

# 343 Madison Avenue

## Draft Scope of Work for Preparation of a Draft Environmental Impact Statement

LEAD AGENCY



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# Draft Scope of Work

## Introduction

This scope of work outlines the technical areas to be analyzed in the Environmental Impact Statement (EIS) for the 343 Madison Avenue project. BP 347 Madison Associates, LLC (BP), is seeking approval of a net lease by the Metropolitan Transportation Authority (MTA) and two Vanderbilt Corridor Subarea special permits, pursuant to Zoning Resolution § 81-633 (Grand Central public realm improvements) and 81-634 (modifications to bulk regulations and mandatory district plan elements), from the City Planning Commission (CPC) (collectively, the "Proposed Action") in order to redevelop the property owned by the MTA and located at 341-347 Madison Avenue (the "Project Site"). MTA and BP are referred to, collectively, as the "Applicant," and these special permits are available to the Project Site by virtue of its location within the Vanderbilt Corridor Subarea of the Grand Central Subdistrict Core, within the Special Midtown Subdistrict.

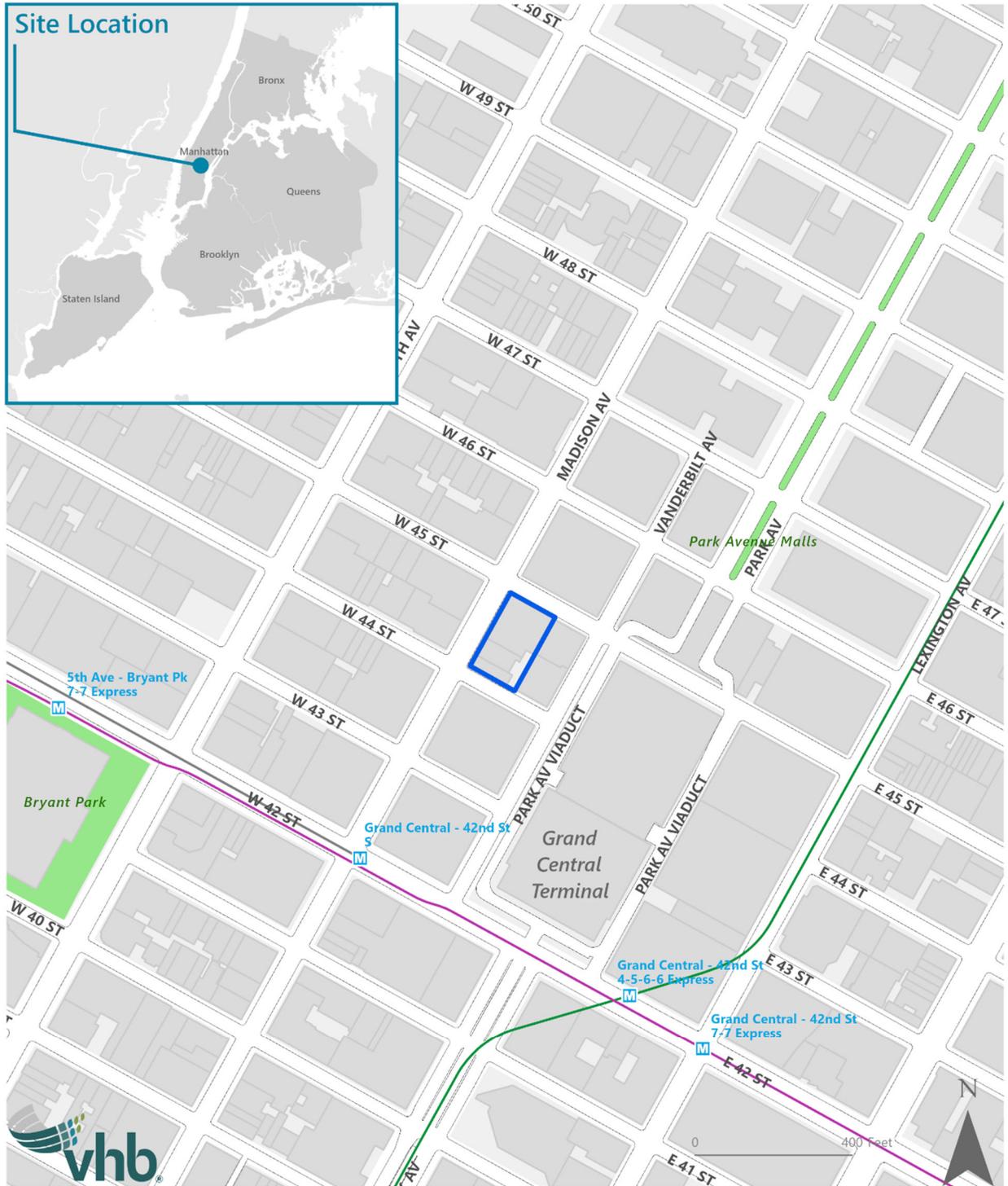
The Proposed Action would facilitate the redevelopment of the Project Site with a new, approximately 925,630 gross square-foot (gsf), commercial office building of up to 1,050 feet tall (up to 1,080 feet including the bulkhead) with ground floor retail uses, and below-grade space (i.e., dedicated mechanical floors) (the "Proposed Project"). The project would provide transportation improvements on-site that create new pedestrian access to, and egress from, the LIRR East Side Access concourse and improve the 45th Street pedestrian connection to Grand Central Terminal. It would also improve passenger circulation at the Grand Central – 42nd Street Subway Station— including improvements to passenger connections to the IRT Flushing Line (#7 Train) platform.

Since the Proposed Project includes discretionary actions by the CPC and the MTA, it is subject to environmental review under the State Environmental Quality Review Act (SEQRA) and City Environmental Quality Review (CEQR) regulations and guidelines. In addition, the Proposed Project is subject to review under the Uniform Land Use Review Procedure (ULURP). The CPC will be the lead agency for the environmental review.

The Project Site, located within Community District 5 in the East Midtown neighborhood of Manhattan, is comprised of Lots 23-25 and 48 on Block 1279, is approximately 25,051 square feet (sf), and has approximately 200 feet of frontage along Madison Avenue and 125 feet of frontage along both East 44th and 45th Streets. Block 1279 is bounded by Madison Avenue to the west, Vanderbilt Avenue to the east, East 44th Street to the south, and East 45th Street to the north (see **Figure 1**).

Based on the Environmental Assessment Statement (EAS) that has been prepared in connection with the Proposed Action, the lead agency has issued a Positive Declaration determining that the Proposed Action has the potential to result in one or more significant adverse environmental impacts, requiring that an Environmental Impact Statement (EIS) be prepared. This Draft Scope of Work outlines the technical areas to be analyzed in the preparation of a Draft EIS (DEIS) for the Proposed Action. Scoping is the first step in the preparation of the EIS and provides an early opportunity for the public and other agencies to be involved in the EIS process. It is intended to determine the range of issues and considerations to be evaluated in the EIS. This Draft Scope of Work includes a description of the Proposed Project and the actions necessary for its implementation, presents the proposed framework for the EIS analysis, and discusses the procedures to be followed in the preparation of the DEIS. The *2014 City Environmental Quality Review (CEQR) Technical Manual* will serve as a general guide on the methodologies and impact criteria for evaluating the Proposed Action's effects on the various environmental areas of analysis.

**Figure 1 Site Location Map**



- Project Site
- 7 Subway Line
- 4 / 5 / 6 Subway Line
- B / D / F / M Subway Line
- S Subway Line
- Subway Station
- GrandCentral

## Description of the Proposed Action

### Project Site and Surrounding Area

The Project Site is comprised of Lots 23-25 and 48 on Block 1279 in the East Midtown neighborhood of Manhattan (see **Figure 2**), within Community District 5 (with a portion of the proposed public realm improvements extending into Community District 6). Block 1279 is bounded by Madison Avenue to the west, Vanderbilt Avenue to the east, East 44th Street to the south, and East 45th Street to the north. The Project Site consists of the western portion of Block 1279, fronting on Madison Avenue, and contains three 13- to 20-story buildings that previously served as the headquarters of the MTA and a ventilation structure for MTA's East Side Access project, which is currently under construction. The buildings that used to contain the MTA headquarters total 351,871 gsf of commercial office and retail space that is now vacant.

In addition to the three MTA buildings and the ventilation structure, Block 1279 contains a commercial building and the Yale Club. All five buildings on the block were constructed between 1916 and 1926 and range in height from 13 to 22 stories. The surrounding land uses are predominantly commercial with large-scale office, retail and hotel uses, and Grand Central Terminal.

The Project Site is zoned C5-3, a high-density commercial district that permits a wide range of uses and is intended for Central Business Districts with large-scale office and retail establishments that serve the entire metropolitan region. The C5-3 zoning allows for a basic maximum floor area ratio (FAR) of 15 for commercial and community facility uses and up to 10 FAR of residential uses.

The Project Site is also located within the Vanderbilt Corridor and Grand Central Core Area of the Special Midtown District's East Midtown Subdistrict. The Vanderbilt Corridor is predominantly developed with commercial uses. Two blocks are fully occupied by large office towers. 335 Madison Avenue, between East 43rd and East 44th Streets (Block 1278, Lot 20), is developed with a 28-story office tower. Originally constructed in the early 20th century as the New York Biltmore Hotel, it was fully renovated with a complete façade reconstruction and interior commercial office conversion in the 1980s. 383 Madison Avenue, at the northern end of the Vanderbilt Corridor between East 46th and East 47th Streets (Block 1282, Lot 21) contains a 47-story office tower completed in the early 2000s.

The remaining properties within the Vanderbilt Corridor contain older commercial buildings. Adjacent to the Project Site are two properties (Block 1279, Lots 28 and 45) fronting on Vanderbilt Avenue that contain buildings that date from the early 20th century: a 20-story office building (52 Vanderbilt Avenue) and the Yale Club, a 22-story building containing clubhouse facilities (dining rooms, banquet halls, athletic facilities, and a library) and guestroom lodgings.

Figure 2 Tax Map



The block between East 45th and East 46th Streets (Block 1281, Lot 21) contains the Roosevelt Hotel, a 19-story building dating from the 1920s, with 1,015 rooms. Grand Central Terminal, located southeast of the Project Site, is one of the City's primary transportation hubs carrying the Metro-North commuter rail system and several subway lines. 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 47-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. The approximately 68-story One Vanderbilt building at 42nd Street and Vanderbilt Avenue is expected to be completed in 2021.

## Background

As a result of the Vanderbilt Corridor rezoning, the FAR of sites within the Vanderbilt Corridor Subarea may be increased by up to 15 FAR (for a total of 30 FAR) through the provision of certain public realm improvements (the "Grand Central Public Realm Improvement Bonus"), through transfer of development rights from designated landmarks within the Grand Central Core Area, or through a combination of public realm improvements and transfer from landmarks.

The Project Site was the subject of a 2013 Request for Proposals (RFP) to transfer the site to a developer as a private redevelopment opportunity. Boston Properties was conditionally designated as the developer for the site. In 2018, the MTA board approved the demolition of the existing buildings, which was subject to a Negative Declaration under SEQRA.

## Proposed Action

The Proposed Action requested by the applicant includes two separate discretionary actions:

### Special Permits

The applicant is seeking two Vanderbilt Corridor Subarea special permits (pursuant to Zoning Resolution § 81-663 and 81-634) available for developments within the Vanderbilt Corridor Subarea that provide public realm improvements in the form of pedestrian and mass transit circulation improvements in and around Grand Central Terminal.

Specifically, the application requests:

1. A special permit to increase the maximum floor area ratio pursuant to the Grand Central Public Realm Improvement Bonus (Zoning Resolution Section 81-633); and
2. A special permit to modify certain mandatory district plan elements, the maximum street wall height, and height and setback regulations (Zoning Resolution Section 81-634).

### Metropolitan Transportation Authority (MTA) Approval of Net Lease

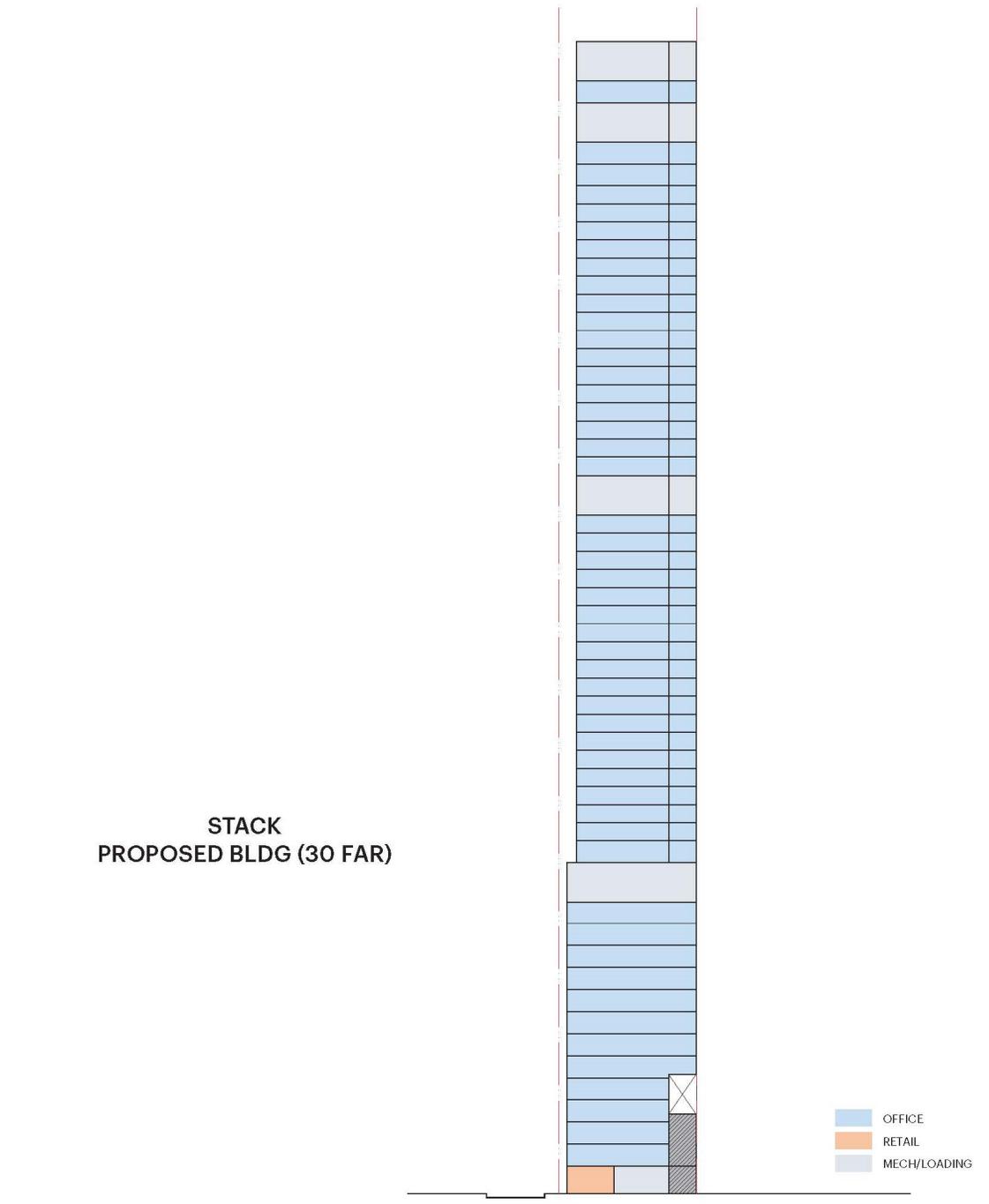
An additional action needed is the MTA approval of a 99-year lease from the MTA to BP (or its designee). In considering this proposed lease, the MTA is acting as an involved agency under CEQR and SEQRA.

