieces of heavy duty diesel equipment. The equipment required for the latter stages of construction would generally have small engines and would be dispersed vertically throughout the building, resulting in very low concentration increments in adjacent areas. In addition, the latter stages of construction would not involve soil disturbance activities and therefore would result in significantly lower dust emissions. Further, interior finishes activities would be better shielded from nearby sensitive receptors by the proposed structures themselves.

INTENSITY OF CONSTRUCTION ACTIVITIES

During the construction of the proposed One Vanderbilt development, several large nonroad diesel engines would be utilized. These engines would generally move throughout the site, although a concrete pump would be located in one location during concrete pours. Based on the nature of the construction work for the proposed One Vanderbilt development, construction activities would not be considered out of the ordinary in terms of intensity; any ground-up construction on the site that would require demolition, excavation and foundation construction (where large equipment such as excavators and drill rigs would be employed) would result in comparable air quality levels to the surrounding community during construction. In addition, Construction of the No-Action building would not incorporate the extensive air quality emissions reduction program that is being committed to by the project sponsors as part of the proposed One Vanderbilt development.

EMISSION CONTROL MEASURES

Construction activity in general has the potential to adversely affect air quality as a result of diesel emissions. To ensure that construction under the proposed actions would result in the lowest practicable DPM emissions, 317 Madison would implement an emissions reduction program for all construction activities, consisting of the following components:

- *Diesel Equipment Reduction*. Electrically powered equipment would be preferred over diesel-powered and gasoline-powered versions of that equipment to the extent practicable. Equipment that would use grid power in lieu of diesel engines includes, but may not be limited to, hoists and small equipment such as welders and rebar benders.
- *Clean Fuel*. ULSD fuel will be used exclusively for all diesel engines throughout the construction sites.
- *Utilization of Newer Equipment*. EPA's Tier 1 through 4 standards for nonroad engines regulate the emission of criteria pollutants from new engines, including PM, CO, NO_x, and hydrocarbons (HC). All nonroad construction equipment with a power rating of 50 hp or greater would meet at least the Tier 3 emissions standard to the extent practicable. Tier 3 NO_x emissions range from 40 to 60 percent lower than Tier 1 emissions and considerably lower than uncontrolled engines. All nonroad engines in the project rated less than 50 hp would meet at least the Tier 2 emissions standard.
- *Best Available Tailpipe Reduction Technologies*. Non-road 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 particulate filters (DPFs) have been identified as being the tailpipe technology currently proven to have the highest reduction capability. Construction contracts would specify that all diesel nonroad engines rated at 50 hp or greater would utilize DPFs, either installed by the original equipment manufacturer (OEM) or retrofitted. Retrofitted DPFs must be verified by EPA or the California Air Resources Board (CARB). Active DPFs or other technologies proven to achieve an equivalent reduction may also be used.

- *Dust Control.* To minimize fugitive dust emissions from construction activities, a strict fugitive dust control plan including a robust watering program would be required as part of contract specifications. For example, all trucks hauling loose material would be equipped with tight-fitting tailgates and their loads securely covered prior to leaving the project site; water sprays would be used for all demolition, excavation, and transfer of soils to ensure that materials would be dampened as necessary to avoid the suspension of dust into the air. Loose materials would be watered, stabilized with chemical suppressing agent, or covered. All measures required by the portion of the *New York City Air Pollution Control Code* regulating construction-related dust emissions would be implemented.
- *Idling 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.

OFF-SITE SOURCES

The construction of the proposed One Vanderbilt development would not result in increases in vehicle volumes higher than those identified in the operational condition. As discussed in Chapter 11, "Air Quality," no significant adverse impacts are predicted due to operational mobile sources. Therefore, construction of the proposed One Vanderbilt development would not result in significant adverse air quality impacts related to vehicular traffic, and further mobile-source analysis is not required.