## Proposed Project

As mentioned above, the Proposed Action would permit the redevelopment of the Project Site with the Proposed Project—a new, approximately 1,050-foot tall (up to 1,080 feet including bulkhead) commercial office and retail building. The building would have a total floor area of 925,630 gsf (753,152 zsf for 30 FAR). As noted in **Table 1**, the building would contain primarily commercial office space, with ground floor retail, a circulation area to access the East Side Access terminal located below the Project Site, and mechanical and below-grade space (i.e. dedicated mechanical floors) (see **Figure 3** and **Figure 4**). For analysis purposes, the Proposed Project represents the future With-Action development scenario (the “With-Action condition”). The permitted zoning floor area would be 30 FAR, utilizing the Grand Central Public Realm Improvement Bonus. Presently, as part of its application, the applicant has proposed the following pedestrian and/or transit improvements:

- › On-Site East Side Access (ESA) Entrance: A new entrance would be provided at the northern portion of the Project Site, providing access to the Long Island Railroad (LIRR) concourse and connection to the Grand Central Terminal Roosevelt passageway.
- › Transit Improvements at Grand Central – 42nd Street Subway Station: the proposed improvements would include measures to increase passenger circulation—including improvements to passenger connections to the IRT Flushing Line (#7 Train) platform.

**Figure 3 With-Action Massing**



**Figure 4 With-Action Ground Floor Plan**

## Project Purpose and Need

The Proposed Action would permit an increase in the maximum floor area ratio, and modifications to certain bulk regulations and mandatory district plan elements, in order to facilitate the development of a first-class office and retail building on the site of the former MTA Headquarters on Madison Avenue. It is intended to further the City's economic development goals for the Vanderbilt Corridor within the Special Midtown District, provide for commercial development in an area that is well-served by mass transit and create an opportunity for significant revenue generation for the MTA.

The Proposed Project would provide transportation improvements at the Grand Central Terminal complex, including (i) the creation of new pedestrian access to, and egress from, the LIRR East Side Access concourse; (ii) improvements to the 45th Street pedestrian connection to Grand Central Terminal; and (iii) improvements to passenger connections to the Flushing Line platform of the Grand Central – 42nd Street Subway Station. Overall, these improvements would serve to relieve pedestrian congestion and circulation constraints at the Grand Central Terminal complex.

These transportation, planning, and economic development goals would be realized in connection with the development of a first-class office and retail building. The Proposed Action would permit modifications to the maximum street wall heights and height and setback regulations, thus allowing for a distinctive tower design while accommodating larger, optimally-sized floor plates. The Proposed Action would also include modifications to mandatory district plan elements to facilitate better site planning and enhanced pedestrian circulation within the district. As a result, the Proposed Action would result in an improved distribution of bulk that is intended to be harmonious with the mandatory district plan element strategy and the height and setback goals of the Special Midtown District.

## Analysis Framework

### Build Year

The build year for the Proposed Project is 2026. Redevelopment of the Project Site is expected to commence with excavation work beginning in 2022 and be completed by 2026. The construction period is expected to be up to 42 months (including excavation, foundation, and superstructure work, and interior fit-out) once the site is made available. It is assumed that demolition would occur over 14-month period from October 2020 to November 2021 prior to the start of construction for this project. This demolition was approved by the MTA through a separate action in 2018.

### Reasonable Worst-Case Development Scenario

In order to assess the potential effects of the Proposed Action, a reasonable worst-case development scenario (RWCDs) was established for both the future without the Proposed Action (No-Action condition) and the future with the Proposed Action (With-Action condition) for an analysis year, or Build Year, of 2026. The incremental difference between the No-Action and With-Action conditions would serve as the basis of the impact analyses.

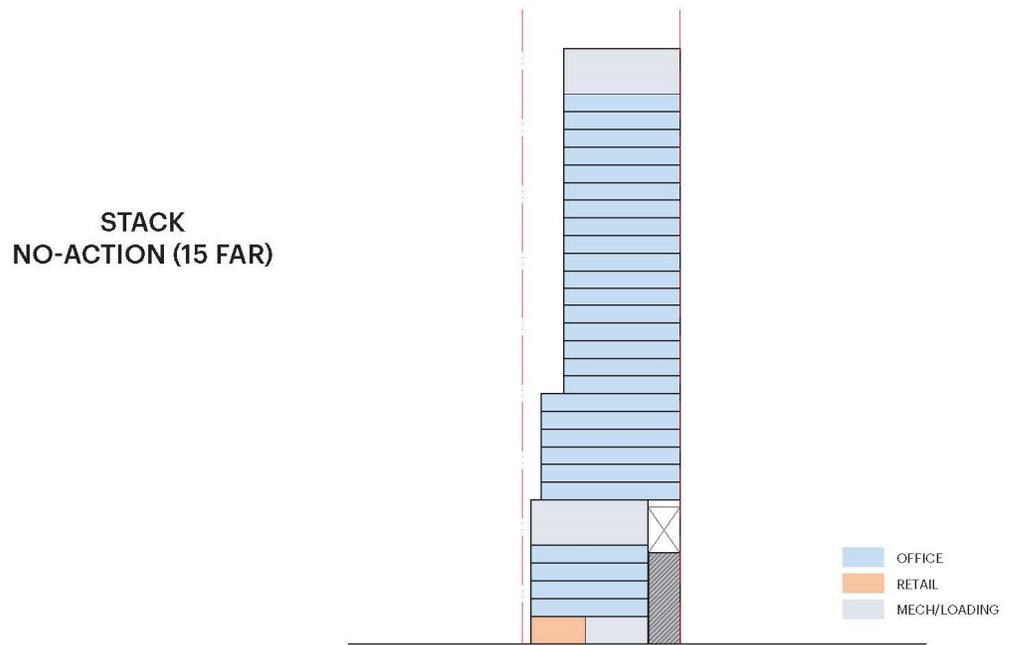
### Existing Conditions

The three buildings on the Project Site (lots 23, 24, and 48) are currently vacant and are set to undergo demolition as approved by the MTA in 2018. They once contained a total of 351,871 gsf of mixed commercial office and retail use. The fourth structure on Lot 25 contains a 2,482 gsf ventilation structure for the East Side Access.

### No-Action Condition

In the future No-Action condition, the RWCDs assumes that after the Project Site is demolished, a 15 FAR, 477,599 gsf (376,574 zsf) mixed commercial office and retail building would be constructed in accordance with existing zoning, without any FAR bonus. The building would contain 6,144 gsf of ground floor retail space, 411,540 gsf of commercial office space above, and 56,848 sf of below grade and mechanical space (i.e. dedicated mechanical floors). It would also include a 3,067-sf easement for possible future East Side Access Circulation to be built by the MTA. The building would be 472 feet high and 30 stories and feature a tower on a 114-foot-tall podium. The tower would have one set back at 194 feet. The ventilation structure on Lot 25 would remain under existing conditions (see **Figure 5** and **Figure 6**).

**Figure 5 No-Action Massing**



**Figure 6 No-Action Ground Floor Plan**



## With-Action Condition and Increment for Analysis

As detailed above, the Proposed Project represents the future With-Action condition and would consist of a 30 FAR mixed commercial office and retail building with a total of 925,630 gsf (753,152 zsf). The building would be 55 stories tall and reach 1,050 feet (up to 1,080 feet including the bulkhead) (see **Figure 3** and **Figure 4**). The structure would be a tower on a podium, with the podium reaching 301 feet. The proposed increment for analysis is described below in **Table 1**.

**Table 1 Reasonable Worst-Case Development Scenario**

Use	Existing	No-Action		With-Action		Increment	
		GSF	Employees	GSF	Employees	GSF	Employees
Office	0	411,540	1,646	832,613	3,330	421,073	1,684
Retail	0	6,144	18	5,357	16	(787)	(2)
Circulation Space	0	3,067		3,067		0	
Mechanical	0	56,848		84,593		27,745	
<b>Total GSF</b>	<b>0</b>	<b>477,599</b>	<b>1,665</b>	<b>925,630</b>	<b>3,347</b>	<b>448,031</b>	<b>1,682</b>

Note: Employee assumptions based on 1 employee per 250 sf of office space, 1 employee per 333.33 sf of retail space

## Environmental Impact Statement Scope of Work

The Department of City Planning (DCP), on behalf of CPC as lead agency in the environmental review, has determined that the Proposed Action and Proposed Project have the potential to result in significant environmental impacts and, therefore, pursuant to CEQR procedures, has issued a positive declaration requiring that an EIS be prepared.

In accordance with SEQRA and CEQR, this Draft Scope of Work has been distributed for public review. A public scoping meeting has been scheduled for Thursday, August 27, 2020 at 2:00 PM, and the period for submitting written comments will remain open for ten days, or until Tuesday, September 8, 2020. In support of the City's efforts to contain the spread of COVID-19, DCP will hold the public scoping meeting remotely. Instructions on how to view and participate, as well as materials relating to the meeting, will be available at the DCP Scoping Documents webpage (<https://www1.nyc.gov/site/planning/applicants/scoping-documents.page>) and NYC Engage website (<https://www1.nyc.gov/site/nycengage/index.page>) in advance of the meeting.

After considering comments received during the public comment period, a Final Scope of Work will be prepared to direct the content and preparation of a DEIS. As the next step in the process, once the lead agency has determined that the DEIS is complete, it will be subject to public review, in accordance with the CEQR and ULURP processes with a public hearing and a period for public comment. A Final EIS (FEIS) will then be prepared to respond to those comments received on the DEIS. The lead agency will make CEQR findings based on the FEIS, before deciding on project approval.

The EIS will be prepared in conformance with all applicable laws and regulations, including SEQRA (Article 8 of the New York State Environmental Conservation Law) and its implementing regulations found at 6 NYCRR Part 617, New York City Executive Order No. 91 of 1977, as amended, and the Rules of Procedure for CEQR, found at Title 62, Chapter 5 of

the Rules of the City of New York. The Proposed Action includes MTA approval of a 99-year net lease from the MTA to BP (or its designee). The MTA will act as an involved agency under SEQRA and CEQR in connection with that lease approval.

## EIS Framework for Proposed Project

The Proposed Action's EIS will cover the following technical areas: Land Use, Zoning and Public Policy; Open Space; Shadows; Historic and Cultural Resources; Urban Design and Visual Resources; Hazardous Materials; Water and Sewer Infrastructure; Transportation; Air Quality; Greenhouse Gas Emissions and Climate Change; Noise; Public Health; Neighborhood Character; and Construction. The remaining CEQR impact categories have undergone analysis as part of an EAS for the Proposed Action. Under guidelines specified in the *CEQR Technical Manual*, the lead agency determined that further analysis of these remaining CEQR impact categories is not required as there would be no potential for significant adverse impacts due to the Proposed Action. These categories include: Socioeconomic Conditions, Community Facilities, Natural Resources, Solid Waste and Sanitation; and Energy.

Based on the conclusions and analyses of the Proposed Action's EAS, the EIS for the Proposed Action will include the sections outlined below. The EIS will follow the guidance of the *CEQR Technical Manual*, and will contain:

- › A description of the Proposed Project and its environmental setting;
- › A statement of the environmental impacts of the Proposed Project, including its short- and long-term effects and typical associated environmental effects;
- › An identification of any adverse environmental effects that cannot be avoided if the Proposed Project is implemented;
- › A discussion of reasonable alternatives to the Proposed Project;
- › An identification of irreversible and irretrievable commitments of resources if the Proposed Project is implemented; and
- › A description of mitigation measures proposed to eliminate or minimize any significant adverse environmental impacts from the Proposed Project.

### Task 1. Project Description

The first chapter of the EIS introduces the Proposed Project and provides the project data from which impacts are assessed. This section will contain a brief history of the Project Site and the Vanderbilt Corridor; a description of the RWCDs; a description of the design of the Proposed Project; figures to depict the Proposed Project; and a discussion of the CPC approvals required.

The Project Description will include appropriate materials from the ULURP application. It will describe the role of the lead agency for CEQR as well as the environmental review and ULURP processes. Any requirements necessary as part of the Proposed Action will also be identified.

### Task 2. Land Use, Zoning and Public Policy

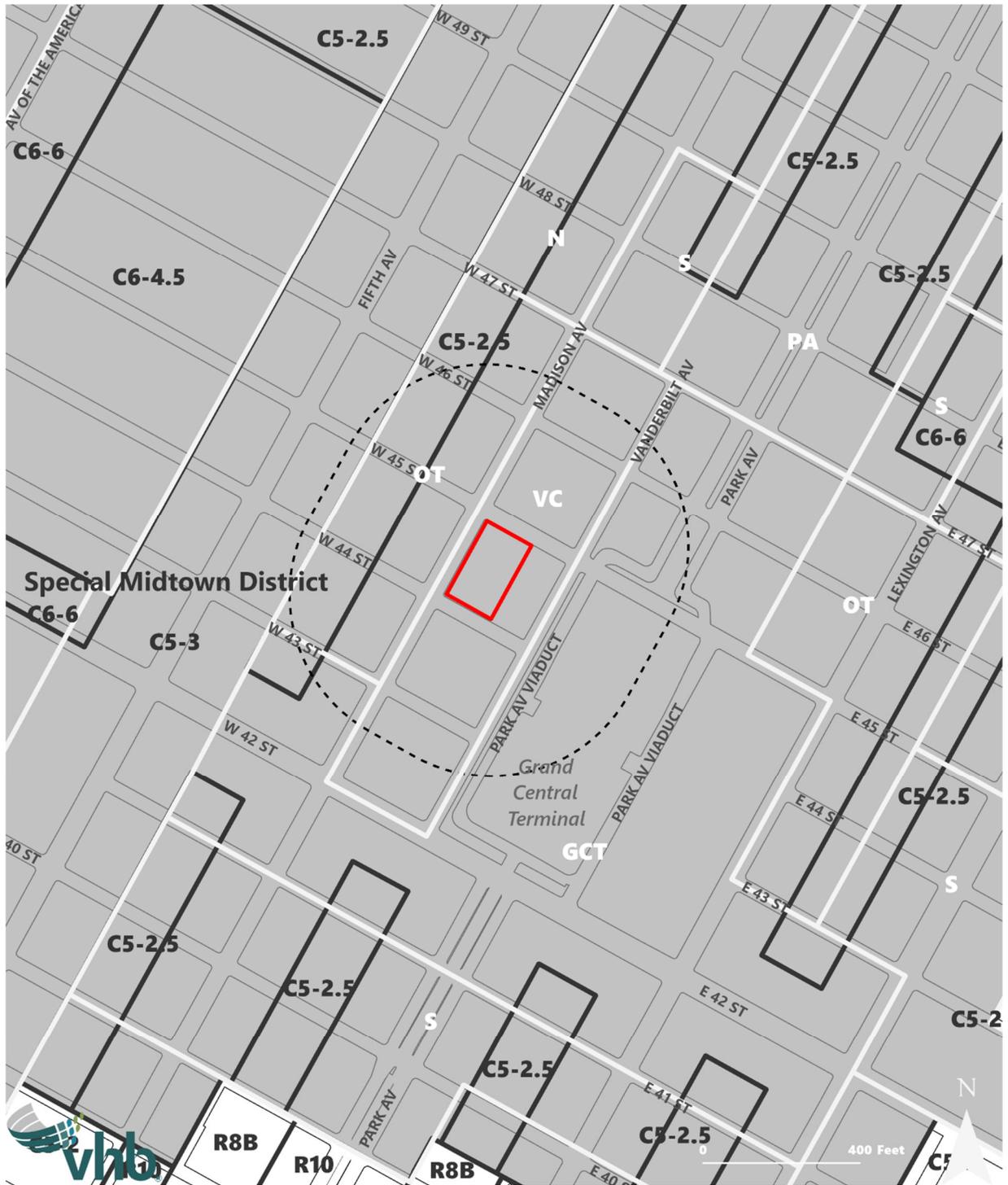
A land use analysis characterizes the uses and development trends in the area that may be affected by the Proposed Project, describes the public policies that guide development, and

determines whether a proposed project is either compatible with those conditions and policies or whether it may affect them. Similarly, the analysis considers compliance of the Proposed Action with, and their effect on, the area's zoning and other applicable public policies. This chapter will analyze the potential impacts of the Proposed Project on land use, zoning, and public policy, pursuant to the methodologies presented in the *2014 CEQR Technical Manual*. Additionally, this chapter will also provide a baseline for other analyses.

The land use study area will consist of the area within 400 feet of the Project Area (see **Figure 7** and **Figure 8**). The analysis will:

- › Provide a brief development history of the site and the study area. The study area will include the site and the area within approximately 400 feet.
- › Describe conditions in the study area, including existing uses and the current zoning.
- › Describe predominant land use patterns in the study area, including recent development trends and zoning changes.
- › Summarize other public policies that may apply to the site and study area, including any formal neighborhood or community plans, and OneNYC.
- › Prepare a list of other projects expected to be built in the study area that would be completed before or concurrent with the Proposed Action. Describe the effects of these projects on land use patterns and development trends. Also, describe any pending zoning actions or other public policy actions that could affect land use patterns and trends in the study area.
- › Provide an assessment of the impacts of the Proposed Project on land use and land use trends, zoning, and public policy. Consider the Proposed Project related to issues of compatibility with surrounding land use, consistency with public policy initiatives, and the effect on development trends and conditions in the area.
- › The proposed development would be assessed pursuant to New York City Zoning Resolution §81-633 to evaluate the project's consistency with the resolution's Special Permit requirements for FAR density bonuses.

**Figure 7 Existing Zoning Map**



- Project Site
- Special Purpose District
- 400 Foot Radius
- Special East Midtown Subdistrict Subareas
- Zonina District

**Figure 8 Existing Land Use Map**



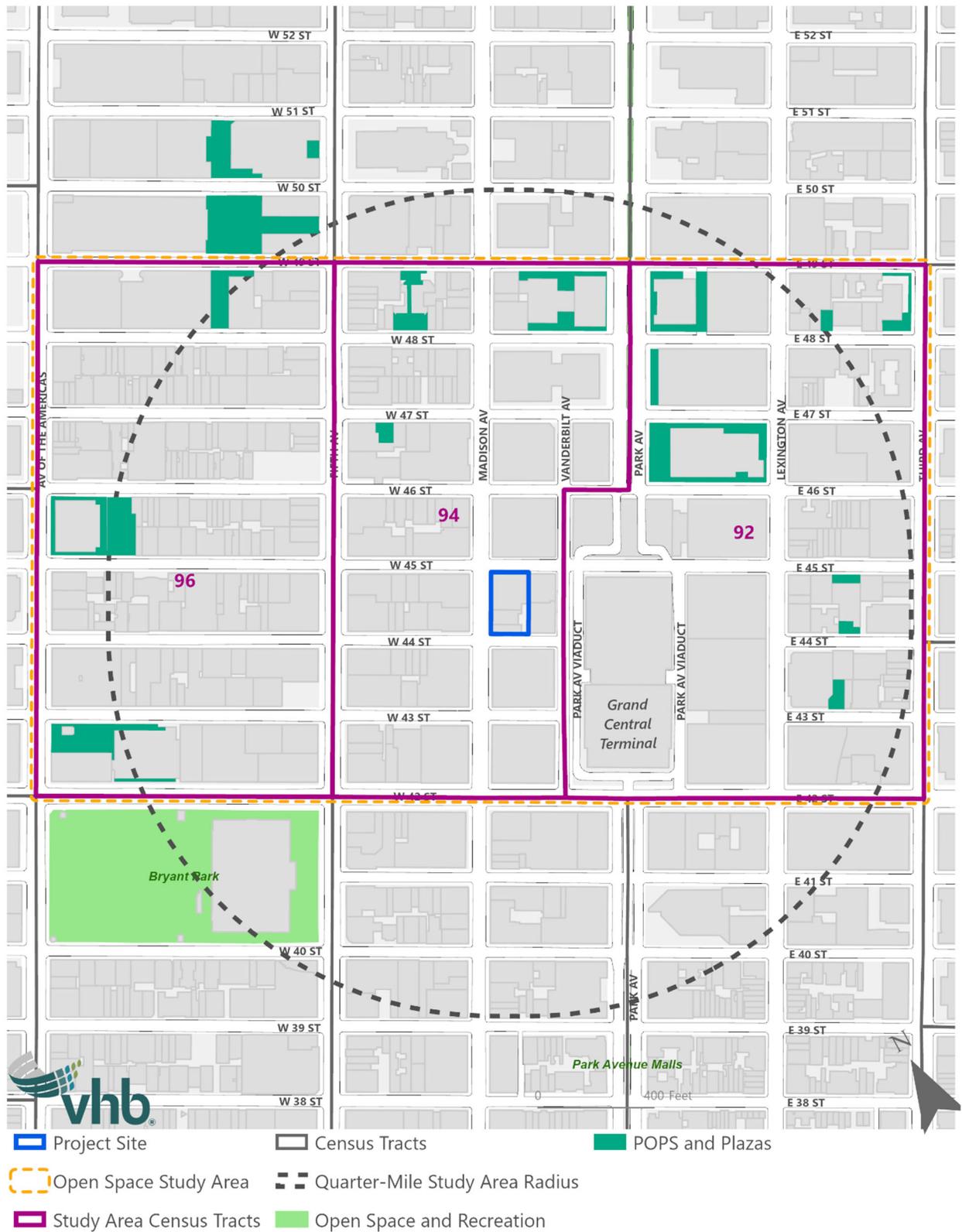
### Task 3. Open Space

The Open Space analysis is conducted to determine whether a proposed project would have a direct impact resulting from the elimination or alteration of existing open space and/or an indirect impact resulting from overtaxing available open space. As the proposed project would generate an additional 1,682 employees that would exceed the 500-worker threshold<sup>1</sup>, an open space analysis for indirect impacts to open space will be included in the EIS. This analysis would include the following tasks:

- › Establishing the open space study area (based on census tracts within a ¼-mile radius of the project site) and calculating its nonresident population and inventorying its publicly accessible open spaces, including privately owned public spaces (POPS), and their conditions (see **Figure 9**). Census tracts with 50% or more of their area within the ¼-mile radius were included in the open space study area.
- › Projecting open space conditions into the future without the Proposed Action (i.e., the No-Action condition).
- › Assess the impacts of the increase in the nonresident population associated with the proposed project on open spaces in the study area, based on quantified ratios and qualitative factors.
- › A preliminary assessment to determine if a detailed open space analysis is necessary and, if so, preparation of such an analysis in accordance with the CEQR Technical Manual.
- › If the results of the detailed analysis identify a potential for significant adverse impacts, potential mitigation measures will be discussed.

<sup>1</sup>The *CEQR Technical Manual* threshold for analysis for commercial projects is 500 employees that are not located in areas defined as under-served or well-served by open space.

**Figure 9 Open Space Study Area Map**



## Task 4. Shadows

The shadows analysis assesses whether new structures resulting from a proposed action would cast shadows on sunlight sensitive publicly accessible resources, which include publicly accessible open spaces, important sunlight-sensitive natural resources, or historic resources with sun-sensitive features, and to assess the significance of their impact. This analysis will examine the Proposed Action's potential for significant and adverse shadow impacts pursuant to the *CEQR Technical Manual* criteria. The shadows analysis would be coordinated with the tasks for open space and historic resources and would include the following tasks:

- › A preliminary shadows assessment will be prepared to ascertain whether the Proposed Project's shadows may potentially reach any sunlight-sensitive resources at any time of the year.
  - A Tier 1 Screening Assessment will be conducted to determine the longest shadow study area for the Project Site, which is defined as 4.3 times the height of a structure (the longest shadow that would occur on December 21, the winter solstice), pursuant to the *CEQR Technical Manual*. A base map that illustrates the location of the development in relation to the sunlight sensitive resources will be developed.
  - A Tier 2 Screening Assessment will be conducted if any portion of a sunlight-sensitive resource lies within the longest shadow study area. The Tier 2 assessment will determine the triangular area that cannot be shaded by the Project Site, which in New York City is the area that lies between -108 and +108 degrees from true north.
  - If any portion of a sunlight-sensitive resource is within the area that could be potentially shaded by the Project Site, a Tier 3 Screening Assessment will be conducted. The Tier 3 Screening Assessment will determine if shadows resulting from the project can reach a sunlight-sensitive resource through the use of three-dimensional CAD models of both the future No-Action and With-Action conditions. The model will include a three-dimensional representation of the sunlight-sensitive resource(s), a three-dimensional representation of the proposed development, and a three-dimensional representation of the topographical information within the area being analyzed. Shadow analyses will be conducted for four representative days of the year to determine the extent and duration of new shadows that would be cast on sunlight-sensitive resources as a result of the proposed development. The four analysis days are: March 21, the vernal equinox, which is the equivalent of September 21, the autumnal equinox; May 6, the midpoint between the equinox and longest day of the year, which is the equivalent to August 6, the midpoint between the equinox and the shortest day of the year; June 21, the longest day of the year; and December 21, the shortest day of the year.
- › If the screening analysis does not rule out the possibility that action-generated shadows would reach any sunlight-sensitive resources, a detailed analysis of potential shadow impacts on publicly accessible open spaces or sunlight-sensitive historic and natural resources resulting from the Project Site will be provided in the EIS. The detailed shadow analysis will establish a baseline condition (No-Action), which will be compared to the future condition resulting from the Proposed Action (With-Action) to illustrate the shadows cast by existing or future buildings and distinguish the additional (incremental) shadow cast by the Project Site. The detailed analysis will include the following tasks:

- Document the analysis with graphics comparing shadows resulting from the No-Action condition with shadows resulting from the proposed development, with incremental shadow highlighted in a contrasting color.
- Provide a summary table listing the entry and exit times and total duration of incremental shadow on each applicable representative day for each affected resource.
- Assess the significance of any shadow impacts on sunlight-sensitive resources.
- If the results of the impact analysis identify a potential for significant adverse impacts, potential mitigation measures will be discussed.

## Task 5. Historic and Cultural Resources

Archaeological resources are physical remains, usually subsurface, of the prehistoric, Native American, and historic periods—such as burials, foundations, artifacts, wells, and privies. Archaeological resources are considered only in those areas where new in-ground disturbance is likely to occur. Since the Proposed Project would require at least some subsurface disturbance on the Project Site, it will be necessary to analyze the potential impacts of the Proposed Project on archaeological resources. If the site is determined not to be archaeologically sensitive, no further work will be required with respect to archaeological 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 and Historic Districts, and properties that have been found by the New York City Landmarks Preservation Commission (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” Landmarks, or NYCLs). There are four architectural resources located in close proximity to the Project Site: the Yale Club (NYCL and S/NR-designated) at 50 Vanderbilt Avenue; the Vanderbilt Concourse Building (S/NR-eligible) at 52 Vanderbilt Avenue; the Brooks Brothers Store (S/NR-eligible) at 346 Madison Avenue; and the Roosevelt Hotel (NYCL-eligible, S/NR-eligible) at 45 East 45th Street. Further, there are numerous architectural resources, including Grand Central Terminal (NYCL, S/NR, NHL) and the New York Central Building (NYCL, S/NR-eligible) at 230 Park Avenue, in the vicinity of the Project Site. Therefore, it will be necessary to consider the potential impacts of the Proposed Action on architectural resources. Consistent with the *CEQR Technical Manual*, the historic and cultural resources analysis will include the following tasks.

- › Request a preliminary determination of archaeological sensitivity for the portions of the Project Site that would experience subsurface disturbance from LPC. If it is determined that all or part of the Project Site may be sensitive for archaeological resources, a Phase 1A Archaeological Documentary Study of the affected area (the Area of Potential Effect [APE]) will be prepared as directed by the lead agency and LPC;
- › Define the study area for architectural resources. This scope of work assumes that the study area for architectural resources will be approximately 400 feet beyond the borders of the Project Site (i.e., consistent with the study area for the analysis of land use, zoning, and public policy).

- › Map and briefly describe designated architectural resources in the study area. Consistent with the guidance of the *CEQR Technical Manual*, designated architectural resources include: New York City Landmarks and Historic Districts; resources calendared for consideration as one of the above by LPC; resources listed on or formally determined eligible for inclusion on the State and/or National Registers of Historic Places, including National Historic Landmarks.
- › Conduct a field survey of the study area to identify any potential architectural resources that could be impacted by the Proposed Action.
- › Assess the potential significant adverse impacts of the Proposed Action on archaeological and architectural resources, including visual and contextual changes as well as any direct physical impacts. Potential effects will be evaluated through a comparison of the future No-Action condition and the future With-Action condition.
- › Consultations with LPC will be undertaken to confirm that there are no resources of archaeological concern at tax blocks within the entire APE.
- › If applicable, develop measures to avoid, minimize, or mitigate any significant adverse impacts on historic and cultural resources, in consultation with LPC and SHPO.