EMISSION PROFILE COMPARISON

The *NYU Core FEIS* Phase I construction analysis concluded that no significant adverse air quality impacts would result from construction-related sources. As demonstrated in the short-term emissions profile (see **Appendix E**), the maximum 24-hour $PM_{2.5}$ emission rate during construction of the proposed One Vanderbilt development is approximately half of the maximum emission rate predicted in the *NYU Core FEIS*. In addition, as described above in "Location of nearby Sensitive Receptors," the area immediately surrounding the project site is predominantly commercial and the nearest sensitive receptors (residences) are located further away in comparison to the *NYU Core FEIS* Phase I construction analysis. Further, the proposed emissions reduction program for the construction of the One Vanderbilt development would be similar to the emissions reduction program for *NYU Core FEIS* Phase I construction. Therefore, since significant adverse air quality impacts were not predicted in the *NYU Core FEIS*, the impacts predicted with the construction of the proposed One Vanderbilt development would be similar or less, and therefore no significant adverse impacts would be expected.

CONCLUSION

Based on the location of nearby sensitive receptors, the duration and intensity of construction activities, a comparison of emissions profiles, the use of emission control measures, the proposed One Vanderbilt development would not result in any significant adverse construction air quality impacts. In addition, construction of the No-Action building would not incorporate the extensive air quality emissions reduction program that is being committed to by the project sponsors as part of the proposed One Vanderbilt development. Further, the maximum number of construction-related vehicle trips is not expected to exceed the *CEQR Technical Manual* thresholds for conducting a mobile source analysis. Therefore, no further analysis is required.

NOISE

Impacts on community noise levels during construction of the proposed One Vanderbilt development could result from noise from construction equipment operation and from construction and delivery vehicles traveling to and from the construction site. Noise levels caused by construction activities vary widely and depend on the stage of construction and the location of the construction relative to sensitive receptor locations. The most significant construction noise sources are expected to be the operation of impact equipment such as hydraulic break rams as well as movements of trucks to and from the project site. 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* requires the adoption and implementation of a noise mitigation plan for each construction site, limits construction (absent special approvals) 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 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 (the "intensity") would occur continuously for approximately two years or longer (the "duration"). 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 following criteria to define a significant adverse noise impact from mobile and on-site construction activities:

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

NOISE ANALYSIS FUNDAMENTALS

Construction activities for the proposed One Vanderbilt development 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 roadways to and from the project site.

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

- 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 following:

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

LOCATION OF NEARBY SENSITIVE RECEPTORS

As discussed above in "Air Quality," the area immediately surrounding the project site is predominantly commercial in nature, with a mix of different types of commercial activity, and built to varying scales. Generally, the project site is located at some distance away from residential uses, with the nearest residence at 41 East 41st Street, approximately 250 feet south of the project site and is separated by East 42nd Street. This 5-story 41 East 41st Street residence is shielded by the 53-story Lincoln Building located immediately to its north such that there is no direct pathway between the noise sources and this sensitive receptor location. The next nearest residence from the project site is 20 East 42nd Street, located approximately 310 feet southwest of the project site and is separated by East 42nd Street and Madison Avenue. This 6-story residential building is partially shielded by the 38-story 300 Madison Avenue commercial building located immediately to its east and the 40-story 330 Madison Avenue commercial building to its north.

NOISE REDUCTION MEASURES

Construction of the proposed One Vanderbilt development 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 would 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 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 used from the start of construction. **Table 16-11** 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 One Vanderbilt development.
- As early in the construction period as logistics would allow, diesel- or gas-powered equipment would be replaced with electrical-powered equipment such as welders, water pumps, 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.

Table 16-11
Typical Construction Equipment Noise Emission Levels (dBA)

Equipment List	NYCDEP & FTA Typical Noise Level at 50 feet[1]	Noise Level with Path Controls at 50 feet[2]
Backhoe/Loader	80	
Chipping Gun / Rivet Buster	85	
Compactor	80	
Compressor (less than or equal to 350 cfm)	75	
Compressor (greater than 350 cfm)	80	
Concrete Pump	82	
Concrete Truck	85	
Cranes (Crawler)	85	
Cranes (Tower)	85	75
Delivery Truck	84	
Drill Rig	85	
Dump Truck	84	
Excavator	85	
Generator (less than or equal to 25kVA)	70	
Generator (greater than 25kVA)	82	72
Hoist	75	65
Hydraulic Break Ram	90	
Pump	77	
Rock Drill	85	
Saw (chainsaw)	85	
Saw (concrete)	90	
Welding Machine	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, Federal Transportation Administration (FTA), May 2006. Kessler, Frederick M., "Noise Control for Construction Equipment and Construction Sites," report for Hydro Quebec,
[2] Path controls include portable noise barriers, enclosures, acoustical panels, and curtains, whichever feasible and practical.