It is anticipated that a construction protection plan (CPP) would be necessary and developed in consultation with LPC and SHPO to avoid adverse construction-related impacts to these resources.

## Task 6. Urban Design and Visual Resources

According to the methodologies of the *CEQR Technical Manual*, if a project requires actions that would result in physical changes to a Project Site beyond those allowable by existing zoning and which could be observed by a pedestrian from street level, a preliminary assessment of urban design and visual resources should be prepared. A detailed analysis is then prepared if warranted based on the preliminary assessment.

The study area for the preliminary assessment of urban design and visual resources will be consistent with that of the study area for the analysis of land use, zoning, and public policy. The preliminary assessment will include a concise narrative of the existing area, the future No-Action condition, and the future With-Action condition. The analysis will draw on information from field visits to the study area and will present photographs, zoning and floor area calculations, building heights, project drawings and site plans, and view corridor assessments.

A detailed analysis will be prepared if warranted based on the preliminary assessment. As described in the *CEQR Technical Manual*, examples of projects that may require a detailed analysis are those that would make substantial alterations to the streetscape of a neighborhood by noticeably changing the scale of buildings, potentially obstructing view corridors, or competing with icons in the skyline. The detailed analysis would draw on information from field visits to the project site and the surrounding study area and visual materials prepared for the proposed development and would present, as warranted, sketches or renderings of the future With-Action condition for each existing view; context and site plans; floor area calculations; street wall and building heights; average floor-plate sizes; building setbacks; birds-eye views of the proposed development; elevations and sections; and the proposed program and use distribution.

The analysis would describe the potential changes that could occur to urban design and visual resources in the future with the Proposed Action, in comparison to the future No-Action condition, focusing on the changes that could negatively affect a pedestrian's experience of the area. If necessary, mitigation measures to avoid or reduce potential significant adverse impacts will be identified.

Specifically, to meet certain conditions and findings of the special permits that are being sought from the CPC, the Proposed Project would need to:

- › Provide enhancements to the ground floor level of the building, such as sidewalk widening, streetscape amenities or enhancements to required pedestrian circulation spaces;
- › At the ground floor level, have a design that contributes to a lively streetscape, improves the accessibility of the overall pedestrian circulation network and is well-integrated with on-site, above, or below-grade improvements, where applicable and practicable;
- › Demonstrate particular attention to building design, including, but not limited to, the proposed uses, massing, articulation, and relationship to buildings in close proximity and within the Midtown Manhattan skyline; and
- › In the building design, ensure light and air to the surrounding streets, provide a tower top that produces a distinctive addition to the Midtown Manhattan skyline which is well-integrated with the remainder of the building, demonstrate an integrated and well-designed façade, and involve a program that includes an intensity and mix of uses that are harmonious with the type of uses in the surrounding area.

The EIS will discuss these aspects of the Proposed Project and their contribution to or effect on urban design and visual resources of the area.

## Task 7. Hazardous Materials

A hazardous materials assessment determines whether a proposed action may increase the exposure of people or the environment to hazardous materials, and, if so, whether this increased exposure would result in potential significant public health or environmental impacts. The potential for significant impacts related to hazardous materials can occur when: (a) elevated levels of hazardous materials exist on a site and the project would increase pathways to human or environmental exposures; (b) a project would introduce new activities or processes using hazardous materials and the risk of human or environmental exposure is increased; or (c) the project would introduce a population to potential human or environmental exposure from off-site sources.

The hazardous materials assessment discloses if the Project Site may have been adversely affected by present or historical uses at or adjacent to the site. A Phase I Environmental Site Assessment (ESA) would be prepared for the site, in accordance with the American Society for Testing and Materials (ASTM) standards. The results of the Phase I ESA would determine if any conditions are present at the Project Site that may warrant further investigations (a Phase II ESA). However, due to the physical constraints on the Project Site, it is not feasible to conduct the required Phase II ESA analysis at the present time, accordingly, it is anticipated that an (E) Designation, in accordance with the *CEQR Technical Manual*, Section 11-15 (Environmental Requirements) of the Zoning Resolution of the City of New York and Chapter 24 of Title 15 of the Rules of the City of New York governing the placement of (E)

designations<sup>2</sup> would be placed as part of the environmental review for development of the site, requiring a Phase II ESA and subsequent Remedial Action Plan (RAP) and Construction Health and Safety Plan (CHASP) be prepared prior to any construction in association with the Proposed Project.

Accordingly, the site-specific information related to hazardous materials will be reviewed and summarized in the hazardous materials chapter of the EIS. Any documentation of hazardous waste and other recognized environmental conditions (RECs), along with recommendations for mitigation or further investigation, will also be included in the hazardous materials assessment.

## Task 8. Water and Sewer Infrastructure

The water and sewer infrastructure assessment determines whether a proposed action may adversely affect the City's water distribution or sewer system and, if so, assesses the effects of such actions to determine whether their impact is significant. The *CEQR Technical Manual* outlines thresholds for analysis of an action's water demand and its generation of wastewater and stormwater. As described in the EAS **Part II: Supplemental Analyses** for the Proposed Actions, an analysis of the City's water supply is not warranted as the Proposed Project would not result in a demand of more than one million gallons per day (gpd) and the Project Area is not located in an area that experiences low water pressure. However, water demand estimates will be provided in the EIS to inform the wastewater and stormwater conveyance and treatment analysis.

The Proposed Project would be constructed in a combined sewer area, and the threshold of preliminary wastewater and stormwater analysis for projects in Manhattan with combined sewers is 1,000 residential units or 250,000 sf or more of commercial, public facility, and institution and/or community facility space. As the Proposed Project would include an increment of up to 421,073 gsf of commercial space, an assessment of wastewater and stormwater conveyance systems is required. The water and sewer infrastructure analysis will consider the potential for significant adverse impacts resulting from the Proposed Project. The New York City Department of Environmental Protection (DEP) will be consulted in the preparation of this assessment.

### Water Supply

- › The existing water distribution system serving the rezoning area will be described based on information obtained from the DEP's Bureau of Water Supply and Wastewater Collection.
- › Water demand generated by the projected Project Sites identified in the RWCDs will be projected. As disclosed in the EAS, water demand is not expected to exceed 1 million gallons per day.

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<sup>2</sup> A hazardous materials (E) designation is an institutional control that can be placed as a result of the CEQR review of a zoning map or zoning text amendment or action pursuant to the Zoning Resolution, as described in the *2014 CEQR Technical Manual*. It provides a mechanism to ensure that testing for and mitigation and/or remediation of hazardous materials, if necessary, are completed prior to, or as part of, future development of the affected site, thereby eliminating the potential for a hazardous materials impact.

## Wastewater and Stormwater Infrastructure

- › The appropriate study area for the assessment will be established in accordance with the guidance of the *CEQR Technical Manual* and in consultation with DEP. The Proposed Project's directly affected area is entirely located within the service area of the Newtown Creek Wastewater Treatment Plant (WWTP).
- › The existing stormwater drainage system and surfaces (pervious or impervious) on the Project Area will be described, and the amount of stormwater generated on the site will be estimated using DEP's volume calculation worksheet.
- › The existing sewer system serving the Project Area will be described based on records obtained from DEP. The existing flows to the Newtown Creek WWTP, which serves the directly affected area, will be obtained for the latest twelve-month period, and the average dry weather monthly flow will be presented. Information on existing sewer infrastructure in the area, including sanitary, storm, and combined sewer mains, regulators, interceptor sewers, outfalls, and other principal components of the local system will be provided based on available records.
- › Any changes to the stormwater drainage plan, sewer system, and surface area expected in the future without the Proposed Actions (i.e., the No-Action condition) will be described, as warranted.
- › Future stormwater generation from the Proposed Project compared to the No-Action condition will be assessed to determine the Proposed Project's potential to result in impacts. The stormwater assessment will discuss any planned sustainability elements and best management practices (BMPs) that are intended to reduce stormwater runoff from the site. Changes to the Project Area's surface area (pervious or impervious) will be described, runoff coefficients and runoff for each surface type/area will be presented. Volume and peak discharge rates of stormwater from the site will be determined based on the DEP volume calculation worksheet.
- › Sanitary sewage generation for the Project Area will also be estimated. The effects of the incremental demand on the system will be assessed to determine if there will be any impact on operations of the Newtown Creek WWTP.

A more detailed assessment may be required if increased sanitary or stormwater discharges from the Proposed Action are predicted to affect the capacity of the existing sewer system, exacerbate Combined Sewer Overflow (CSO) volumes/frequencies or contribute greater pollutant loadings in stormwater discharged to receiving water bodies. The scope of a more detailed analysis, if necessary, will be developed based on conclusions from the preliminary infrastructure assessment and in coordination with DEP.

## Task 9. Transportation

This section of the EIS will evaluate whether the Proposed Project would create significant impacts on vehicular traffic, parking, transit services, pedestrian circulation, or safety. Should significant impacts be identified per *CEQR Technical Manual* criteria, the EIS will evaluate improvements to mitigate those impacts. The transportation analysis will include the subtasks outlined below.

## Travel Demand Analysis

A Travel Demand Analysis (TDA) Technical Memorandum has been prepared and is included as **Appendix A**. The TDA Technical Memorandum provides the framework of assumptions for the analyses to be undertaken in the EIS.

Trip generation projections (Level 1 screening analysis) were developed for each of the proposed land uses (commercial office building with retail frontage) for the weekday AM, midday, and PM peak periods using trip generation rates, temporal distributions, modal splits, average vehicle occupancies, and in/out splits that are published in the *CEQR Technical Manual*, US Census data, New York City Department of Transportation (DOT) survey data, EISs for other similar development uses and locations, or other professional reference materials. The peak hour vehicle, subway transit, and pedestrian trip projections are anticipated to exceed the Level 1 screening thresholds and therefore Level 2 screening analyses were needed.

As part of the Level 2 screening analysis, vehicular, transit, and pedestrian trips were distributed and assigned through the study area's roadway network, subway and bus services, and pedestrian network to determine whether specific intersections, subway stations and lines, or pedestrian locations exceed CEQR screening thresholds and would need detailed quantitative analyses. It is anticipated that detailed analyses will be required for subway transit and pedestrian trips but not for vehicular and bus transit trips. Although the screening analysis found no requirement for a detailed traffic analysis, select vehicular intersections may be analyzed to provide informational context for the pedestrian analysis and/or safety assessment. The scope for detailed analyses for those travel modes that exceeded their screening thresholds is described below.

### Transit

The transit analysis will assess critical station elements at the Grand Central-42nd Street subway station, the station closest to the Project Site, which is served by the 4, 5, 6, 7, and S subway lines. Subway station elements (stairways, escalators, and fare control areas) to be analyzed will be determined by MTA/New York City Transit (NYCT). Bus routes serving the Project Site will be identified and discussed but detailed analysis is not anticipated.

Utilization and capacity of existing station elements and subway line-haul will be assessed based on the analysis methodologies provided in the *CEQR Technical Manual* during the weekday AM and PM commuter peak hours.

Future No-Action subway volumes will be developed by adding trips to be generated by significant development projects (e.g. One Vanderbilt) expected to be operational near the Project Site by its 2026 analysis year to the background growth projected by MTA/NYCT. Proposed transit service changes and changes to the subway station circulation elements identified to occur by the analysis year (e.g. East Side Access, Second Avenue Subway, and One Vanderbilt improvements) will be incorporated into the analyses. Future No-Action conditions for the station elements and subway lines being analyzed will be determined.

The development density of the Proposed Project would be achieved through the "Grand Central Public Realm Improvement Bonus" available through sites in the Vanderbilt Corridor. The proposed transit benefits may include:

- › **On-Site East Side Access (ESA) Entrance:** To provide access to the LIRR concourse and connection to the Grand Central Terminal Roosevelt passageway.
- › **Improvements at Grand Central-42nd Street Subway Station:** The proposed improvements would include measures to increase passenger flow such as improvements to platform stairs, transit passageways and other areas of the station.

Project-generated subway trips will be assigned to subway station elements to determine whether there would be significant subway impacts under future With-Action conditions. The potential for significant impacts on line-haul utilization will also be determined.

## Pedestrian

Pedestrian analyses will be conducted for the weekday AM, midday, and PM peak hours at selected pedestrian elements (crosswalks, sidewalks, and corner reservoir areas) at key pedestrian elements within the project site vicinity including the two intersections adjacent to the Project Site's proposed main entrance – Madison Avenue at East 44th and East 45th Streets.

Future No-Action pedestrian volumes will be developed using the annual background pedestrian growth rate cited in the *CEQR Technical Manual* plus pedestrian trips to be generated by significant development projects expected to be operational near the Project Site by its analysis year. Proposed changes to the street network identified to occur by the analysis year will be incorporated into the pedestrian analyses. Future No-Action pedestrian conditions for the elements analyzed will be determined.

Future With-Action pedestrian volumes will be developed by adding project-generated pedestrian increments to the future No-Action pedestrian volumes. Proposed changes to the street network as well as any required sidewalk widening expected to occur in conjunction with the Proposed Project, if any, will be incorporated into the pedestrian analysis. Future With-Action pedestrian conditions for the elements analyzed will be determined and potential significant impacts will be identified.

## Safety Analysis

Vehicular and pedestrian crash data will be reviewed for the most recent three-year period for which such data are available, and the number and severity of crashes will be summarized by year for the pedestrian analysis locations. A determination will then be made whether any of the intersections being analyzed are considered high crash locations based on *CEQR Technical Manual* criteria, and whether traffic generated by the Proposed Project would contribute materially at such locations. Potential improvements will be identified for locations deemed as "high crash" locations per the *CEQR Technical Manual* criteria.

## Task 10. Air Quality

An air quality assessment determines both a proposed project's effects on ambient air quality as well as the effects of ambient air quality on the project itself. Air quality analyses will be conducted following the procedures outlined in the *CEQR Technical Manual* to determine whether the Proposed Project would result in exceedances of ambient air quality standards or health-related guideline values. Further details on the air quality analysis

approach for the Proposed Project is provided in **Appendix B, Air Quality Analysis Protocol Memorandum**.

The key air quality issues that would be addressed are:

- › The potential for changes in vehicular travel associated with the proposed action to result in significant mobile source (vehicle-related) air quality impacts
- › The potential for emissions from the HVAC systems of the Proposed Project to significantly impact existing or future land uses (project-on-existing impacts)
- › The potential for significant air quality impacts from the existing “major” or “large” emission source (e.g., power plants) on the Proposed Project.
- › The potential from industrial air toxics emissions generated by existing sources to significantly impact the Proposed Project.

The proposed project is not anticipated to generate vehicular trips that will exceed the CEQR carbon monoxide (CO) analysis threshold. Furthermore, no heavy-duty trips or its equivalent that may trigger particulate matter (PM) analysis is expected to be introduced by the project. Lastly, no parking facilities are associated with the proposed project. The screening mobile source analysis will be included in the EIS chapter, but no detailed mobile source analysis is anticipated to be required.

## Stationary Source Analysis

### ***HVAC Analysis***

Emissions from the HVAC systems of the proposed building may affect air quality levels at nearby existing or future land uses.

The impacts of these emissions would be a function of fuel type, boiler capacity and type, stack height and location, building dimension and location relative to a nearby sensitive receptor sites. Additionally, the proposed building may incur wake effect that could potentially increase impacts at some receptor locations. Detailed dispersion analysis of impacts of the HVAC emissions will be conducted following the *CEQR Technical Manual* and using the latest version of the EPA’s AERMOD software.

Analysis will be conducted using the appropriate *CEQR Technical Manual* assumptions for dispersion modeling and emission rates estimates based on the latest available Residential Energy Consumption Survey and the EPA’s AP-42, Compilation of Air Pollutant Emission Factors. NO<sub>2</sub> and PM<sub>2.5</sub> will be pollutants of concern. The proposed building and the closest buildings of similar or greater height will be considered for potential downwash effects. Resultant concentrations will be compared to the CEQR *de minimis* criteria and National Ambient Air Quality Standards, as applicable. Should the results be below the compliance criteria, the finding will be that no significant air quality impacts could be realized as the result of the Proposed Project and no further analysis will be warranted.

### ***Industrial Source Analysis***

According to the *CEQR Technical Manual*, an air quality assessment is required to evaluate the potential impacts of emissions from exhaust systems of manufacturing or processing facilities when the Proposed Action would result in new sensitive uses (particularly schools,

hospitals, parks, and residences) within a 400-foot radius of the proposed project development sites.

Land use maps and New York City Department of Environmental Protection's Clean Air Tracking System (DEP CATS) will be reviewed to identify potential sources of emissions from manufacturing/industrial operations. If any such sources are identified, the air permits for them will be obtained from the NYCDEP and a screening analysis following the *CEQR Technical Manual* guidelines will be conducted for these sources. If warranted, cumulative analysis will be conducted with respect to such industrial sources. The New York State Department of Environmental Conservation's (NYSDEC) DAR-1 Annual Guideline Concentration (AGC), Short-term Guideline Concentration (SGC), cancer risk and hazard index will be used as the thresholds to determine impacts' significance. Should the screening analysis results exceed any of these thresholds, a more detailed analysis using the AERSCREEN or AERMOD and following the *CEQR Technical Manual* procedures will be conducted.

### ***Large and Major Source Analysis***

Following *CEQR Technical Manual*, a survey of land uses will be conducted to determine whether there are existing "major" or "large" sources emissions located within 1,000 feet of the Proposed Project. Impacts of identified "large" or "major" sources will be assessed using a detailed AERMOD dispersion modeling in accordance with *CEQR Technical Manual* guidelines. All identified sources will be analyzed together to estimate cumulative impacts. Predicted pollutant concentrations will be compared with applicable NAAQS to determine significance of these impacts.

## **Task 11. Greenhouse Gas Emissions and Climate Change**

According to the *CEQR Technical Manual*, a greenhouse gas (GHG) consistency assessment is appropriate for projects in New York City being reviewed in an EIS that would result in development of 350,000 square feet or greater. Therefore, GHG emissions will be quantified and an assessment of consistency with the City's GHG reduction goal will be performed. Project's GHG emissions will be estimated and reported as carbon dioxide equivalent (CO<sub>2</sub>e) in metric tons per year. The quantified assessment will include emissions from the operation of the proposed project, including direct and indirect emissions. The construction phase or the extraction or production of materials or fuels needed to construct the project is not likely to be a significant part of total project emissions. Therefore, emissions resulting from construction activity and construction materials will be assessed qualitatively. The proposed project would not fundamentally change the City's solid waste management system, and therefore a quantified assessment of emissions due to solid waste management is not warranted. The proposed development GHG will be assessed to demonstrate consistency with the NYC Climate Mobilization Act reduction goals and other City GHG reduction goal initiatives. The GHG analysis will consist of the following subtasks:

- › **Direct Operational Emissions:** Emissions from on-site boilers used for heat and hot water would be quantified, based on the carbon intensity factors specified in the *CEQR Technical Manual* or project specific information on energy use. If there will be any vehicles owned by the proposed project, mobile source GHG emissions will be estimated using emission factors from the *CEQR Technical Manual*.

- › **Indirect Operational Emissions:** Emissions from purchased electricity generated off-site and consumed on-site and from vehicles associated with the proposed project will be quantified using *CEQR Technical Manual* approach.
- › **Construction Emissions:** Emissions from construction and emissions associated with the extraction or production of construction materials will be discussed qualitatively. Opportunities for reducing GHG emissions associated with construction will be considered. If a quantified analysis of GHG emissions from construction is required, both construction activity emissions and emissions from the production and transport of construction materials will be included.
- › **GHG Reduction:** Features of the proposed development that would reduce energy use and GHG emissions will be discussed. Consistency with the Local Law 97, Climate Mobilization Act, that sets to reduce by 40% GHG emissions from large buildings in New York City by 2030 will be assessed. Other City goals to reduce GHG emissions will be evaluated based on the project's efforts to reduce the carbon footprint.

## Task 12. Noise

As per the *CEQR Technical Manual*, the noise chapter will address whether the Proposed Action would result in a significant increase in noise levels to existing noise-sensitive receptors near the Project Site and whether new noise-sensitive receptors such as commercial office space would be introduced into a high ambient noise environment which would require a minimum sound attenuation level to provide acceptable interior noise levels within the proposed building. Further details on the noise analysis approach for the Proposed Actions is provided in **Appendix C, Noise Analysis Protocol Memorandum**.

As described in the *CEQR Technical Manual*, a noise impact assessment is generally needed when a Proposed Action has the potential to results in significant adverse impacts.

The development of the Project Site would not result in significant adverse noise impacts at existing receptors from the increase in traffic due since the With-Action noise levels would not increase by 3 decibel or more. Additionally, based on a the travel demand assessment in the TDA (see **Appendix A**), the Proposed Action is expected to generate more than 50 incremental vehicular trips in one or more peak hours, but would not generate 50 or more vehicles at an intersection during the peak hours analyzed. Since the Proposed Action would not exceed the Level 2 screening, there is no potential for traffic volumes to double resulting in a 3 decibel increase in noise, and there is no potential for significant adverse noise impact due to mobile sources. Therefore, no further mobile source analysis will be needed for existing receptors.

The Proposed Action would introduce new stationary sources such as rooftop mechanical equipment and would be exposed to existing stationary sources such as the existing MTA ventilation structure on Lot 25. An assessment will be conducted to address the potential for noise impact at nearby receptors due to new stationary sources or changes to existing sources. Since there would be existing receptors within 1500 feet of the rooftop with a direct line of sight to rooftop equipment, it may be necessary to specify noise limits for the equipment to assure that it will meet NYC Noise Code requirements.

As the Proposed Action is anticipated to cantilever over the MTA ventilation structure on Lot 25 for the East Side Access Project, an evaluation will be conducted to assess whether

changes in noise exposure due to the building design will result in unacceptable interior sound levels from the ventilation structure. Additionally, the integration of the proposed building with the ventilation structure may affect noise exposure to public ways (i.e. sidewalks) and there is a need to assess whether the ventilation noise would change significantly and whether it would meet City of New York Noise Code limits for circulation devices.

Noise measurements were conducted at three locations along the Madison Avenue, East 45th Street, and East 44th Street facades to determine the need for certain window/wall sound attenuation requirements. The *CEQR Technical Manual* recommends conducting 20-minute measurements during AM peak-hour, midday, and PM peak-hour periods when the noise environment is dominated by roadway traffic. The sound monitor met Type 1 ANSI standards and measured the following sound levels:  $L_{max}$ ,  $L_{min}$ ,  $L_1$ ,  $L_{10}$ ,  $L_{50}$ ,  $L_{90}$ , and  $L_{eq}$ . A complete record of the measurement was documented including specific measurement locations, time of measurements, meteorological conditions, equipment used, significant noise sources, and spot traffic counts. The results of the noise measurements will be used to evaluate the need for a minimum window/wall sound attenuation to provide acceptable interior noise conditions.

If warranted by the analysis, window/wall sound attenuation and/or floor sound attenuation would be defined and mandated by (E) designations. Prior to construction, it would be necessary for the applicant to demonstrate to the New York City Office of Environmental Remediation (OER) how the building will be built to comply with these requirements.

### Task 13. Public Health

According to the *CEQR Technical Manual*, public health is the organized effort of society to protect and improve the health and well-being of the population through monitoring; assessment and surveillance; health promotion; prevention of disease, injury, disorder, disability, and premature death; and reducing inequalities in health status. The goal of CEQR with respect to public health is to determine whether adverse impacts on public health may occur as a result of a proposed project, and if so, to identify measures to mitigate such effects.

A public health assessment may be warranted if an unmitigated significant adverse impact is identified in certain CEQR analysis areas, such as air quality, hazardous materials, or noise. If unmitigated significant adverse impacts are identified in any of these technical areas and the lead agency determines that a public health assessment is warranted, an analysis would be provided for the specific technical area or areas in accordance with CEQR guidelines.

### Task 14. Neighborhood Character

The character of a neighborhood is established by numerous factors, including land use patterns, the scale of its development, the design of its buildings, the presence of notable landmarks, and a variety of other physical features that include traffic and pedestrian patterns, noise, etc. The Proposed Action has the potential to alter certain elements contributing to the affected area's neighborhood character. Therefore, a neighborhood character analysis would be provided in the EIS.

A preliminary assessment of neighborhood character would be provided in the EIS to determine whether changes expected in other technical analysis areas—land use, zoning, and public policy; socioeconomic conditions; open space; historic and cultural resources; urban design and visual resources; transportation; and noise—may affect a defining feature of neighborhood character.

The preliminary assessment would:

- › Identify the defining features of the existing neighborhood character;

Summarize changes in the character of the neighborhood that can be expected in the future With-Action conditions and compare to the future No-Action conditions;

- › Evaluate whether the Proposed Action has the potential to affect these defining features, either through the potential for a significant adverse impact or a combination of moderate effects in the relevant technical areas.

If the preliminary assessment determines that the Proposed Action could affect the defining features of neighborhood character, a detailed analysis would be conducted in accordance with the *CEQR Technical Manual* guidelines.

## Task 15. Construction

Construction impacts, though temporary, can have a disruptive and noticeable effect on the adjacent community, as well as on people passing through the area. Construction impacts are usually important when construction activity could affect traffic conditions, community noise patterns, air quality conditions, and mitigation of hazardous materials. This section will describe the construction schedule and phasing plan for the Proposed Project. An estimate of anticipated construction characteristics, such as duration, construction methods, project sequencing and location of staging areas, will also be provided. Technical areas to be analyzed include:

- › **Transportation:** This assessment will consider construction worker parking strategies, losses in lanes, sidewalks, and other transportation services during the various phases of construction, and the increase in vehicle trips from construction workers and trucks. Construction worker and truck trips will be projected during the peak quarter of construction and an assessment of potential impacts during construction will be provided. If the projected construction trips are expected to exceed the *CEQR Technical Manual* thresholds for quantitative transportation analysis, a detailed analysis will then be prepared. Due to the Project Site's proximity to Grand Central Terminal and the Grand Central subway station and the inclusion of transit improvements in the proposed development, construction activities will be coordinated with MTA/NYCT.
- › **Air Quality:** According to the *CEQR Technical Manual*, the detailed analysis of potential impacts to air quality levels during construction would be considered if the duration of the construction activities is longer than two years, would involve multiple project sites simultaneously under construction, and/or would be adjacent to sensitive receptor locations. Since the Proposed Project is anticipated to require more than two years to construct, an air quality analysis will estimate emission intensity for the construction period based on construction schedule, activity and equipment used at each stage of construction. Resultant emission profile will then be compared with the emission profile of a project that conducted construction analysis and demonstrated no significant air

quality impacts. Should the proposed project construction emissions be smaller than those of the comparison project, it will be concluded that no significant air quality impacts are anticipated from the proposed project as well. If construction emissions are higher, a detailed construction analysis for the proposed project be conducted to determine whether construction activities for the Proposed Project would comply with applicable air quality requirements (NAAQS) and CEQR *de minimis* criteria. Specifically, the analysis will determine whether the projected construction operations would cause or exacerbate violations of applicable NAAQS for NO<sub>2</sub>, PM<sub>10</sub> and CO, or cause impacts greater than the City's *de minimis* thresholds established for PM<sub>2.5</sub>. Should exceedances of the NAAQS, or the City's *de minimis* values be predicted, control measures that could be undertaken to reduce these values would be identified and the effectiveness of these measures quantified.

- › **Noise:** Construction of the Proposed Project has the potential to affect nearby sensitive receptor locations. The construction noise impact section will contain a discussion of noise from each phase of construction activity for the Proposed Project. Appropriate recommendations will be made to comply with DEP Rules for Citywide Construction Noise Mitigation and the New York City Noise Control Code. The detailed construction analysis will review the projected activity and equipment in the context of intensity, duration, and location of noise relative to nearby sensitive locations, and project specific control measures required will be identified to further reduce construction noise.
- › **Historic and Cultural Resources:** As previously noted, there are four historic resources located adjacent to or within 90 feet of the Project Site, which is close enough to construction activities to potentially experience construction-related effects. Therefore, a Construction Protection Plan (CPP) would be identified and developed in consultation with LPC to avoid adverse construction-related impacts to these resources. If necessary, mitigation measures to avoid or reduce potential significant adverse impacts will be identified.

## Task 16. Mitigation

If significant adverse project impacts are identified in Tasks 2 to 15, feasible measures to mitigate those impacts would be described. Where impacts cannot be mitigated, they would be identified as unavoidable adverse impacts.

## Task 17. Alternatives

The purpose of an Alternatives analysis in an EIS is to examine reasonable and feasible options that avoid or reduce project-related significant adverse impacts, while achieving the goals and objectives of the Proposed Action. The alternatives are usually defined once the full extent of the Proposed Action's impacts has been identified. However, the alternatives analyzed must include the No-Action Alternative, as required by CEQR, and may include an alternative(s) that reduces any identified significant adverse impacts. If the Proposed Action produces unmitigated impacts, the EIS would also include a no unmitigated impacts alternative. The alternatives analysis will be qualitative, except where significant adverse impacts of the Proposed Project have been identified, or an alternative with fewer overall impacts would nevertheless have new significant adverse impacts.