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 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 to the extent feasible and practical (e.g., tower crane). These barriers are conservatively assumed to offer only a 10 dBA reduction in noise levels for each piece of equipment to which they are applied. The details for construction of portable noise barriers, enclosures, etc. are based upon DEP Citywide Construction Noise Mitigation.

CONSTRUCTION NOISE ANALYSIS

The construction noise analysis considers the noise generated by construction-related traffic, including delivery trucks and worker vehicles, traveling to and from the project site as well as by on-site construction equipment and activity. As discussed above in "Construction Phasing and Schedule," the analysis looks first at the intensity of noise levels during construction, then assesses the potential duration of those noise levels, and finally makes a determination of the potential for impact. The most noise-sensitive construction activities would be demolition, excavation and foundation work, which would last approximately 29 months, as well as core and shell activities, which would last approximately 42 months.

Mobile Construction Noise Sources

Throughout the construction period, vehicles including construction-related trucks and vehicles driven by workers at the construction would travel near the project site. As described above in "Transportation," the amount of traffic generated by the construction of the proposed One Vanderbilt development would be low compared with the traffic levels generated by the construction of the No-Action building. In addition, the construction-related vehicles would be distributed amongst the different routes to and from the project site. Accordingly, the proposed One Vanderbilt development would not result significant adverse construction noise impacts due to mobile sources, and no further analysis is required.

Construction Noise from On-Site Sources

The residential buildings at 41 East 41st Street and 20 East 42nd Street represent the sensitive receptor locations most likely to experience increased noise levels resulting from the operation of stationary construction equipment. With the construction noise control measures described above including 12-foot barriers and path controls or quieter models of some pieces of construction equipment, maximum $L_{eq(1)}$ noise levels at 41 East 41st Street during construction would be expected to be approximately in the low 50 dBA [1]and maximum $L_{eq(1)}$ noise levels at 20 East 42nd Street during construction would be expected to be approximately in the high 40s

[1] Based on detailed noise analyses prepared for several other large-scale construction projects with comparable noise-control measure commitments, including Seward Park (*CEQR* No. 11DME012M) and Halletts Point (*CEQR* No. 09DCP084Q)

dBA. In addition, measured existing noise levels near these locations were in the mid-70s dBA, and would be expected to remain relatively unchanged in the future without the proposed One Vanderbilt development. Consequently, noise generated by on-site construction activities would not be expected to result in exceedances of the *CEQR Technical Manual* noise impact criteria at these residential buildings.

Consequently, noise due to construction of the proposed One Vanderbilt development is not expected to result in any significant adverse impacts on nearby sensitive receptor locations.

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, generally construction activities do not reach the levels that can cause architectural or structural damage, but can achieve levels that may be perceptible and annoying in buildings very close to a construction site. An assessment has been prepared to quantify potential vibration impacts of construction activities on structures and residences near the project site.

CONSTRUCTION VIBRATION CRITERIA

For purposes of assessing potential structural or architectural damage, the determination of a significant impact was based on the vibration impact criterion used by 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 vibration decibels (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 16-12 shows vibration source levels for typical construction equipment.

Table 16-12
Vibration Source Levels for Construction Equipment

Equipment	PPVref (in/sec)	Approximate Lv (ref) (VdB)
Hydraulic Break 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 building of most concern with regard to the potential for structural or architectural damage due to vibration associated with construction of the proposed One Vanderbilt development would be Grand Central Terminal located approximately 60 feet east of the project site. As described in Chapter 6, "Historic and Cultural Resources," a CPP would be developed to protect the Grand Central Terminal from the proposed construction activities associated with the One Vanderbilt development. CPPs would also be prepared and implemented for the Pershing Square Building and the Socony-Mobil Building to avoid inadvertent damage from the construction of adjacent off-site transit-related improvements. The CPP would include a monitoring component to ensure that if vibration levels approach the 0.5 inches per second peak particle velocity (PPV) criterion, corrective action would be taken to reduce vibration levels, thereby avoiding architectural damage and significant vibration impacts. Therefore, construction of the proposed One Vanderbilt development is not expected to result in significant adverse construction impacts with respect to vibration.