## Task 18. Summary EIS Chapters

In accordance with the *CEQR Technical Manual*, the EIS would include the following summary chapters, where appropriate to the Proposed Action:

- › **Unavoidable Adverse Impacts:** which summarizes any significant adverse impacts that are unavoidable if a proposed action is implemented regardless of the mitigation employed (or if mitigation is impossible).
- › **Growth-Inducing Aspects of the Proposed Action:** which generally refer to “secondary” impacts of a proposed action that trigger further development.
- › **Irreversible and Irretrievable Commitments of Resources:** which summarizes the Proposed Action and its impacts in terms of the loss of environmental resources (loss of vegetation, use of fossil fuels and materials for construction, etc.), both in the immediate future and long term.

## Task 19. Executive Summary

The executive summary would utilize relevant material from the body of the EIS to describe the Proposed Action, the necessary approvals, study areas, predicted environmental impacts, measures to mitigate those impacts, unmitigated and unavoidable impacts (if any), and alternatives to the Proposed Action.

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## **Appendix A: Travel Demand Analysis Technical Memorandum**

# 343 Madison Avenue



## Travel Demand Analysis Memorandum

July 24, 2020

### Introduction and Summary of Key Findings

This memorandum summarizes the travel demand assumptions and transportation screening analysis for the redevelopment of the MTA HQ at 343 Madison Avenue between East 44th Street and East 45th Street in Midtown Manhattan. It provides a detailed description of the project analysis framework and travel demand assumptions used to determine the number of additional trips generated by the proposed project. The project is expected to be completed in 2026.

As described below, detailed analyses of subway and pedestrian conditions will be required per *CEQR Technical Manual* guidelines and will be included in the EIS; the increase in vehicle trips would not exceed the CEQR Level 2 screening thresholds for detailed traffic analysis. For transit, a detailed analysis will be conducted for the 42nd Street – Grand Central station elements and subway lines; no detailed bus or rail analyses would be required as the number of trips generated by those modes would not exceed the screening thresholds for detailed analysis. Detailed pedestrian analyses will be needed at selected elements along Madison Avenue between East 44th Street and East 46th Street.

### Analytical Framework

The proposed project would redevelop the project site with approximately 832,613 square feet (sf) of office space, and 5,357 sf of ground floor retail space. The proposed project would also provide an entrance to East Side Access and Grand Central Terminal (GCT) and the Long Island Rail Road's (LIRR) East Side Access connection on the northwest corner of the site. Absent the proposed project (the No-Action condition), the project site could be redeveloped with approximately 411,540 sf of office space and 6,144 sf of ground floor retail space. Although MTA or NYCT would reserve an easement for a possible future entrance to East Side Access and Grand Central Terminal, no such new entrance would be included in the No-Action condition. Pedestrians would continue to utilize the existing East 45th Street passageway for a connection to Grand Central Terminal.

The incremental difference between the future No-Action and future With-Action conditions is the basis of the transportation impact analyses of the EIS. **Table 1** summarizes the No-Action Condition, With-Action Condition, and the incremental net change of component sizes by land use. The proposed project consists of an increase of 421,073 sf of office space and a reduction of 787 sf of local retail space, compared to the No-Action condition.

**Table 1 Development Increment for Analysis**

Use	No-Action Condition	With-Action Condition	Increment
Office	411,540 sf	832,613 sf	+421,073
Local Retail	6,144 sf	5,357 sf	-787

## CEQR Transportation Analysis Screening

According to the *2014 CEQR Technical Manual* procedures for transportation analysis, a two-tiered screening process is to be undertaken to determine whether a quantified analysis is necessary. The first step, the Level 1 (Trip Generation) screening, determines whether the volume of peak hour person and vehicle trips generated by the proposed project would remain below the minimum thresholds for further study. These thresholds are:

- › 50 peak hour vehicle trip ends;
- › 200 peak hour subway/rail or bus transit riders; and
- › 200 peak hour pedestrian trips.

If the proposed project results in increments that would exceed any of these thresholds, a Level 2 (Trip Assignment) screening assessment is usually performed. Under this assessment, project-generated trips that exceed Level 1 thresholds are assigned to and from the site through their respective networks (streets, bus and subway lines, sidewalks, etc.) based on expected origin-destination patterns and travel routes.

### Level 1 Screening Assessment (Trip Generation)

The travel demand factors used to calculate the projected number of trips were obtained primarily from the *2014 CEQR Technical Manual*, US census journey-to-work data, New York City Department of Transportation (NYCDOT) surveys, and information from recently-certified New York City environmental impact studies such as the *Greater East Midtown Rezoning FEIS (2017)* and *M1 Hotel Zoning Text Amendment FEIS (2018)*. Table 2 provides the travel demand assumptions used for the weekday AM, midday, and PM peak hours.

**Table 2 Travel Demand Characteristics**

<b>Rates</b>	<b>Office</b>	<b>Local Retail</b>
<b>Weekday Person Trip Gen Rate</b>	18.0 <sup>1</sup>	205 <sup>1</sup>
	per 1,000 SF	per 1,000 SF
Linked Trip Credit	0%	25%
<b>Temporal Distribution</b>		
AM Peak Hour	12% <sup>2</sup>	3% <sup>1</sup>
Midday Peak Hour	11% <sup>2</sup>	19% <sup>1</sup>
PM Peak Hour	11% <sup>2</sup>	10% <sup>1</sup>
<b>Modal Split (AM, PM / Midday)</b>		
Auto	7.8% / 2% <sup>3,4</sup>	6.0% <sup>5</sup>
Taxi	2.1% / 3% <sup>3,4</sup>	1.0% <sup>5</sup>
Bus	13.2% / 6% <sup>3,4</sup>	1.0% <sup>5</sup>
Subway	47.6% / 6% <sup>3,4</sup>	1.0% <sup>5</sup>
Rail	19.8% / 0% <sup>3,4</sup>	-
Walk/Other	9.4% / 83% <sup>3,4</sup>	91.0% <sup>5</sup>
<b>Vehicle Occupancy</b>		
Auto	1.13 <sup>3</sup>	1.65 <sup>6</sup>
Taxi	1.40 <sup>4</sup>	1.40 <sup>6</sup>
<b>Directional Split (In/Out)</b>		
AM Peak Hour	96% / 4% <sup>4</sup>	50% / 50% <sup>6</sup>
Midday Peak Hour	48% / 52% <sup>4</sup>	50% / 50% <sup>6</sup>
PM Peak Hour	5% / 95% <sup>4</sup>	50% / 50% <sup>6</sup>
<b>Weekday Delivery Trip Gen Rate</b>	0.32 <sup>1</sup>	0.35 <sup>1</sup>
	per 1,000 SF	per 1,000 SF
<b>Delivery Temporal Distribution</b>		
AM Peak Hour	10% <sup>1</sup>	8% <sup>1</sup>
Midday Peak Hour	11% <sup>1</sup>	11% <sup>1</sup>
PM Peak Hour	2% <sup>1</sup>	2% <sup>1</sup>

Delivery trip directional distribution: 50% in / 50% out

Source:

<sup>1</sup> 2014 CEQR Technical Manual

<sup>2</sup> NYCDOT surveys of office use

<sup>3</sup> 2012-2016 American Community Survey reverse journey-to-work data for Manhattan Census Tracts 80, 82, 92, 94, 100 and 102

<sup>4</sup> Greater East Midtown Rezoning FEIS (2017)

<sup>5</sup> NYCDOT surveys of local retail in Manhattan transit zone

<sup>6</sup> M1 Hotel Zoning Text Amendment FEIS (2018) – Manhattan below 59<sup>th</sup> Street site

## Office

The trip generation rate of 18.0 daily person trips per 1,000 sf for weekday for the office use was obtained from the *2014 CEQR Technical Manual*. Temporal distributions of 12 percent, 11 percent, and 11 percent for the weekday AM, midday, and PM peak hours, respectively, were provided by NYCDOT based on recent surveys of office use. The weekday AM, and PM peak hour modal splits of 7.8 percent by auto, 2.1 percent by taxi, 13.2 percent by bus, 47.6 percent by subway, 19.8 percent by rail, and 9.4 percent by walk were obtained from 2012-2016 American Community Survey reverse journey-to-work data for Manhattan Census Tracts 80, 82, 92, 94, 100, and 102. The weekday midday peak hour modal split used of 2 percent by auto, 3 percent by taxi, 6 percent by bus, 6 percent by subway, and 83 percent by walk were obtained from the *Greater East Midtown Rezoning FEIS (2017)*. Vehicle occupancies of 1.13 persons by auto and 1.40 by taxi were obtained from the 2012-2016 American Community Survey reverse journey-to-work data and the *Greater East Midtown Rezoning FEIS (2017)*, respectively. The directional distributions of 96 percent "in", 48 percent "in", and 5 percent "in" were used for the weekday AM, midday, and PM peak hours, respectively, and were based on the *Greater East Midtown Rezoning FEIS (2017)*.

For office delivery trips, a trip generation rate of 0.32 daily truck trips per 1,000 sf and temporal distributions of 10 percent, 11 percent, and 2 percent for the weekday AM, midday, and PM peak hours, respectively, were based on the *2014 CEQR Technical Manual*.

## Local Retail

For the local retail use, trip generation rates and temporal distributions were obtained from the *2014 CEQR Technical Manual*. The trip generation rate of 205 person trips per 1,000 sf for the weekday and temporal distributions of 3 percent, 19 percent, and 10 percent during the weekday AM, midday, and PM peak hours were assumed. It is anticipated that a portion of these trips would be "linked" trips (e.g., a trip with multiple purposes, such as stopping at a retail store while commuting to or from work, or at lunch time); a credit of 25 percent was assumed as a linked trip credit. This assumption is similar to other certified studies such as *Greater East Midtown Rezoning FEIS (2017)* and *M1 Hotel Zoning Text Amendment FEIS (2018)*. Modal splits used were based on NYCDOT surveys of local retail in Manhattan transit zones. The modal splits used were 6 percent by auto, 1 percent by taxi, 1 percent by bus, 1 percent by subway, and 91 percent by walk. Vehicle occupancies and directional distributions were obtained from the *M1 Hotel Zoning Text Amendment FEIS (2018)* for the Manhattan below 59th Street site; vehicle occupancies of 1.65 persons per auto and 1.40 persons per taxi were used. The directional split was 50 percent "in" for all peak periods.

For retail delivery trips, daily trip generation rates of 0.35 daily truck trips per 1,000 sf and a temporal distribution of 8 percent, 11 percent, and 2 percent for the weekday AM, midday, and PM peak hours, respectively, were obtained from the *2014 CEQR Technical Manual*.

## Level 1 Screening Results

### Transit and Pedestrians

The increased number of person trips generated by the Proposed Project are provided in **Table 3** and can be expected to exceed the *2014 CEQR Technical Manual* Level 1 screening thresholds for subway trips during the AM and PM commuting peak hours, and pedestrian trips during the AM, midday, and PM peak hours. Bus and rail trips would not exceed the Level 1 screening thresholds and therefore further analysis is not needed.

- › During the AM peak hour, the project can be expected to generate 120 bus trips, 432 subway trips, 180 rail trips, and 813 pedestrian trips (walk plus bus, subway and rail).
- › During the midday peak hour, the project can be expected to generate 50 bus trips, 50 subway trips, no rail trips, and 772 pedestrian trips (walk plus bus, subway and rail).
- › During the PM peak hour, the project can be expected to generate 111 bus trips, 397 subway trips, 165 rail trips, and 739 pedestrian trips (walk plus bus, subway and rail).

Since the number of peak hour subway trips, and the number of combined peak hour pedestrian trips, expected to be generated by the Proposed Project exceed the CEQR thresholds of 200 pedestrian trips per hour, a Level 2 trip assignment is needed to determine whether additional analyses are needed.

**Table 3 Trip Generation Summary – Person Trips**

Mode	AM Peak Hour			Midday Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
Auto	68	3	71	7	8	15	3	62	65
Taxi	18	1	19	12	13	25	1	17	18
Bus	115	5	120	24	26	50	6	105	111
Subway	416	16	432	24	26	50	20	377	397
Rail	173	7	180	0	0	0	8	157	165
Walk	80	1	81	322	350	672	-2	68	66
<b>Total</b>	<b>870</b>	<b>33</b>	<b>903</b>	<b>389</b>	<b>423</b>	<b>812</b>	<b>36</b>	<b>786</b>	<b>822</b>

### Traffic and Parking

**Table 4** summarizes the total peak hour vehicular volumes (“ins” plus “outs”) for the Proposed Project. The Proposed Project would result in an hourly trip increment of 103 vehicles per hour (vph) during the weekday AM peak hour, 49 vph in the weekday midday peak hour, and 84 vph in weekday PM peak hour. Since the volume of vehicle trips generated by the Proposed Project would exceed the 50-vehicle trip threshold during the AM and PM peak hours, a Level 2 trip assignment is needed to determine the scope of the detailed traffic analysis.

**Table 4 Trip Generation Summary – Vehicle Trips**

Mode	AM Peak Hour			Midday Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
Auto	60	3	63	6	7	13	3	55	58
Taxi	13	13	26	11	11	22	12	12	24
Truck	7	7	14	7	7	14	1	1	2
<b>Total</b>	<b>80</b>	<b>23</b>	<b>103</b>	<b>24</b>	<b>25</b>	<b>49</b>	<b>16</b>	<b>68</b>	<b>84</b>

## Level 2 Screening Assessment (Trip Assignment)

As shown above, the number of trips generated by the Proposed Project would exceed the 2014 CEQR Technical Manual Level 1 screening thresholds for vehicular and subway trips during the AM and PM peak hours, and pedestrian trips during all peak hours analyzed. Project-generated trips were assigned through the surrounding street network based on expected routes to and from the project site.

### **Transit and Pedestrians**

Transit and pedestrian trips were assigned through the pedestrian network based on logical and direct travel routes to and from the project site from neighborhood attractions, commuter rail stations, subway stations and/or bus stops, to determine if the additional pedestrian trips generated by the project would exceed 200 peak hour pedestrian trips at key pedestrian elements (e.g. crosswalks, sidewalks, corner reservoir areas) approaching the site – the threshold for detailed pedestrian analysis. The project site is bordered by Madison Avenue to the west, Vanderbilt Avenue to the east, East 44th Avenue to the south, and East 45th Street to the north. Pedestrian access to the project would be provided along Madison Avenue.

The Development Site is well served by MTA local and express bus service and by commuter bus service such as the North Fork Express, Bee-Line Bus, and Monsey Trails. Bus transit options within the project site vicinity include Manhattan buses such as M1, M2, M3, M4, M42, M101, M102, Queens buses such as the Q32, and express bus services such as the BxM6, BxM7, BxM8, BxM9, BxM10, BxM11, QM21, QM31, QM32, QM34, QM35, QM36, SIM1C, SIM 3C, SIM4C, SIM33C, X27, X28, X37, X38, X63, X64, and X68. Based on 2012-2016 American Community Survey reverse journey-to-work data for commuters using buses to travel to workplaces in the study area, it is estimated that approximately 50 percent of bus trips originate from New Jersey. Of these trips, 25 percent were assigned to walk from the Port Authority Bus terminal, with the remaining 25 percent assigned to the M42 bus route to travel to and from the Port Authority Bus Terminal. Approximately 21 percent of commuter trips originate from within Manhattan and were assigned to the local Manhattan bus routes, and 10 percent originate from Queens and were assigned to the Q32 and express bus routes. Bus trips originating from Staten Island (8 percent), Brooklyn (7 percent), and the Bronx (4 percent) were assigned to the express bus routes.

The 42nd Street - Grand Central station is the City's major commuter hub, providing access to subways and commuter rail service in the center of Midtown Manhattan. The No. 4, 5 and 6 subway lines serve riders to and from the Bronx and Brooklyn as well as Upper and Lower Manhattan. The No. 7 Flushing line provides service between Flushing, Queens and West Midtown (Times Square and Hudson Yards) after stopping at GCT. Additionally, the Times Square Shuttle operates between GCT and Times Square. The Proposed Project would generate an increase of 432 and 397 new subway trips during the weekday AM and PM peak hours, respectively. The project would provide direct access to Grand Central Terminal and the 42nd Street-Grand Central subway station; based on information from the *Greater East Midtown Rezoning FEIS (2017)*, it is assumed that approximately 63 percent of the subway trips will use this connection and not need to use the street network. A detailed analysis will be conducted at this subway station. The remaining 37 percent of the subway trips were assigned to nearby stations. Specifically, these were distributed evenly between the Fifth Avenue – Bryant Park station on West 42nd Street between Sixth and Fifth Avenues, and the 47th – 50th Streets Rockefeller Center station at Sixth Avenue and West 47th Street.

Grand Central Terminal is the busiest Metro-North station and is in the process of expanding. As part of the East Side Access project, a new commuter rail connection will be constructed for the Long Island Rail Road at Grand Central Terminal – providing LIRR commuters with direct train service to Grand Central Terminal

as well as to Penn Station -- with an expected opening date in late 2022. It is expected that all rail and some of the subway trips generated by the Proposed Project will use the new East Side Access connection adjacent to the site.

Walk-only pedestrian trips were distributed evenly in all directions due to the centrality of the project site and the number of attractions in the project site vicinity and then assigned throughout the network.

Based on the pedestrian assignments described above, detailed pedestrian level of service analysis will be performed at the following pedestrian elements (crosswalk, corners, and sidewalks):

Crosswalks and Corners:

- › Madison Avenue and East 44th Street – northeast and southeast corners, and east crosswalk
- › Madison Avenue and East 45th Street – northeast and southeast corners, and east crosswalk

Sidewalks:

- › East side of Madison Avenue between East 44th and East 45th Streets (site entrance)
- › East side of Madison Avenue between East 45th and East 46th Streets
- › North side of East 44th Street between Madison and Vanderbilt Avenues
- › South side of East 45th Street between Madison and Vanderbilt Avenues

Pedestrian analyses will be performed at these elements for the weekday AM, midday, and PM peak hours.

### **Traffic**

Project-generated vehicle trips were assigned through the surrounding street network based on expected routes to and from the project site, the configuration of the street network, and parking facilities within the project site vicinity. Since the proposed project would not provide parking on-site, auto trips were assigned to park at nearby off-street parking facilities based on parking availability information from the *Greater East Midtown Rezoning FEIS (2017)*. The parking assignments considered the loss of available parking in the area as a result of significant projects expected to be completed by the project's Build year such as the One Vanderbilt development.

Office auto trip distributions were based upon 2012-2016 American Community Survey reverse journey-to-work data for Manhattan census tracts 80, 82, 92, 94, 100, and 102. Within New York City, approximately 8 percent of the auto trips are assumed to originate from Manhattan, 15 percent from Queens, 8 percent from Brooklyn, 4 percent from the Bronx, and 3 percent from Staten Island. New York counties to the north of New York City (Westchester, Yonkers, and Upstate New York) make up approximately 14 percent of office trips while trips from Long Island are approximately 14 percent of office trips. Approximately 30 percent of office trips are assumed to originate from out of state areas to the west (New Jersey and Pennsylvania) and approximately 4 percent from Connecticut.

Most office auto trips were distributed to use East River and Hudson River crossings. Approximately 28 percent of trips (Queens, Long Island, Brooklyn, and Connecticut trips) were assigned to the Queens-Midtown Tunnel (20 percent) and the Ed Koch Queensboro Bridge (8 percent) crossing the East River to access the study area. Approximately 20 percent of the trips (New Jersey and Staten Island trips) were assigned to the study area using the Lincoln Tunnel. Trips using the highways from the north, such as the Franklin D. Roosevelt (FDR) Drive and Henry Hudson Parkway (Route 9A), account for approximately 32 percent of office trips. FDR Drive office trips from the south account for approximately 8 percent of the trips. The remaining trips would use local north-south streets including Third, Lexington, Park, Madison,

and Fifth Avenues.

Taxi pick-ups and drop-offs were assigned along the Madison Avenue frontage. Delivery trips were assigned along New York City Department of Transportation's (NYCDOT) designated truck routes such as 42nd Street, Second Avenue, Third Avenue, and Lexington Avenue. Delivery trips were assigned along truck routes as long as possible until reaching the project site's loading area, which is accessed from East 44th Street.

Based on the vehicular traffic assignments described above, no intersection would exceed the *2014 CEQR Technical Manual* Level 2 screening thresholds for detailed traffic analysis.

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## **Appendix B: Air Quality Analysis Protocol Memorandum**

# 343 Madison Avenue



## Air Quality Analysis Protocol

July 24, 2020

### Introduction

The Proposed Project would redevelop the property located at 343 Madison Avenue to introduce an approximately 925,630 gross square-foot new building comprised of commercial office and retail space (Proposed Project). An Environmental Impact Statement (EIS) will be prepared for the Proposed Project that would be 55 stories tall and reach 1,050 feet in height (up to 1,080 feet including the bulkhead) and located on Madison Avenue between 45th and 44th Streets.

The air quality analysis in the EIS will be conducted under the *2014 CEQR Technical Manual (CEQR TM)* guidelines supported by the most current NYS DAR 10 and EPA recommendations and regulations as applicable to the proposed project under CEQR. The air quality analysis will include an assessment of the potential impacts of emissions from the mobile sources introduced by the proposed project and from the stationary sources associated with the proposed project—heating, ventilation and air conditioning (HVAC) systems of the proposed building, from the industrial and manufacturing facilities and from the large and major sources. It will also include an assessment of emissions from construction impacts.

The key issues that may have the potential to significantly impact the air quality are:

1. Project-generated traffic's potential to result in significant localized air quality impacts at the affected intersections (mobile source analysis);
2. Air emissions from the HVAC systems' potential to significantly impact existing and future sensitive land uses (stationary source analysis);
3. Light industrial/manufacturing sources' potential to adversely impact the proposed development (stationary source analysis);
4. Large or major sources' potential to significantly affect air quality at the sensitive land uses in the proposed development (stationary source analysis); and
5. Stationary and mobile source emissions' potential during construction activities (construction air quality analysis) to adversely impact air quality.

### Mobile Source – Microscale Analysis

The preliminary traffic analysis indicated that the CEQR CO threshold of 140 trips generated by the project at any intersection is not likely to be exceeded. The project is not expected to exceed PM screening threshold of heavy-duty diesel vehicle trips or its equivalent under the operational conditions. The screening analyses as appropriate will be included in the EIS chapter. No parking is associated with the project. No detailed mobile source analyses are anticipated to be required for the project under the *CEQR TM* guidance. However, if these thresholds are exceeded based on the results of the traffic analysis, a detailed analysis will be provided.

## Stationary Source Analysis

### HVAC Analysis

The Proposed Project is expected to use natural gas boiler for its HVAC systems. The air quality analysis will be conducted to determine significance of the impacts of the HVAC systems of this building on existing and future development. There is only one building, One Vanderbilt, taller than the proposed building in the 400-foot radius of the Proposed Project. A dispersion analysis using the latest version of the EPA's AERMOD model will be conducted to estimate air quality impacts of the proposed development.

#### *Emissions and Dispersion Modeling*

Emission rates for the HVAC systems will be estimated based on the EPA's AP-42, Compilation of Air Pollutant Emissions Factors and 2012 fuel consumption rates from the Commercial Energy Consumption Survey. The information about the proposed boiler and the proposed building will also be used to determine emissions. This analysis will estimate concentrations at sensitive receptors at the surrounding buildings using direct plume impact and the downwash modeling analyses. The pollutant of concern for this analysis will be NO<sub>2</sub> and PM<sub>2.5</sub> the two main pollutants of concern for the natural gas combustion.

The NO<sub>x</sub> to NO<sub>2</sub> conversion will be conducted using the PVMRM approach with the background ozone concentrations for Manhattan and 10 percent in-stack NO<sub>2</sub>. Background NO<sub>2</sub> concentrations will be obtained from the 65-30 Kissena Boulevard monitoring station in Queens.

#### *Compliance Criteria*

The purpose of this analysis is to address the significance of the air quality impacts by demonstrating compliance with the one-hour and annual NO<sub>2</sub> national ambient air quality standards (NAAQS) and the CEQR *de minimis* criteria for PM<sub>2.5</sub>. If the total highest design concentrations at the receptor are lower than the NAAQS or the CEQR *de minimis* criteria, the impacts will not be considered significant. If the total concentrations are higher than the NAAQS or the CEQR *de minimis* criteria, a more detailed analysis will be conducted for the proposed building's HVAC systems.

### Industrial/Manufacturing Source Analysis

According to the *CEQR Technical Manual*, an air quality assessment is required to evaluate the potential impacts of emissions from exhaust systems of manufacturing or processing facilities when the Proposed Action would result in new sensitive uses (particularly schools, hospitals, parks, and residences) within a 400-foot radius of the proposed project development sites,

#### *Emission and Dispersion Modeling*

Land use maps and New York City Department of Environmental Protection's Clean Air Tracking System (DEP CATS) will be reviewed to identify potential sources of emissions from manufacturing/industrial operations. If any such sources are identified, the air permits for them will be obtained from the NYCDEP and a screening analysis following the *CEQR Technical Manual* guidelines will be conducted for these sources. If warranted, cumulative analysis will be conducted with respect to such industrial sources.

### ***Compliance Criteria***

The New York State Department of Environmental Conservation's (NYSDEC) DAR-1 Annual Guideline Concentration (AGC), Short-term Guideline Concentration (SGC), cancer risk and hazard index will be used as the thresholds to determine impacts' significance. Should the screening analysis results exceed any of these thresholds, a more detailed analysis using the AERSCREEN or AERMOD and following the *CEQR Technical Manual* procedures will be conducted.

### **Large and Major Source Analysis**

Large or major sources are those that have a state or Title V permit to operate. *CEQR Technical Manual* requires an air quality assessment if such a source is located within a 1000-foot radius of the proposed project. Review of available information identified two "large" sources, a Generator Plant at 330 Madison Avenue and a Power Plant at 11 West 42<sup>nd</sup> Street that have State Facility permits and are located within a 1,000-foot radius of the project site. The impact of emissions from these facilities on the Proposed Project will be estimated using the latest version of the EPA's AERMOD model.

### ***Emissions and Dispersion Modeling***

Emissions from the large source facilities will be estimated based on the potential to emit obtained from the Air State Facility (ASF) permit. Several pollutants will be of concern from the large sources identified within a 1000-foot radius, PM, both PM<sub>10</sub> and PM<sub>2.5</sub>, NO<sub>2</sub> and SO<sub>2</sub>. The large sources will be modeled using parameters listed in the permit for the facility. The impacts of the large sources will be estimated both as a direct plume impact and using the downwash algorithm. The downwash algorithm calculates concentrations affected by impact of buildings located near the stacks. The NO<sub>2</sub> modeling will be conducted using PVMRM module in the AERMOD and the hourly ozone observations obtained from the NYS Convent Avenue monitoring location in Manhattan. The latest available five years of meteorological data, 2015-2019, from LaGuardia Airport will be used in this analysis.

### ***Background Concentrations***

Background concentrations for this analysis will be estimated from the latest three full years (2017-2019) of observations in the following NYS monitoring stations:

- › PM<sub>2.5</sub> – from 185 1<sup>st</sup> Avenue, New York, NY
- › PM<sub>10</sub> – from 40 Division Street, New York, NY
- › NO<sub>2</sub> – from 65-30 Kissena Blvd., Queens, NY
- › Ozone – from 160 Convent Avenue, New York, NY

### ***Compliance Criteria***

Significance of the air quality impacts from the described large and major sources will be determined based on the comparison with the National Ambient Air Quality Standards (NAAQS).

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## **Appendix C: Noise Analysis Protocol Memorandum**

# 343 Madison Avenue



## Noise Protocol

July 24, 2020

### Introduction

The following presents the proposed noise assessment methodology for the redevelopment of the property located at 341 – 347 Madison Avenue (Block 1279, Lots 23-25 and 48; hereinafter the “Project Site”). The proposed methodology describes how noise receptors will be identified and categorized, criteria that will be used to assess potential noise impact at existing receptors and evaluate whether new receptors would be introduced into a high ambient noise environment, measurements that will be conducted to characterize the existing noise environment in the study area, how No-action and With-action noise levels will be predicted to address changes in mobile and stationary noise sources, and the process for considering the need for mitigation to reduce noise to acceptable levels.

### Study Area

The initial step in conducting a noise impact assessment is to identify and categorize existing noise-sensitive land uses adjacent to the Project Site and to determine the anticipated locations and type of new sensitive receptors that would be introduced by the Proposed Project. Existing noise-sensitive land uses adjacent to the Project Site primarily include commercial, office, and hotel. For example, existing noise-sensitive receptors include The Roosevelt Hotel to the north on East 45th Street between Madison Avenue and Vanderbilt Avenue, The Helmsley Building to the northeast on East 45th Street between Vanderbilt Avenue and Depew Place, The MetLife Building to the east on Vanderbilt Avenue between East 44th and 45th Streets and The Yale Club at 50 Vanderbilt Avenue directly to the east of the building.

The Proposed Project would introduce new commercial office receptors up to 950 feet above ground level. Receptors on the north, west and south facades would be adjacent to East 45th Street, Madison Avenue and East 44th Street. Receptors on the east façade would be setback approximately 100 feet from Vanderbilt Avenue with 20 to 22-floor buildings (#50 and #52 Vanderbilt Avenue) between the receptors and the Vanderbilt Avenue.