In terms of potential vibration levels that would be perceptible and annoying, the equipment that would have the most potential for producing levels which exceed the 65 VdB limit is the hydraulic break ram**.** It would produce perceptible vibration levels (i.e., vibration levels exceeding 65 VdB) at locations within a distance of approximately 140 feet, including Grand Central Terminal and other commercial office buildings in the area. 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. In no case are significant adverse impacts from vibrations expected to occur.

OTHER TECHNICAL AREAS

LAND USE AND NEIGHBORHOOD CHARACTER

Construction activities would not affect land use on the project site nor would they alter surrounding land uses. As is typical with construction projects, during periods of peak construction activity there would be some disruption to the nearby area. There would be construction trucks and construction workers coming to the project site. There would also be noise, sometimes intrusive, from demolition, excavation, and foundation activities as well as

trucks and other vehicles backing up, loading, and unloading. These disruptions would be temporary in nature and would have limited effects on land uses within the study area, particularly as most construction activities would take place within the project site or within portions of sidewalks, and curb lanes of streets immediately adjacent to the construction site. In addition, throughout the construction period, measures would be implemented to control noise, vibration, and dust on the project site, including the erection of construction fencing and barriers. The fencing would reduce potentially undesirable views of construction site and buffer noise emitted from construction activities. Barriers would be used to protect the safety of pedestrians and to reduce noise from particularly disruptive activities where practicable.

Overall, while construction activities at the project site would be evident to the local community, the limited duration of construction would not result in any significant or long-term adverse impacts on local land use patterns or the character of the nearby area.

SOCIOECONOMIC CONDITIONS

Construction activities would temporarily affect pedestrian and vehicular access. However, lane and/or sidewalk closures would not obstruct entrances to any existing businesses, or obstruct major thoroughfares used by customers, and businesses are not expected to be significantly affected by any temporary reductions in the amount of pedestrian foot traffic or vehicular delays that could occur as a result of construction activities. 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 associated with the proposed One Vanderbilt development would not result in any significant adverse impacts on surrounding businesses.

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

COMMUNITY FACILTIES

No community facilities would be directly affected by construction activities because none would be directly displaced or altered by construction. The construction sites would be surrounded by construction fencing and barriers that would limit the effects of construction on nearby facilities. Measures outlined in the MPT Plan would ensure that lane closures and sidewalk closures are kept to a minimum and that adequate pedestrian access is maintained. Construction workers would not place any burden on nearby academic buildings and would have minimal, if any, demands on libraries, child care facilities, and health care. Construction activities would not block or restrict access to any facilities in the area, and would not materially affect the New York City Police Department (NYPD), FDNY, or other emergency services or response times.

OPEN SPACE

There are no existing recreational open spaces within the project site, and no recreational open space resources would be used for staging or other construction activities. While the nearby area surrounding the project site includes a number of privately owned public spaces, it contains no significant publicly controlled open spaces. The nearest open space resource is the privately owned arcade on the first floor of the Phillip Morris International Building (120 Park Avenue). This open space resource is located approximately 120 feet away southeast of the project site and is shielded

from the project site by the building's facade. Construction activities may generate noise that could impair the enjoyment of users of this open space resource, but such noise effects would be temporary and of short duration. Construction activities would not limit access to any open space resources in the vicinity of the project site. Therefore, construction associated with the proposed One Vanderbilt development would not result in any significant adverse impacts on open space.

As described in Chapter 2, "Land Use," the proposed One Vanderbilt development would support PlaNYC's open space goals by closing the portion of Vanderbilt Avenue between East 42nd Street and East 43rd Street to vehicular traffic and creating a new public place under the jurisdiction of DOT. This would provide additional pedestrian space at-grade and would further the City's goal to create public open space resources within the right-of-way. In addition, creation of the protected public place on Vanderbilt Avenue would also support the City's "Vision Zero" policy for reducing pedestrian injuries and deaths.