### Impact Criteria

In accordance with the *CEQR Technical Manual*, potential noise impacts will be assessed at existing receptors according to the increase in noise that would occur between the no-action and With-action conditions. For new receptors that would be introduced by the Proposed Project, future With-action noise conditions will be evaluated according to CEQR Noise Exposure Guidelines. Noise increases associated with the Proposed Project will be assessed based on “continuous equivalent sound level” (Leq) levels. The Leq is a single value that is equivalent in sound energy to the fluctuating levels over a period of time. Noise impact will be assessed according to criteria defined in the CEQR Technical Manual. If no-action Leq levels are 60 dBA or less, impact would occur if there would be a 5 dBA or more increase in noise for the With-action condition. If No-action Leq noise levels are 61 dBA, then a 4 dBA or greater increase would result in noise impact. If No-action Leq noise levels are 62 dBA or higher, than a 3 dBA or greater increase

would result in noise impact.

For new receptors, noise is assessed according to the CEQR Noise Exposure Guidelines (Table 19-2) which are based on the greater of the With-action L10 and Leq noise levels. The L10 noise level is that which is exceeded for 10 percent of the time during a given time period. Therefore, this metric represents the higher end of the range of sound levels. The Noise Exposure Guidelines define whether exterior ambient noise conditions are "Acceptable", "Marginally Acceptable", "Marginally Unacceptable", or "Clearly Unacceptable" depending on the type of receptor (i.e. residential, hotel, commercial or office) and the time of day. These guidelines have been developed with the goal of maintaining interior noise conditions of 45 dBA or lower at residential locations and 50 dBA or lower at commercial/office/retail locations.

## Existing Noise Measurements

Ambient noise measurements were conducted on Thursday May 19, 2016 and Thursday May 26, 2016 to characterize the ambient noise conditions at the Project Site. As shown in Figure 1, measurements were conducted on the Madison Avenue façade (Site 1), 44th Street façade (Site 2), and 45th Street façade (Site 3) near the existing building for 20 minutes at ground level during the early morning period (when mobile sources from construction activity may be greatest), AM Peak, midday and PM peak periods that coincide with the traffic analysis.



Figure 1. Noise Measurement Locations

Noise conditions on the east façade of the Proposed Project, which is setback from Vanderbilt Avenue approximately 100 feet, will be based on the greater of the levels measured at Site 2 and Site 3.

A Type I sound level meter was used to conduct measurements in accordance with the methods outlined in the CEQR Technical Manual. Because the ambient noise environment is dominated primarily by roadway sources at Sites 1, 2, and 3, measurements were conducted for 20-minute durations with simultaneous traffic counts including vehicle classifications. Noise measurements were conducted at Site 1, 2, and 3 during the following periods:

- › Early AM (6:00 – 7:00 AM)
- › AM peak (7:00 – 9:00 AM)
- › Midday (12:00 to 2:00 PM)
- › PM peak (4:30 to 6:30 PM)

## Mobile Source Noise

Based on the preliminary traffic assessment and the Traffic Demand Analysis, the Proposed Action would generate more than 50 incremental vehicular trips in one or more peak hours but would not generate 50 or more vehicles at an intersection during the peak hours analyzed. This means that there is no potential for traffic volumes to double which would result in a 3 decibel increase in noise and no potential for significant adverse noise impact due to mobile sources.

Since the ambient noise measurements were conducted in 2016, current ambient noise conditions will be determined by adjusting the measurements for the change in traffic volumes since 2016 using proportional modeling.

## Stationary Source Noise

Based on general information available for the anticipated introduction of new stationary sources such as rooftop mechanical equipment, a qualitative assessment will be conducted to address the potential for noise impact at nearby receptors. Since there would be existing receptors within 1500 feet of the rooftop with a direct line of sight to rooftop equipment, it may be necessary to specify noise limits for the equipment to assure that it will meet NYC Noise Code requirements.

Since the proposed building will cantilever over the existing MTA ventilation building, noise exposure from the ventilation structure will be evaluated on the proposed Project and nearby receptor locations. The ventilation building is not currently operational and is not planned to operate until MTA train service begins as part of the East Side Access Project in approximately 2022. The East Side Access Environment Impact Statement evaluated potential noise impacts from this MTA ventilation building and specified that the equipment will be designed to meet all applicable noise standards and regulations, and to avoid producing noise levels that cause impacts. Equipment in New York City would meet the provisions of (the then current) Local Law No. 64, which provides noise criteria based upon zoning designations, and the New York City Noise Code (Section 24-227), which limits noise produced by circulation devices within a receiving property dwelling unit to 42 dBA and cumulative noise from all circulation devices shall not exceed 45 dBA inside a receiving property dwelling unit measured at a point 3 feet from the open portion of the nearest window. Therefore, it is assumed that the ventilation building has been designed and specified to meet this noise limit.

As shown in Figure 2, the ventilation structure has louvers on the top of the building and the front of the building where sound propagates from the mechanical equipment. The building is adjacent to the Yale Club which has windows approximately 15 feet away from these louvers. As indicated in the East Side Access EIS, the ventilation building has been designed to meet the specification that sound will not exceed 45 dBA at open window positions.



Figure 2. MTA Ventilation Building (louvers in red) and Yale Club

As shown in Figure 3, the Proposed Action would cantilever over the louvers on the top of the ventilation building. Information on the sound emissions of the ventilation building such as equipment specifications or acoustical analyses previously conducted by others will be reviewed and the noise exposure at the proposed building and the need for building attenuation to maintain acceptable interior noise conditions will be evaluated. Noise levels from the ventilation building are expected to meet the New York City Noise Code for circulation devices at the proposed building.

In regard to potential effects on nearby receptors, the proposed building would cause sound that would otherwise propagate upwards to reflect off the proposed building, reverberate in the space above the ventilation building and be redirected. Sound reflected off the bottom of the proposed building (green line) would primarily reflect back through the louvers of the ventilation building and would not cause noise levels to increase at other receptors such as the Yale Club. Additionally, the Proposed Action may include a wall with louvers within the space above the ventilation building which would further reduce noise at nearby receptors. Therefore, it is anticipated that there would be no noise impact to nearby receptors. The EIS will include an analysis of the proposed building and the potential for it to affect sound from the ventilation building.

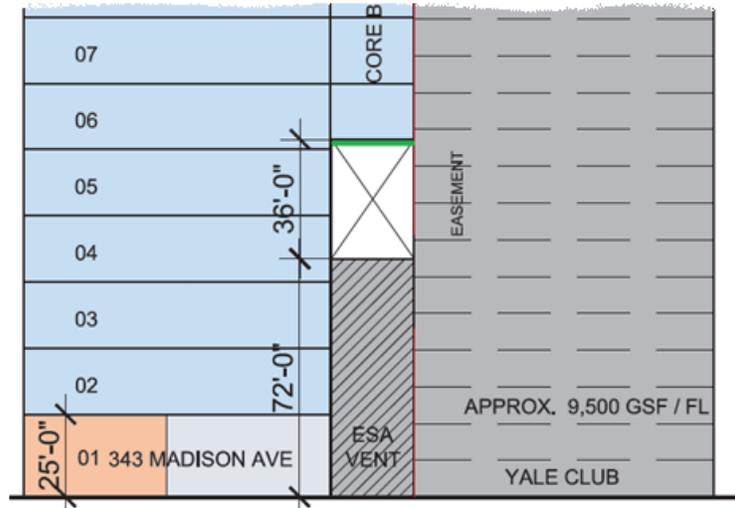


Figure 3. Proposed Building (draft April 29, 2020)

For new receptors that would be introduced by the Proposed Project, nearby stationary sources including the MTA ventilation structure on Lot 25 for the LIRR East Side Access Project will be evaluated. As the Proposed Project is expected to cantilever over this structure, a minimum sound attenuation of the cantilevered floor structure may need to be specified to maintain acceptable interior noise conditions.

### Noise Impact Assessment

Noise impact will be assessed according to criteria in the *CEQR Technical Manual* for existing receptors and the Noise Exposure Guidelines for new receptors. If there would be noise impact at existing receptors, potential noise mitigation measures must be considered. With-Action noise levels will be determined based on the previous noise measurements and proportional modeling for the change in traffic volumes since 2016.

For new receptors, if with-action noise conditions are “Marginally Unacceptable”, “Unacceptable”, or “Clearly Unacceptable”, then a minimum window/wall attenuation of each respective building facade would be required. It should be noted that while minimum attenuation limits will be specified for each facade based on their respective exterior noise exposure, the applicant may choose a window/wall design that provides uniform noise attenuation on all facades of the building. Window/wall attenuation requirements would specify the minimum outdoor-to-indoor transmission classification (OITC) rating necessary to maintain interior noise conditions to acceptable levels. The minimum OITC ratings for office, commercial uses are 5 dBA lower than the residential requirements. The OITC ratings for commercial office receptors are as follows:

### Required Attenuation Values To Achieve Acceptable Interior Noise Levels

Noise level with proposed project	Marginally Unacceptable				Clearly Unacceptable
	$70 < L_{10} \leq 73$	$73 < L_{10} \leq 76$	$76 < L_{10} \leq 78$	$78 < L_{10} \leq 80$	$80 < L_{10}$
Attenuation <sup>A</sup>	(I) 28 dB(A)	(II) 31 dB(A)	(III) 33 dB(A)	(IV) 35 dB(A)	$36 + (L_{10} - 80)^B$ dB(A)

Note: <sup>A</sup>The above composite window-wall attenuation values are for residential dwellings and community facility development. Commercial office spaces and meeting rooms would be 5 dB(A) less in each category. All of the above categories require a closed window situation and hence an alternate means of ventilation.

<sup>B</sup> Required attenuation values increase by 1 dB(A) increments for  $L_{10}$  values greater than 80 dBA.

Should window/wall attenuation requirements be needed, they will be included as an (E) designation.

## Construction Noise And vibration Assessment

Construction of the Proposed Project has the potential to affect nearby sensitive receptor locations. Because the Proposed Project is expected to have a total construction period in excess of two years and there are nearby sensitive receptors including residential and commercial land uses, a detailed construction noise and vibration assessment is warranted.

Based on current information about the construction stages, on-site construction equipment (i.e. stationary sources) and construction-related vehicles (i.e. mobile sources) including worker trips and material handling trips on adjacent roadways, a quantitative construction noise assessment will be conducted. The analysis will quantify the magnitude, time of occurrence, and duration of the potential exceedances of the CEQR impact criteria, and determine the practicability and feasibility of implementing control measures that would reduce or eliminate any identified significant adverse noise impacts. As recommended in the *CEQR Technical Manual*, this study uses the criteria to define a significant adverse noise impact as follows for noise exposure occurring for more than 24 months:

- If the existing noise levels are less than 60 decibels, A-weighted equivalent sound level for one hour (dBA  $L_{eq(1)}$ ) and the analysis period is not a nighttime period, the threshold for a significant impact would be an increase of at least 5 dBA  $L_{eq(1)}$ . For the 5 dBA threshold to be valid, the resulting noise level with the proposed project would have to be equal to or less than 65 dBA.
- If the existing 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 p.m. and 7:00 a.m.), the incremental significant impact threshold would be 3 dBA  $L_{eq(1)}$ .
- If the existing noise level is 61 dBA  $L_{eq(1)}$ , the threshold would reflect an incremental increase of 4 dBA, since an increase higher than this would result in a noise level higher than the 65 dBA  $L_{eq(1)}$  threshold).

Additionally, significant adverse construction noise impact may occur if noise levels would increase 15 dBA or more over ambient levels for 12 months or more or would increase 20 dBA or more over ambient levels for 3 months or more. Ambient noise conditions at nearby receptor locations will be predicted using Cadna-A modeling based on existing traffic data and adjusted based on the measured noise levels.

For existing receptors where there would be significant adverse construction noise impact, interior noise levels will be evaluated and the outdoor-to-indoor sound attenuation will be estimated. A windshield survey will be conducted to determine the type of windows (i.e., single pane or double pane) that are installed and their means of ventilation and cooling (i.e., central air-conditioning or PTAC units).

## Analysis Approach

Stationary construction noise levels will be predicted at nearby sensitive receptors using the Cadna-A sound prediction software based on the type of equipment used, the usage factors, and distances from source to receptor and acoustic shielding from intervening buildings. Mobile construction noise will be modeled based on the reference sound levels for general and construction vehicles included in the *CEQR Technical Manual* and the Federal Transit Administration guidance manual and based on noise reduction according to the DEP's rules for Citywide Construction Noise Mitigation. Construction noise from stationary sources will be evaluated according to requirements outlined in the New York City Noise Control Code.

Mobile source construction noise impact will be assessed according to criteria in the *CEQR Technical Manual*. Noise levels generated by traffic movements will be calculated using Cadna-A sound prediction software.

Construction noise mitigation recommendations will be presented, as needed, in accordance with CEQR and New York City Noise Control Code requirements. There are a wide variety of other measures that, when deemed feasible and practicable, will greatly minimize construction noise exposure and therefore reduce potential noise impacts such as controlling the noise emission levels of specific equipment, performing particularly noisy work during certain times of the day, choosing quieter equipment and methods when feasible, controlling the use of back-up alarms, using enclosures for small equipment and installing solid perimeter fencing as noise barriers.

## Vibration Assessment

Construction vibration has the potential to result in damage to adjacent structures and cause annoyance to sensitive receptors. A qualitative construction vibration assessment will be performed initially based on the construction equipment and staging information and proximity to nearby sensitive resources, to determine if further analysis is warranted. If further analysis is required, a quantitative construction vibration assessment will be conducted to evaluate the potential for structural damage or annoyance from equipment that has the greatest potential to generate vibration (i.e. pile driving, demolition, jack hammers, etc.). Vibration levels will be predicted at sensitive receptors according to the methodology outlined in the FTA guidance manual. Potential vibration impact will be assessed according to general vibration impact criteria and not structure-specific limits that could be established by a structural engineer upon a detailed evaluation.

The applicant would comply with the New York City Landmarks Preservation Commission (LPC) vibration requirements and prepare a Construction Protection Plan (CPP) for adjacent historic properties such as the Yale Club prior to construction. It is anticipated that the CPP will be prepared and reviewed by LPC after the completion of the EIS. The EIS will include recommended vibration mitigation measures, as needed, such for the contractor to prepare a detailed construction vibration control plan.

## Vibration Impact 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 per second. For non-fragile buildings, vibration levels below 0.60 inches per 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 will be used:

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

where:  $PPV_{\text{equip}}$  is the peak particle velocity in inches per second of the equipment at the receiver location;

$PPV_{\text{ref}}$  is the reference vibration level in inches per second 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 will be used:

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

where:  $L_v(D)$  is the vibration level in VdB of the equipment at the receiver location;  $L_v(\text{ref})$  is the reference vibration level in VdB at 25 feet; and

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