HISTORIC AND CULTURAL RESOURCES

A detailed assessment of potential impacts on cultural resources is described in Chapter 6, "Historic and Cultural Resources." The section below summarizes the potential for the proposed One Vanderbilt development to result in adverse construction-period impacts on historic and cultural resources.

Grand Central Terminal is located 60 feet to the east of the One Vanderbilt site. To avoid inadvertent construction-period damage to Grand Central Terminal, 317 Madison would develop and implement a CPP for the terminal in consultation with LPC and MTA. CPPs would also be prepared and implemented in consultation with LPC for the Pershing Square Building and the Socony-Mobil Building to avoid inadvertent damage from the construction of adjacent off-site transit-related improvements. With these measures in place, construction would not be expected to result in significant adverse impacts on historic or cultural resources.

HAZARDOUS MATERIALS

As described in Chapter 8, "Hazardous Materials," in the future with or without the proposed actions, the existing buildings would be demolished and a new building constructed, requiring a similar degree of subsurface disturbance on the project site itself. However, there would be less subsurface disturbance elsewhere without the proposed actions since the transit connections and public space would not be constructed. DEC regulations relating to petroleum spill closure along with removal of any associated contaminated soil would need to be followed. Other applicable legal requirements would need to be followed, including but not limited to: disposal of any remaining chemicals or wastes; regulations relating to pre-demolition removal of ACM; and regulations relating to the proper disposal, during or prior to demolition, of building materials or components with LBP or PCBs. Specifically:

- Unless information exists to indicate that suspect ACM do not contain asbestos, prior to demolition activities, an asbestos survey would be completed and all ACMs that would be disturbed by these activities would be removed and disposed of in accordance with applicable regulatory requirements.
- Any renovation/demolition activities with the potential to disturb lead-based paint would be performed in accordance with the applicable Occupational Safety and Health Administration regulation (OSHA 29 CFR 1926.62—Lead Exposure in Construction).
- Unless labeling or laboratory testing data indicates that suspect PCB-containing electrical equipment (including underground transformers) and fluorescent lighting fixtures do not

contain PCBs, and that fluorescent lights do not contain mercury, disposal would be performed in accordance with applicable regulatory requirements.

Soil that would be disturbed by the construction of the proposed One Vanderbilt development potentially includes petroleum contamination and includes urban fill materials with somewhat elevated concentrations of certain metals and organic compounds. Somewhat elevated levels of vapors including chlorinated solvents were found in sub-slab vapor samples. In addition, based on investigative subsurface sampling conducted earlier this year, some portion of the soil will require disposal as hazardous waste due to elevated Toxicity Characteristic Leaching Procedure (TCLP) lead levels. Excavation activities could disturb these hazardous materials and potentially increase pathways for human exposure. DEP requested that the scope for the subsurface investigation be modified to include soil gas sampling and the collection of two grab soil samples per boring. A supplemental site investigation was conducted in November 2014 subsequent to the completion of the Draft Environmental Impact Statement (DEIS) in accordance with the requirements of a DEP letter dated August 8. Based on the results of the testing already conducted, a RAP, and associated CHASP, would be prepared (and submitted for review and approval by DEP or OER) prior to implementation during project construction.

The RAP would addresses requirements for items such as: installation of a vapor barrier around the foundations and two feet of clean fill as a site cap in landscaped or other unpaved areas; soil stockpiling, soil disposal and transportation; dust control; dewatering procedures; quality assurance; procedures for the closure and removal of the known petroleum storage tank; and contingency measures should additional petroleum storage tanks or contamination be unexpectedly encountered. The CHASP would identify potential hazards that may be encountered during construction and specify appropriate health and safety measures to be undertaken to ensure that subsurface disturbance is performed in a manner protective of workers and the community (such as personal protective equipment, air monitoring requirements including community air monitoring, and emergency response procedures).

With these above-described measures, the proposed One Vanderbilt development is not expected to result in any significant adverse impacts related to hazardous materials during construction. ✷